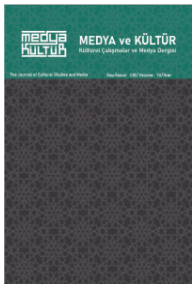

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Research Article

The Effect of Digital Competencies on Artificial Intelligence Addiction: A University Youth Study

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Abstract: The rapid proliferation of generative artificial intelligence tools among university students today, while contributing to educational processes, also increases the risk of addiction. This study quantitatively investigated the relationship between digital competence levels and AI addiction among university students in a sample of 401 volunteer participants from Selçuk University and Necmettin Erbakan University. The findings showed that participants had high levels of digital competence and relatively low levels of AI addiction. Digital tool usage time, news consumption/digital information searching, digital empathy, digital media use, and digital content creation were found to have a positive and significant effect on AI addiction, while digital security had a negative and significant effect. The study also found that the perception of AI use played a partial mediating role in the effect of digital competence on AI addiction. This study is expected to provide an original contribution to the literature on the relationship between digital competence and AI addiction, as well as generating important data for future research.

Keywords: Digitalization, Digital Competence, AI Addiction, Effect, University Students

1. Introduction

Digital technologies are now part of everyday life, influencing access to services, communication, education, the workplace and civic participation (Rusu et al., 2026). As individuals increasingly turn to global communication networks through digital social environments such as the internet, mobile phones, computer games, and blogs (Önür & Kalaman, 2016), this trend brings about a significant transformation in the ways we work, learn, play, communicate, and express our emotions (Islam & Bhuiyan, 2023). Despite the vast opportunities offered by this process, often referred to as the digital revolution, it is crucial not to overlook the significant risks it entails at the societal level (Helbing, 2019).

The dual-sided structure of the digital environment necessitates its safe, conscious and critical use. Digital competence is key. It means knowing how to effectively use ICTs for communication, collaboration, management, content creation and more (Toker et al., 2021).

Digital competence is a key competency in today's world (Su & Yang, 2024), where digital tools and technologies are deeply integrated into daily life. However, while the concept of digital competence theoretically refers to a comprehensive competency area encompassing critical, conscious, and safe usage practices, in practice it often remains limited to individuals' ability to effectively use digital tools. This situation can lead to such skills becoming a factor that facilitates the more intensive and uncontrolled use of technology.

Indeed, the rapid integration of AI-based tools—which have seen extraordinary development in recent years—into various aspects of daily life has heightened concerns regarding problematic use and psychological impacts (Maral et al., 2025). Indeed, throughout history, new technologies—especially those adopted rapidly and transforming daily life—have often been accompanied by social anxieties and debates about moral panic (Ciudad-Fernández, 2025).

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AI tools capable of generating human-like text and performing complex tasks, such as automated text generation, question-answering, and image generation, are becoming increasingly intertwined with individuals' daily routines. This situation is also leading to the growing visibility of the potential for addiction to AI use. However, despite this increasing concern, it is notable that research on AI addiction remains limited (Al-Obaydi & Pikhart, 2026).

In this context, understanding how digital competencies shape individuals' relationship with technology, particularly as AI-based tools become more widespread, has become an increasingly important area of research. The present study employs quantitative methodologies to examine the relationship between university students' levels of digital competency and AI addiction. The study, which utilized a survey as the data collection method, was conducted among university students who actively and intensively use artificial intelligence tools.

2. Digital Competence

Digitalization is defined as the process of the advancement of digital technologies and their permeation into virtually all areas of human activity (Hu & Qian, 2025). Digital environments that are easily accessible and highly interactive have rapidly scaled up usage practices—which began at the individual level—to the societal level, enabling the widespread adoption of technology in a short period (Özçelik Baloğlu, 2023), while fundamentally transforming the ways in which information is accessed and disseminated (Lan et al., 2024). When the opportunities and threats emerging from this process are considered together, it becomes evident that digitalization has made digital competence an indispensable requirement for sustainability and growth across various fields, from education to the business world (Reddy et al., 2020).

As one of the conceptual reflections of this transformation, it is noteworthy that the concept of digital literacy in the literature is increasingly being replaced by the digital competence approach, which offers a more comprehensive framework (Falloon, 2020; Yang et al., 2023). This approach is regarded as a fundamental competency area enabling individuals' active participation in lifelong learning processes (Freiman et al., 2017). In this framework, digital competence refers to the knowledge and skills required for the effective use of digital technologies. A key to digital society participation, it includes critical thinking, collaboration, and responsible, safe, efficient use of technology (Lan et al., 2024; Falloon, 2020).

The concept of digital competence, which encompasses both the technical aspects related to hardware and software management and the cognitive dimensions based on knowledge and education (Ottestad et al., 2014), is highlighted as a fundamental necessity for individuals of all age groups to adapt to a rapidly changing and highly interconnected world (Zhao et al., 2025). However, not all individuals possess the necessary interest, self-confidence, social support, or opportunity to begin developing their digital competence. Individuals lacking sufficient digital competence face the risk of being excluded from important activities, failing to fully benefit from existing opportunities, and even putting themselves at risk while using digital tools and media (Ala-Mutka, 2011).

In the context of addressing these risks, the development of digital competence based on skills that enable the innovative, critical, and safe use of information and communication technologies (Bojórquez-Roque et al., 2024) has recently become a central agenda item for academics, field experts, and policymakers worldwide (Iordache et al., 2017). In this context, many countries and organizations have undertaken efforts to update their education policies and curricula with the aim of making digital competence an official component of compulsory education (Su & Yang, 2024). Indeed, digital competence is not merely intended to address the transformations brought about by digitalization in the field of education; they also emerge as a fundamental competency area for both learners and educators, supporting lifelong learning processes, and as a critical component of the contemporary educational context (Bozkurt et al., 2021).

The assessments presented so far largely reflect the normative framework regarding digital competence. However, in practical applications, digital competence is often limited to the ability to use digital tools. Digital competence is expected to encompass individuals' ability to critically evaluate digital environments, question content, and make informed choices. At this point, it can be argued that the nature of the relationship young individuals establish with the digital realm differs significantly from the critical and inquisitive level ideally envisioned. Indeed, the literature emphasizes that despite

the expansion of access to technology, individuals continue to face various difficulties in critically evaluating digital content (Furbani et al., 2025).

In this context, with the widespread adoption of artificial intelligence technologies that have rapidly integrated into our lives in recent years, it is observed that tendencies toward excessive and uncontrolled use of these systems are beginning to be addressed as a new form of addiction. Indeed, research indicates that increased use of artificial intelligence significantly elevates addiction levels (Zhang et al., 2025; Kılıç & Koca, 2025; Shen et al., 2026). In this context, the relationship between artificial intelligence addiction and digital competence must be examined within a multidimensional framework.

3. Artificial Intelligence Addiction

As technological advancements accelerate, the impact of digital media tools on daily life is becoming increasingly evident. However, the central role of digital transformation in our lives does not yield only positive outcomes; it also brings with it various risks. Among these risks, digital addiction has emerged as a significant area of concern in recent years (Balcı et al., 2024). Indeed, Kuss and colleagues (2014) emphasize that addiction is not exclusive to substance use; certain behaviors can also exhibit similar addictive components and, therefore, can be evaluated within the scope of addiction. In this context, the phenomenon of digital addiction—which leads to numerous problems such as poor academic performance, sleep disorders, weakened social relationships, and depression (Balcı & Kaya Güler, 2023)—is increasingly recognized as a growing global public health issue (Patel et al., 2025).

Digital addiction, defined as the excessive and compulsive use of digital technologies with negative consequences for physical, mental, and social well-being (Yu et al., 2024), is not limited to the internet, social media, or smartphones alone, but is taking on new forms in parallel with technological advancements. In particular, the growing interest in artificial intelligence applications in recent years has significantly increased the level of interaction individuals have with these technologies (Montag et al., 2025). Indeed, as of the second half of 2025, approximately one in six people worldwide (16.3%) uses generative artificial intelligence tools. This represents a 1.2-point increase compared to the 15.1% rate in the first half of the year. Furthermore, while the most widely used AI tools vary by region and market share, ChatGPT and DeepSeek stand out as the most popular applications (Microsoft AI Economy Institute, 2026).

On the other hand, it is noted that the use of AI tools is increasingly concentrated among younger users, with Generation Z and Millennials being the primary users of these technologies (Chen et al., 2025). Indeed, it is stated that young users frequently use AI tools in their daily lives for purposes such as preparing homework, receiving support during research processes, and engaging in emotional interactions (Elshaer & Azazz, 2025). On the other hand, the widespread adoption of artificial intelligence is increasingly raising concerns regarding problematic usage patterns, such as excessive use and digital addiction (Maral et al., 2025; El-Sayed et al., 2025).

In this context, artificial intelligence addiction refers to a problematic behavioral pattern characterized by individuals struggling to control this technology, experiencing intense mental preoccupation, feeling restless when access is unavailable, feeling an increasing need to use it, and continuing its use despite negative consequences (Revesai, 2025). Excessive dependence on artificial intelligence significantly impacts individual adaptation and development (Chen et al., 2025). It is argued that AI applications—which can trigger anxiety and panic reactions, particularly in adolescents who may be more vulnerable to such technologies (Huang et al., 2024)—not only hinder critical thinking skills and independent learning processes but may also negatively impact intellectual development in the long term (Wu et al., 2026).

At this point, it is believed that the effects of AI use on individuals are related not only to the frequency of use but also to the level of digital competence individuals possess. Indeed, the fact that individuals who possess the ability to effectively use digital technologies—even if they do not have advanced digital competencies —may use these technologies more intensively and for a variety of purposes has sparked discussions suggesting that this could create a foundation that increases the risk of addiction to artificial intelligence.

4. The Relationship between Digital Competencies and AI Addiction

The Unified Theory of Acceptance and Use of Technology (UTAUT) explains individuals' use of technology under the headings of "performance expectancy, effort expectancy, social influence and facilitating conditions." The theory examines users' behavioural intentions and use of technology through these four key determining factors. Digital competence, assessed as a technology usage skill, positively influences the perceived levels of these factors, thereby accelerating and enhancing the interaction between the individual and the technology (Venkatesh et al., 2003). Digital competence also plays a role in the adoption of artificial intelligence tools by individuals—tools that learn through data integrated into almost every aspect of life in recent years and provide outputs to users by analysing this data via algorithms. Indeed, digital competence is recognised as a key factor in facilitating interaction with AI tools and enabling their efficient use (Ren et al., 2025). Consequently, attention is drawn to the relationship between digital competence and the use of AI, and how digital competence shapes the use of AI within this relationship.

Digital competence shapes individuals' use of artificial intelligence in two distinct ways. Users with low levels of digital competence tend to accept content generated by AI tools without question and are unable to make full use of the features these tools offer. This situation not only results in users' interactions with AI remaining superficial and limited, but also creates uncertainties regarding their trust in such content. On the other hand, users with a high level of digital competence are able to use AI tools more effectively, strategically, efficiently and in a controlled manner, and can evaluate the outputs obtained from a critical perspective. For this reason, digital competence emerges as a key variable that determines not only the level of AI usage but also the level of interaction (Ren et al., 2025; Yu et al., 2026).

The widespread use of AI tools can be attributed to rapid developments in the field. The fact that artificial intelligence provides instant feedback and helps generate personalised content has paved the way for dependence on these tools. The fact that individuals with high digital competence possess the ability to use AI tools with high efficiency whilst expending less effort also increases the risk of addiction to these tools. This is because these individuals can use AI more effectively—particularly chatbots—by issuing the correct commands, thereby accessing the information they require more quickly. When used as a virtual social companion, AI tools create a sense of conversational flow and enhance the ability to elicit emotional responses. Furthermore, individuals with advanced digital skills can deepen their interaction with AI to create realistic scenarios. These individuals enter an endless cycle of discovery by constantly asking AI new questions (Shen et al., 2026). The fact that artificial intelligence facilitates the creation of digital content, communication and media usage leads to individuals spending more time on these tools, thereby contributing to the development of addictive behaviour.

The tendency to rely on AI in social interactions, daily routines, and academic activities is referred to as AI addiction (Zhang et al., 2024). The present study examined the relationship between university students' levels of AI addiction and the frequency of their AI use. The findings indicate that students who use AI on a daily basis achieve higher scores on the addiction scale in comparison to those who use it weekly or a few times per month. In other words, as the frequency of AI use increases, so does AI addiction (Kılıç & Koca, 2025), suggesting that frequent use may serve as an indicator of reliance on these tools.

The widespread use of artificial intelligence is giving rise to issues such as data security, privacy and user addiction. Just as with the internet, social media and smartphones, users are becoming dependent on AI tools by relying on them in every aspect of their lives. This situation negatively impacts users' daily routines and interpersonal relationships, increasing the risk of relying on misinformation and making erroneous decisions. Conversely, users with high digital competence, despite their intensive use of AI tools, act conscientiously regarding data security and privacy, thereby enhancing their ability to produce creative content and solve problems (Zhou & Zhang, 2024). From this perspective, users with high digital competence can use AI tools to simplify their daily lives.

5. Method

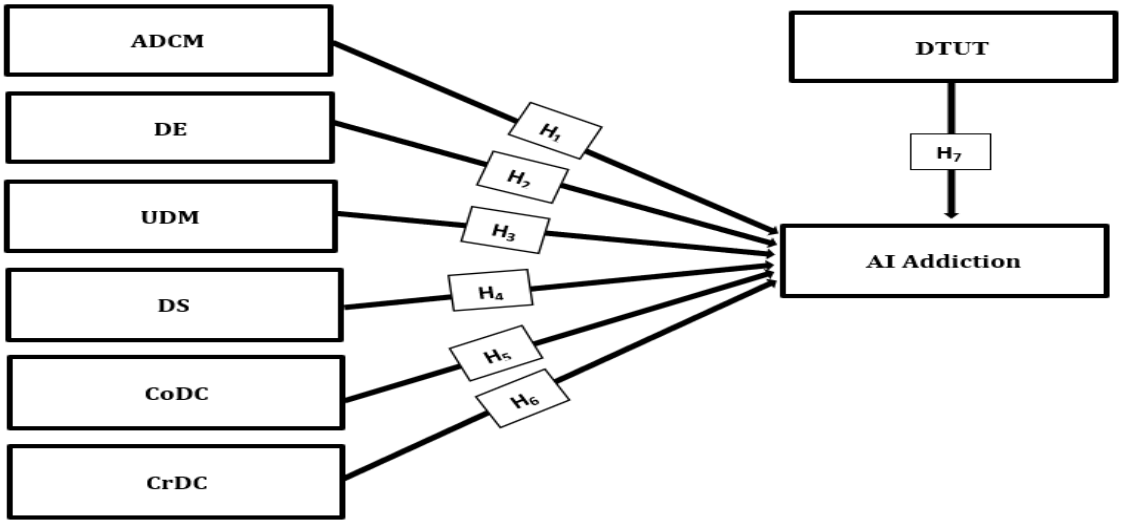
In this study, which employs a quantitative research method, the effect of digital competencies subdimensions and the duration of digital tool use on artificial intelligence addiction is examined.

5.1. Research model and hypotheses

The Correlational Survey Model was adopted to reveal the level of interaction among multiple variables (Şimşek, 2012). In this model, the primary objective is to determine the relationship between variables and to identify causal effects (Fraenkel et al., 2012). In the model, the subdimensions of digital competencies (DC) and the duration of digital tool use serve as independent variables, while the level of artificial intelligence addiction serves as the dependent variable.

Figure 1

Research Model



Hypothesis 1: Digital content management has a significant positive effect on AI addiction.

Hypothesis 2: Digital empathy has a significant positive effect on AI addiction.

Hypothesis 3: Digital media use has a significant positive effect on AI addiction.

Hypothesis 4: Digital security has a significant negative effect on AI addiction.

Hypothesis 5: Digital content communication has a significant positive effect on AI addiction.

Hypothesis 6: Digital content creation has a significant positive effect on AI addiction.

Hypothesis 7: Digital tool usage time has a significant positive effect on AI addiction.

Hypothesis 8: AI perception plays a mediating role in the relationship between digital competence level and AI addiction.

5.2. Participants

Study population: Selçuk and Necmettin Erbakan University students. There has been a marked rise in the use of generative AI among university students. With its rapid development and global uptake, understanding its effects on students has become critical. AI in higher education enriches learning and prepares students for life, with research showing improved analytical reasoning, clinical reasoning, and decision-making competence. However, AI tools can also lead to addiction and challenges in the transition to adulthood. Research suggests that some individuals resort to increased technology use as a coping mechanism for negative affect. Therefore, examining university students' application of AI and investigating the effects of digital competence is important.

Purposive (judgmental) sampling was used to select the 401 university students surveyed. Of those who responded to the research questions, 45.1% were male and 54.9% were female. These proportions appear sufficient for making comparisons based on gender. In the course of this study, interviews were conducted with a sample of university students aged 18-52. The mean age of the subjects was 22.1 years. Of the individuals in the sample, 52.9% (212 students) stated they were enrolled at Selçuk University, and 47.1% (189 students) stated they were enrolled at Necmettin Erbakan University.

5.3. Data collection tools

Digital Competencies Scale: Based on a literature review, the scale developed by Fan and Wang (2022) has been validated by Kryukova et al. (2022), Urakova et al. (2023), and Mejías-Acosta et al. (2024). The scale consists of 27 items and 6 subscales on a 5-point Likert scale (1 = Never, 5 = Always). The scale's subscales are: Access to Digital Content Management (ADCM), Digital Empathy (DE), Use of Digital Media (UDM), Digital Security (DS), Communication of Digital Content (CoDC), and Creation of Digital Content (CrDC). The Turkish adaptation of the scale was conducted by the authors of this study. In this context, regarding linguistic validity, four experts in the field were asked to compare the English and Turkish adaptations, and the pilot version of the scale was administered to 150 university students. The data collected from the students were transferred to a dataset created in SPSS. To assess the fit between the original version of the scale and the Turkish adaptation, Exploratory Factor Analysis (EFA) was conducted using Principal Component Analysis on the dataset created in SPSS. Thus, the final Turkish scale was finalized. As the score increases, the level of digital competence also increases. The six dimensions with eigenvalues greater than 1 explain 53.4% of the total variance (KMO = 0.874; $\chi^2 = 2905.07$; $p < 0.001$). In this study, the internal consistency coefficient (Cronbach's Alpha) for the entire scale was calculated as 0.901.

Problematic ChatGPT Use Scale: The scale, developed by Yu et al. (2024), consists of 11 Likert-type items grouped into a single sub-dimension. Participants are asked to rate each item on a scale from 1 (strongly disagree) to 4 (strongly agree). The lowest possible total score on the scale is 11, and the highest is 44. As the score increases, the level of addiction also increases. Yu et al. (2024) calculated the scale's Cronbach's Alpha coefficient as 0.88. The Turkish adaptation of the scale (without item deletion) was conducted by Maral et al. (2025). The authors reported Cronbach's Alpha as 0.90. In this study, the internal consistency coefficient was determined to be 0.88.

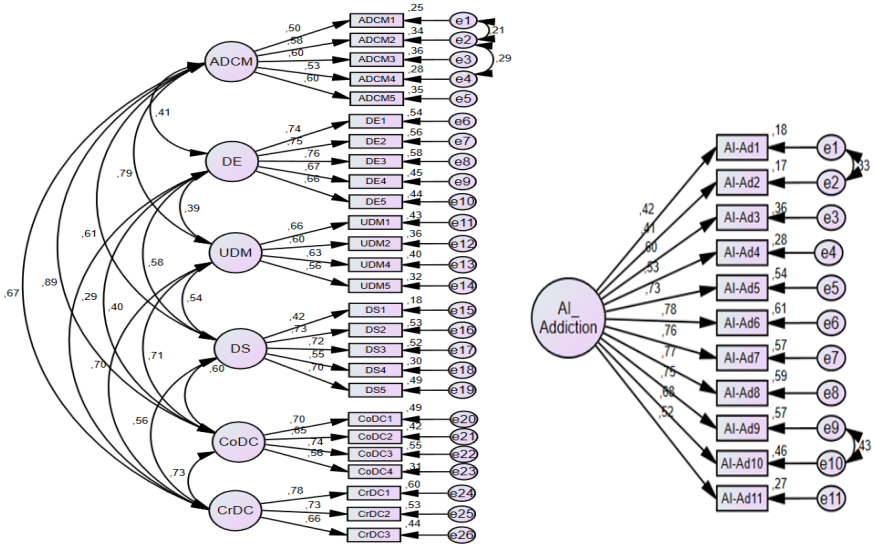
Perceptions Scale Regarding the Relationship between Digital Competence and AI: This scale, developed by the authors of this study following an extensive literature review, aims to determine university students' levels of perception regarding the relationship between their digital competence and the use of generative artificial intelligence. The scale consists of 6 items on a 5-point Likert scale (ranging from 1= Strongly Disagree to 5= Strongly Agree). The lowest possible total score on the scale is 6, and the highest is 30. As the score increases, the level of perception regarding the relationship between digital competence and AI also increases. The construct validity of the scale was assessed using Exploratory Factor Analysis (EFA) with the assistance of Principal Component Analysis. The single dimension with an eigenvalue greater than 1 explains 43.8% of the total variance (KMO = 0.737; $\chi^2 = 502.96$; $p< 0.001$). In this study, the internal consistency coefficient (Cronbach's Alpha) for the entire scale stands out at 0.72.

5.4. Data analysis

The data for this study were collected between 2nd and 16th February 2026, with 401 participants. Descriptive statistics were calculated for Likert-scale items, and Cronbach's alpha was used to assess internal consistency. Factor analyses were conducted to validate the scales. The present study employed correlation analysis to examine the relationships between digital competence subscales and artificial intelligence addiction. Gender differences were analysed using an independent samples t-test. Multiple linear regression analysis was performed to assess the effects of Digital Competence sub-dimensions and digital tool usage duration on artificial intelligence addiction. The mediating role of Digital Competence and Artificial Intelligence perception was tested using the Hayes PROCESS analysis method.

Figure 2

CFA Diagrams for the Digital Competence Scale and the Artificial Intelligence Addiction Scale



To ensure construct validity, CFA was also conducted.

Table 1

CFA Results for the Digital Competence (DC) and Artificial Intelligence Addiction Scales (N= 401)

Model	$\Delta\chi^2$	df	$\Delta\chi^2$/df	p	RMSEA	GFI	CFI	SRMR
[1]DC Scale	646,881	282	2,294	,000	,057	,885	,900	,058
[2]AI-Add. Scale	151,308	42	3,603	,000	,079	,933	,942	,052

For the fit indices presented in Table 1, the accepted criteria were met (Brown, 2006; Byrne, 1994; Çokluk et al., 2012; Hooper et al., 2008; Meydan & Şeşen, 2011) and that the structures of the scales under examination have been validated (Hu & Bentler, 1999). One item (UDM3) in the Digital Competence Scale was excluded from the analysis because it had a low adjusted item-total correlation.

6. Findings

The subsequent section is devoted to the presentation of the descriptive statistics and correlation analyses of the scales. This is followed by a discussion of the descriptive findings related to perceptions of the relationship between digital competencies and artificial intelligence. The research is concluded with an analysis of the impact results.

6.1. Descriptive statistics, T-tests, and correlation analyses of the scales

Participants scored between 45 and 130 on the digital competencies scale, with an average score of 103.62. University students' digital competencies are high.

Table 2

Descriptive Statistics for the Digital Competence Scale and Its Subdimensions and the Artificial Intelligence Addiction Scales

SCALES	Min.	Max.	$\bar{X}$	Skewness	Kurtosis
DC Scale	45,00	130,00	103,62	-,568	1,295
ADCM	9,00	25,00	21,02	-,75	1,29
DE	5,00	25,00	18,70	-1,13	1,45
UDM	8,00	20,00	15,85	-,53	,26
DS	8,00	25,00	20,79	-1,17	1,46
CoDC	6,00	20,00	16,23	-1,00	1,48
CrDC	3,00	15,00	11,05	-,55	,45
AI Add.	11,00	44,00	23,51	,58	,32

It was found that participants assigned scores ranging from a low of 9 to a high of 25 to the 9 items in the News Tracking/Digital Information Search subscale. The average scores for university students were 18.70 for Digital Empathy; 15.85 for Digital Media Use; 20.79 for Digital Security; 16.23 for Digital Content Communication; and 11.05 for Digital Content Creation.

When analyzed by gender, university students showed significant differences in News Tracking/ Digital Information Search (t= -3,01; p< 0.01), Digital Empathy (t= -3,93; p< 0.001), Digital Security (t= -3,77; p< 0.001), and Digital Content Communication (t= -2,20; p< 0.05). Descriptive statistical results indicate that, compared to men, women have higher scores in news tracking/digital information search, digital empathy, digital security, and digital content communication.

It is noteworthy that university students who responded to the survey questions scored between a minimum of 11 and a maximum of 44 on the AIAS. The average AI addiction level among participants was 23.51. In other words, the findings indicate that university students' artificial intelligence addiction levels are not very high.

There is no significant difference in AI addiction levels based on the gender of the students participating in the study (t= 1.81; p> 0.05). Descriptive statistical results indicate that the AI addiction scores of males ($\bar{X}$= 24.19) and females ($\bar{X}$= 22.96) are close to one another.

The fact that the skewness and kurtosis values for the scales and subscales used in the study fall within the ±1.5 range serves as evidence that the data follows a normal distribution (Terzi, 2019; Tabachnick & Fidell, 2013).

Table 3

Findings of the Correlation Analysis on the Relationship between Digital Competence Subdimensions and Artificial Intelligence Addiction (Pearson r)

	1.	2.	3.	4.	5.	6.	7.
ADCM	1	,304**	,547**	,427**	,626**	,434**	,108*
DE		1	,317**	,494**	,333**	,235**	,101*
UDM			1	,407**	,530**	,496**	,128*
DS				1	,443**	,396**	-,090*
CoDC					1	,520**	,064
CrDC						1	,147**
AI Addiction							1

Note: *p< ,05; **p< ,01

In a further finding, a weak but statistically significant positive correlation was observed between AI addiction and Access to Digital Content Management (ADCM) (r = 0.108; p < 0.01), Digital Empathy (DE) (r = 0.101; p < 0.01), Use of Digital Media (UDM) (r = 0.128; p < 0.01), and Creation of Digital Content (CrDC) (r = 0.147; p < 0.01). There is a very weak, negative, and statistically significant relationship between AI addiction and Digital Security- DS (r= -,090; p< 0.05). As participants perceived level of digital security increases, there is a decrease in AI addiction. In terms of the sub-dimensions of digital competence, the strongest relationship is observed between Access to Digital Content Management-ADCM and Digital Content Communication- CoDC (r= ,626; p< 0.01). In other words, as the desire to track news and search for digital information in digital environments increases, there is also an increase in digital content communication.

6.2. Perceptions regarding the relationship between digital competence and AI

The two items on the Perceptions of Digital Competence and Artificial Intelligence scale that received the highest scores from participants were: "Individuals with high digital competence find it easier to use artificial intelligence" ($\bar{X}$= 3.96) and "My digital skills help me improve my ability to use artificial intelligence" ($\bar{X}$= 3.93). The item receiving the lowest scores is "Digital incompetence may lead to avoiding artificial intelligence" ($\bar{X}$= 3.35).

Table 4

Descriptive Statistics of the Scale of Perceptions Regarding the Relationship between Digital Competencies and AI

ITEMS	Min.	Max.	$\bar{X}$	Skewness	Kurtosis
Individuals with high digital competence find it easier to use artificial intelligence.	1	5	3,96	-1,003	,567
My digital skills help me improve my ability to use artificial intelligence.	1	5	3,93	-,997	1,427
Digital competence is essential for effectively using artificial intelligence tools.	1	5	3,75	-,900	,638
My digital skills allow me to use artificial intelligence applications for longer periods of time.	1	5	3,67	-,710	,524
My affinity for digital tools makes me more eager to use artificial intelligence.	1	5	3,60	-,536	-,109
A lack of digital competencies can lead to avoiding artificial intelligence.	1	5	3,35	-,302	-,722
TOTAL	6	30	22,29	-,492	,752

It was observed that respondents to the research questions scored between a minimum of 6 and a maximum of 30 on the six items of the Digital Competence and Perceptions of Artificial Intelligence Scale. The average level of participants' perceptions regarding digital competence and artificial intelligence was 22.29, which is a high score.

The study revealed that there was no statistically significant difference in the levels of perception regarding digital competencies and artificial intelligence based on the gender of university students ($t = 0.416$; $p > 0.05$). Descriptive statistical results indicate that the levels of perception regarding digital competencies and artificial intelligence among men ($\bar{X}$= 22.38) and women ($\bar{X}$= 22.21) are close to one another.

6.3. Effect analyses

Here, we tested hypotheses based on the research model, findings in Table 5. The model examined digital competence and tool usage as predictors of AI addiction.

Table 5

Digital Tool Usage Time and Digital Competence Subdimensions as Predictors of AI Addiction

Effect Path	B	C.E.	Estimate (β)	*t*	p	LLCI	ULCI
(Constant)	21,886	2,995		7,308	,000	15,998	27,774
ADCM → AI Add.	,329	,165	,130	1,989	**,047**	,004	,654
DE → AI Add.	,344	,103	,186	3,343	**,001**	,142	,546
UDM → AI Add.	,374	,181	,129	2,067	**,039**	,018	,730
DS → AI Add.	-,579	,139	-,252	-4,172	**,000**	-,852	-,306
CoDC → AI Add.	,032	,171	,013	,187	,852	-,304	,368
CrDC → AI Add.	,498	,166	,177	2,997	**,003**	,171	,824
DTUT → AI Add.	,006	,002	,165	3,409	**,001**	,003	,010
R^2= ,128; Adjusted R^2= ,114						F= 7,23; df= 7; p= ,000	

An analysis of the results of the linear multiple regression analysis reveals that the variables "digital tool usage time- DTUT" (β= ,165; p= 0.000), "access to digital content management" (β= ,130; p= 0.047), "digital empathy" (β= ,186; p= 0.001), "use of digital media" (β= ,129; p=0.039), and "creation of digital content" (β= ,177; p= 0.001) have a positive effect on artificial intelligence addiction; digital security (β= -,252; p= 0.000) has a negative effect. No significant effect of digital content communication on AI addiction was detected (β= ,013; p> 0.05). The model's explanatory capacity is 11.4%. These results confirm *Hypotheses 1, 2, 3, 4, 6*, and *7*, while *Hypothesis 5* was rejected.

Table 6

Results of Mediating Test the Digital Competence-to-AI Perceptions on the Effect of Digital Competence on AI Addiction (Hayes Process Method)

Effect Path				95% Confidence Interval		Result
	β	**S.E.**	**t**	**LLCI**	**ULCI**	
Total Effect DC→ AI Add.	1,26***	,219	5,77	,836	1,701	*Partial Mediation Exists*
Direct Effect DC→ AIP → AI Add.	1,10***	,222	4,98	,671	1,544	
Indirect Effect DC→ AIP → AI Add.	,161	,058		,0607	,2871	(H_8 Accept)

Note: ***p< ,001

The final study model examined perceptions of AI as it relates to digital competencies and addiction. Digital competence positively impacts AI addiction (β= 1.26; p< .001). Analysis using the bootstrap method indicates that the level of perception regarding the digital competencies –AI relationship mediates the relationship between digital competencies and AI addiction (0.0607- 0.2871). The fact that the strength of the effect, which was significant before the mediating variable was included in the model, decreases when the mediating variable is added (*β*= 1.10; *p*< .001) indicates that the level of perception regarding the digital competencies–AI relationship has a partial mediating effect in this relationship. These results also underscore the validation of *Hypothesis 8*.

7. Discussion and Conclusion

It is evident that the use of generative AI tools is rapidly becoming widespread among university students and is making significant contributions to educational processes. AI-based tools support students in accessing information quickly and easily, whilst helping to develop their learning motivation, critical thinking, problem-solving and professional skills. However, the ease of access to these tools and their prolonged use can also increase the risk of addiction. Individuals with high digital competence—such as those engaged in content creation or providing guidance through precise commands—spend more time using these tools with each new piece of content, posing different questions, which further increases the risk of addiction. Therefore, the impact of digital competence on AI addiction is considered an important area of research.

The present study examined the effect of digital competence on artificial intelligence addiction using data collected from 401 volunteer participants currently studying at Selçuk University and Necmettin Erbakan University. Furthermore, the study investigated the mediating role of the digital competence-to-AI perceptions in the relationship between these two variables. The research concluded that the participants exhibited high levels of digital competence, and relatively low levels of artificial intelligence addiction. A thorough examination of the data obtained from the participants indicated that the dimensions of news tracking/digital information search, digital security and digital empathy within the digital competence framework exhibited higher mean values in comparison to other dimensions. This finding suggests that the majority of study participants possess a fundamental understanding of security in digital environments, including password security and data protection. Furthermore, these participants demonstrate responsible behaviour in their interactions within these environments from an emotional, social and ethical standpoint. This finding is consistent with the conclusions of preceding studies on this subject (Kaleli, 2024; Čekić, 2025). The fact that the digital content creation dimension had the lowest average score in the study suggests that participants are more passive when it comes to producing digital content.

The finding that students did not achieve a high average score for AI addiction in the study suggests that the participants did not exhibit a very high tendency towards AI addiction. Furthermore, the study found no significant difference in levels of AI addiction between participants based on gender. In a similar vein, the study undertaken by Kılıç and Koca revealed that there was no statistically significant discrepancy in the mean AI addiction scores based on gender (2025). This finding indicates that the utilisation of AI exhibits comparable mean levels among female and male students, suggesting that the adoption of AI is equally prevalent among both groups.

Another finding of the study is the existence of a weak, positive correlation between AI addiction and the sub-dimensions of digital competence: News tracking/digital information seeking, digital empathy, digital media usage and digital content creation. Accordingly, it can be concluded that as participants' levels of digital information search, digital media use, digital content creation and digital empathy increase, so too do their levels of artificial intelligence addiction. Similarly, the literature indicates a positive and significant relationship between digital literacy—assessed as a digital competence skill—and the intention to learn AI, showing that individuals with higher levels of digital literacy have stronger intentions to use AI and face a higher risk of developing dependence on these tools (Kurdal & Kaplan, 2026; Yurter & Duğan, 2024). On the other hand, the identification of a negative and very weak relationship between the digital security sub-dimension and AI addiction in the study suggests that participants' awareness and understanding of digital security—such as protecting personal information and passwords—may be effective in reducing AI addiction.

According to the multiple linear regression analysis testing the effect of digital competence dimensions on AI addiction, it was concluded that participants' time spent using digital tools, news tracking/information searching in digital environments, digital empathy, digital media usage and digital content creation have a positive and significant effect on AI addiction. In the literature, news following/digital information seeking (Kul, 2020; Göker & Tekedere, 2024), digital empathy (Lee et al., 2022), digital media use (Savcı & Aysan, 2017; Uslu, 2021) and digital content creation (Hsu et al., 2014; Turel & Qahri-Saremi, 2016; Kuss & Griffiths, 2017) support the findings of this study. This suggests that individuals' intensive use of digital tools, their search for information and monitoring of news in digital environments, their demonstration of digital empathy, and their production of digital content may increase AI addiction. However, the study found that digital security has a significant negative effect on AI addiction. This result indicates that individuals with high digital security awareness may be able to balance their use of AI and thereby reduce the risk of addiction.

The study concluded that the overall level of digital competence —derived by combining the dimensions of digital competence into a single variable—has a significant positive effect on AI addiction, and that this effect is partially mediated by participants' perceptions of AI. Thus, it is revealed that users with high digital tool skills will have a higher preference for using artificial intelligence and may become more dependent on it, and the way users perceive artificial intelligence will also be influential in this risk of dependence.

This research, conducted on university students—a group with a high need and desire for AI use—investigated the effect of digital competence on AI addiction. However, AI tools are widely used by different age groups and segments of society. Therefore, future research could extend these findings by examining different age groups and broader societal segments.

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