

MODELING THE CAUSAL RELATIONSHIP BETWEEN PERCEIVED DIGITAL DISTRACTION RISKS AND DECISION-MAKING STRESS ON STUDENT VOLLEYBALL ACHIEVEMENT

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ABSTRACT

This research aims to identify the correlation between perceived digital distraction risks, decision-making stress, and volleyball performance among students. It also seeks to develop a model that clarifies and explains the direct and indirect causal relationship between these factors. The study employs a descriptive approach using survey methodology and correlational and causal studies. The research population was defined as third-year students in the Colleges of Physical Education and Sports Sciences at the Middle Euphrates State Universities for the academic year (2025-2026), totaling (1086) male and female students. The pilot sample consisted of (20) male and female students, the preparation sample consisted of (500) male and female students, and the main sample consisted of (200) male and female students. A scale of perceived digital immersion risks was prepared with (38) items and a decision stress scale with (39) items. The academic achievement score in volleyball for third-year students in the College of Physical Education and Sports Sciences - University of Babylon was obtained, which is considered the final score for the first semester of the team sports branch. A model of causal relationships was built for the domains of perceived digital immersion risks, which represent the independent variables in decision stress as a mediating variable and academic achievement in volleyball as a dependent variable. The research yielded several conclusions, including a genuine correlation between perceived risks of digital immersion, decision fatigue, and students' academic performance in volleyball. The research also found that the various aspects of digital immersion risk differ in their mechanisms of influence, not all operating through the same pathway. Furthermore, ethical and health risks directly increase decision fatigue due to cognitive and physical exhaustion. The research concluded with recommendations, including raising students' awareness of the risks of digital immersion and its effects on mental health and academic achievement, and guiding students towards purposeful digital use that serves the educational process and reduces unregulated immersion.

KEYWORDS: Perceived risks of digital immersion, decision fatigue, academic achievement in volleyball.

INTRODUCTION

Academic achievement is a complex and multifaceted educational concept due to its connection with numerous social, psychological, and personal variables. Academic achievement plays a crucial role in shaping the daily lives of students, families, and society. It is a tangible outcome and a significant indicator of a student's success or failure in their academic tasks. One of the academic tasks undertaken by physical education students is team sports, which have gained prominence worldwide as a prime example of team sports. Psychological well-being is essential for students, as it forms the foundation upon which the learning process begins. The higher the psychological requirements, the greater the ability to perform academic duties effectively. Hence, the importance of the psychological and social aspects of students' participation in team sports, which include various games such as volleyball.

One of the social variables that the researchers believe is related to the academic achievement of students in the Faculty of Physical Education and Sports Sciences is the perceived risk of digital immersion. This is one of the most prominent phenomena resulting from technological advancements, as university students have become increasingly reliant on smart devices and modern technologies in their daily activities, whether educational or recreational. Despite the benefits technology offers in terms of easy access to information and enhanced social interaction, excessive use of these devices can lead to numerous negative effects on psychological and academic well-being, especially for students participating in team sports such as volleyball. Another variable that the researchers believe affects students' academic achievement is decision-making stress, which reflects a diminished ability to make high-quality decisions and control behavior as a result of repeated decision-making. Evidence suggests that individuals experiencing decision-making stress exhibit weak negotiation skills, prefer a passive role in decision-making, and often make choices that appear impulsive or irrational.

Therefore, the importance of this research lies in the fact that academic achievement is a fundamental element in students' lives. It is crucial to delve into student-related issues by studying variables (perceived risks of digital distraction, decision-making stress, and academic achievement) that play a significant role in guiding students' appropriate behavior, shaping their actions, and forming their future goals. The study examines perceived risks of digital distraction as an independent variable and its direct impact on decision-making stress as a dependent and mediating variable, and on academic achievement in volleyball as a dependent variable, given its active and distinctive role in students' lives. Through field observation and investigation of the results of third-year students in team sports, including volleyball, the researchers found fluctuations and declines in their academic performance in this subject. The researchers believe this is due to the influence of several psychological and social variables, including perceived digital distraction risks and decision-making stress. Therefore, the research problem can be defined by the following questions:

- What is the nature of the correlation between perceived digital distraction risks, decision-making stress, and students' academic achievement in volleyball?
- Is it possible to develop a model that clarifies and explains the nature of the direct and indirect causal relationship between perceived digital distraction risks, decision-making stress, and students' academic achievement in volleyball?

Therefore, this research aims to:

1. Develop a scale for perceived digital distraction risks and construct a decision-stress scale for students.
2. Determine the relationship between perceived digital distraction risks, decision-stress, and academic achievement in volleyball among students.
3. Establish the correlation between perceived digital distraction risks, decision-stress, and academic achievement in volleyball among students.
4. Develop a model that clarifies and explains the nature of the direct and indirect causal relationship between perceived digital distraction risks, decision-stress, and academic achievement in volleyball among students.

METHODOLOGY

The researchers adopted a descriptive approach using survey methodology and correlational and causal studies, which is appropriate for the nature of this study. The research population consisted of third-year students in the morning program at the Colleges of Physical Education and Sports Sciences in the Middle Euphrates public universities (Babylon, Karbala, Kufa, Qadisiyah, and Al-Qasim Al-Khadra) for the academic year 2024-2025, totaling 1,086 students. The research samples were selected using simple random sampling and divided into three groups: a pilot study (20 students), a preparatory study (500 students), and a main study (200 students).

The researchers used the Perceived Digital Immersion Risk Scale developed by Khashan (2025), which comprises 48 items representing four domains: psychological risks, academic risks, health risks, and ethical risks. Four response options were provided: high risk, moderate risk, low risk, and no risk. After modifying some items in the two scales, they were presented in a questionnaire to a group of (13) experts and specialists to assess the validity of these items in terms of their wording and suitability for measuring what they were designed to measure. The specialists' responses were analyzed using the chi-square test, and it was found that two items (5 and 48) were not significant.

The researchers developed a decision-stress scale following the scientific steps used in constructing psychological and educational scales. (47) items were prepared, representing five domains of the scale: cognitive, physical, emotional, social, and environmental. Five response options were provided: always, often, sometimes, rarely, and never. The domains, along

with their definitions and items, were presented in a questionnaire to a group of experts and specialists to assess its validity in terms of wording and its suitability for measuring its intended purpose. The specialists' responses were analyzed using the chi-square (χ^2) formula. It was found that all domains were valid, except for five items (3, 6, 11, 18, and 22), which were excluded because their calculated values were not statistically significant.

The researchers conducted their pilot study on Sunday and Monday, November 23-24, 2025, with a sample of 20 third-year students from the College of Physical Education and Sports Sciences at the University of Babylon. The items of the Perceived Digital Immersion Risk and Decision Stress scales, in their initial versions, were applied to a sample of (500) male and female students from the third stage in the College of Physical Education and Sports Sciences at the Universities of (Babylon, Karbala, Kufa, Qadisiyah, and Al-Qasim Al-Khadra). This took place from Sunday, December 7, 2025, to Tuesday, December 9, 2025, in the classrooms of those colleges. After correcting the answers to the items of the two scales, the researchers followed two methods in analyzing the items of the two scales: the discriminatory ability (the two extreme groups) and the internal consistency coefficient. The researchers verified the item's ability to discriminate in this method through a sample of (500) numbers. After arranging the scores in descending order, (27%) of the forms that obtained the highest scores and (27%) of the forms that obtained the lowest scores were selected, because this percentage achieves two groups with the maximum possible size and differentiation, as the number of forms in each group reached (135) forms, and excluding the middle percentage (46%), which numbered (230) forms. Then, the discrimination coefficient for each item of the scale was calculated using the t-test for two independent samples, and the value of (Sig) was considered statistically significant as an indicator of item discrimination. (39) items appeared as distinct for the scale of perceived digital immersion risks, and in the decision stress scale, (39) items appeared as distinct because the value of (sig) was less than the significance level of (0.05). It was found that there were (7) items that appeared as non-distinctive for the scale of perceived digital immersion risks, and there were (3) items that appeared as non-distinctive in the decision stress scale because the value of (sig) was higher than the significance level of (0.05).

In the internal consistency statistical analysis, the correlation between item scores and the total scale score was calculated using Pearson's correlation coefficient for the entire sample of 500 students. For the Perceived Digital Immersion Risk Scale, 38 items showed a significant correlation between their scores and the total scale score, as the p-value (sig) for all items was less than the significance level of 0.05. Item 45 was found to be non-significant because its p-value was greater than 0.05. Therefore, 38 items were retained for application to the main sample. For the Decision Stress Scale, all 39 items showed a significant correlation between their scores and the total scale score, as well as with the overall domain score, since the p-value for all items was less than 0.05. Therefore, 39 items were retained for application to the main sample.

In the Decision Stress Scale, all 39 items showed a significant correlation between their scores and the total scale score, and also with the overall domain score, as the p-value for all items was less than 0.05. The validity of both scales was verified through face validity and construct validity by statistically analyzing the items. This involved calculating the discrimination coefficients for the two extreme groups and determining the internal consistency of the items.

To verify the reliability of the scales, the split-half method was used on a sample of 500 students. Each scale was divided into odd and even items, and the half-scale reliability coefficient was calculated between the scores of the two sections using Pearson's correlation coefficient. The Pearson coefficient was 0.75 for the Perceived Digital Immersion Risk scale and 0.76 for the Decision Stress scale. The correlation coefficient was then corrected using the Spearman-Brown formula, revealing high reliability for both scales: 0.85 for the Perceived Digital Immersion Risk scale and 0.86 for the Decision Stress scale. After completing the preparation process, the Perceived Digital Engagement Risk Scale, consisting of (38) items, and the Decision Stress Scale, consisting of (39) items, were administered to the main experimental sample, which consisted of (200) third-year students (40 female and 160 male) at the College of Physical Education and Sports Sciences, University of Babylon, from Monday, February 16, 2026, to Wednesday, February 18, 2026.

The students' academic achievement grades in volleyball, from the Team Sports branch, were obtained as the final grades for the first semester of the 2025-2026 academic year. The students' averages were calculated in preparation for statistical analysis.

The Statistical Package for the Social Sciences (SPSS) version (24) was used for statistical analysis, and the AMOS software version (24) was used to extract the results of the direct and indirect effects of the variables.

RESULTS AND DISCUSSIONS

PRESENTATION AND DISCUSSION OF THE RESULTS OF THE VARIABLES

Table 1: shows the results of the differences between the hypothetical and arithmetic means of the variables

Variables	Mean	Std	Hypothetical mean	Calculated value of T	Value (Sig)	Statistical significance
Perceived risks of digital immersion	105.410	6.544	95	22.496	0.000	Sig.
Decision stress	129.815	9.470	117	19.138	0.000	Sig.
Academic achievement	63.480	8.053	50	23.674	0.000	Sig.

The results of Table (1) show that there are differences between the arithmetic mean and the hypothetical mean in the perceived risks of digital immersion, decision stress and academic achievement. To determine the significance of the

differences between the two means, a t-test for a single sample was used, and the significance of the differences between the two means was found to be in favor of the achieved arithmetic mean, because the value of (Sig) reached (0.000), which is less than the significance level of (0.05).

PRESENTATION AND DISCUSSION OF THE RESULTS OF THE CORRELATIONAL RELATIONSHIPS BETWEEN THE RESEARCH VARIABLES:

Table 2: Shows the correlational relationships between the study variables

Variables	Perceived risks of digital overload	Decision-making stress	Academic achievement
Perceived risks of digital overload	1	0.489	0.634
Decision-making stress		1	0.501
Academic achievement			1

By observing the correlation matrix in Table (2), it becomes clear that all calculated correlation coefficients between the variables are statistically significant at a significance level of less than (0.05).

PRESENTATION AND DISCUSSION OF THE CAUSAL RELATIONSHIPS OF THE MODEL BETWEEN THE INVESTIGATED VARIABLES:

To construct a model that clarifies and explains the nature of the direct and indirect causal relationships between the research variables, the researchers designed a model that illustrates the direct and indirect correlational relationships between the variables. They assumed that the perceived risks of digital immersion are independent variables, decision stress is a mediating variable, and academic achievement is a dependent variable, as illustrated in Figure (1).

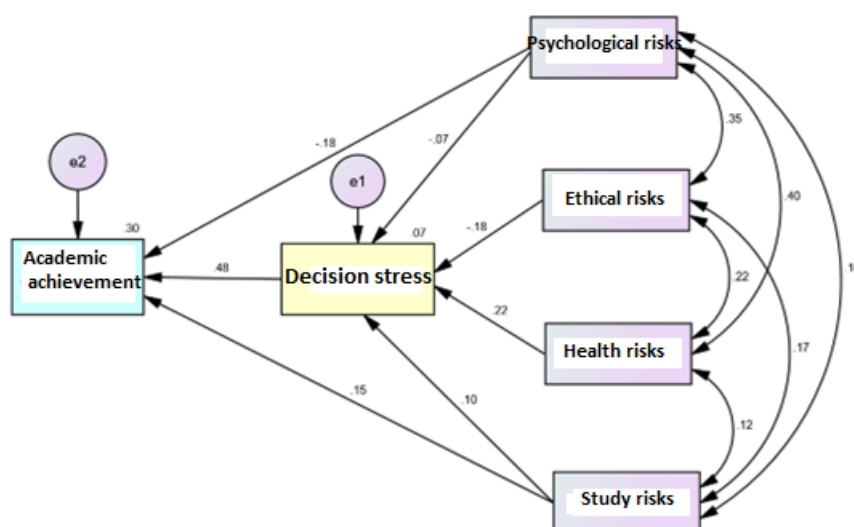


Figure 1: Illustrates the standard model indicators for direct and indirect causal relationships between variables

Table 3: Shows the quality indicators of the proposed path analysis model for the theoretical model

Variables	Value of Chi Square	df	Quality of conformity	Level of significance	(GFI) Good Conformity	Good Conformity Adjustment (AGFI)	(RMSEA) Trust Limits
Values	238.0	2	119.0	0.888	1.000	0.996	0.000
Admission standard	-	-	Less than (2) matching the model	Higher than 0.05	0.90 or higher	0.90 or higher	Less than 0.080

The results in Table (3) show that the model is a good fit, as demonstrated by the statistical indicators of model quality.

Table 4: Shows the direct, indirect, and overall effects of the independent variables on the dependent variable of the theoretical model

Type of effect	The independent variable and the mediator	Mediating variable Decision stress	Dependent variable Academic achievement
Direct effects	Ethical risks	-0.181	
	Health risks	0.222	
	Academic risks	0.102	0.147
	Psychological risks	-0.069	-0.175
	Decision stress		0.438
indirect effects	Moral hazard		-0.088
	Health risks		0.107
	Academic risks		0.049
	Psychological risks		-0.033
Overall effects	Ethical risks	-0.181	-0.088
	Health risks	0.222	0.107
	Academic risks	0.102	0.196
	Psychological risks	-0.069	-0.208
	Decision stress		0.438

Table 5: Shows the regression weights of the independent variables on the dependent variables of the theoretical model

Independent variables	Direction of impact	dependent variables	slope weights		standard error	Critical ratio	Value (Sig)	Type of indication
			Standardization	Non-standard				
Ethical risks	→	Decision stress	-0.181	-0.692	0.281	-2.461	0.014	Sig.
Health risks	→	Decision stress	0.222	0.844	0.284	2.970	0.003	Sig.
Study risks	→	Decision stress	0.102	0.221	0.151	1.460	0.144	Non-sig.
		Academic achievement	0.147	0.271	0.112	2.423	0.015	Sig.
Psychological risks	→	Decision stress	-0.069	-0.229	0.261	-0.879	0.379	Non-sig.
		Academic achievement	-0.175	-0.497	0.171	-2.902	0.004	Sig.
Decision stress	→	Academic achievement	0.438	0.411	0.051	8.083	0.000	Sig.

Table (5) shows the direct effects of independent variables on dependent variables. The results reflect a subtle variation in the pathways of influence among the domains of digital immersion risk. Not all domains acted in the same way; rather, they differed according to the nature of each domain and its cognitive and psychological mechanisms. This strengthens the explanatory model of the study. The results indicate that the perceived domains of digital immersion risk differ in their mechanisms of influence. Ethical and health risks contributed to raising the level of decision-making stress due to the continuous cognitive drain they impose, while academic and psychological risks directly affected academic achievement without mediating through intermediate cognitive processes. Decision-making stress also emerged as a significant cognitive variable that directly affects the level of skill performance, reflecting the multiplicity of explanatory pathways for the relationship between digital and psychological variables and students' academic achievement. These risks, including cognitive distraction, time wastage, social comparison, and sleep disturbances, contribute to a state of emotional instability. Furthermore, students' awareness of these risks is not merely theoretical; it reflects a lived experience of their negative effects, leading to increased anxiety, stress, and mood swings. Therefore, digital immersion is a direct factor impacting students' mental health. Idrissi (2024) argues that the effects of digital addiction extend beyond study time, impacting students' overall health. Using electronic devices, bright screens, and stimulating content before bedtime is a common problem that affects sleep quality and students' ability to relax and prepare for the next day. Consequently, they exhibit signs of fatigue, stress, and poor concentration in the classroom. (Idrisi, 2024, 236)

Students live in a digitally stimulating environment, and this environment generates excessive cognitive load that leads the student to feel a loss of control over time, distraction, and poor concentration. Physical education students are required to have high attention and sensory-motor interaction because learning depends on direct motor performance and not just theory, i.e., actual practice and physical repetition. Therefore, any digital immersion leads to a reduction in the actual practice time for learning the skill performance, in addition to poor preparation. (Sharif 2023) believes that studying the negative effects of digital technological risks on digital stress, which emerged as a reflection of individuals' need for satisfying experiences through social media or virtual environments to compensate for the deprivation of basic needs, and

to satisfy the need to feel important, accepted, satisfied and to communicate with others. Therefore, these individuals are highly exposed to the risk of overusing information and communication technology to satisfy their basic needs, and to create a desirable environment in which the adolescent feels more competent, even if it is a virtual environment. With what virtual electronic environments provide in terms of increasing social capital, their services may reach unhealthy levels as a result of overuse as a response to the non-satisfaction of needs; thus making them an unhealthy alternative to the real satisfaction of these needs, especially in adolescence, the stage of self-formation, personality and independence. (Sharif, 2023, p. 987)

Academic achievement depends on attention, repetitive performance, and cognitive processing of recurring situations. Digital immersion leads to attention fragmentation, reducing the efficiency of skill-based learning and weakening motor memory programs. Furthermore, excessive digital use reduces the time allocated to actual learning and affects sleep quality, both of which are crucial factors in skill-based learning. Excessive use of smart devices is linked to a decline in academic and skill-based performance. Kredi (2024) confirms that due to the academic, social, and economic pressures students face at this stage of their education, as well as the weakness of educational competencies, the abundance of distractions in our current era, and the changing interests of students due to exposure to the outside world, they suffer from a diminished ability to control their attention. This is because attention is affected by many factors, such as rapid technological development and increasing life demands, in addition to its connection to several cognitive processes like intelligence, memory, thinking styles, and learning, which are in turn influenced by individual differences related to socialization, the surrounding environment, and genetic factors. (Kridi, 2024, p. 778)

Cognitive competence is a fundamental requirement for skill performance, and any deficiency in executive processes directly impacts performance. Volleyball, for example, relies on speed, accuracy, and decision-making. Decision-making fatigue is one of the variables that leads to slower response times, increased errors in skill performance, and weakened decision-making. Abdul-Hussein (2021) observes that students' lives are generally filled with difficulties that affect their academic adjustment, hindering them from achieving their goals and satisfying their motivations. Students can overcome these difficulties by exerting more effort and using their thinking skills. However, sometimes they are unable to do so, leading to surrender, loss of self-esteem, and despair. (Abdul-Hussein, 2021, p. 23)

CONCLUSION

Based on the research findings, the researchers concluded the following:

1. The high levels of perceived digital distraction and decision-making stress among students indicate that the digital environment has become a source of cognitive and psychological stress within the university setting, and is not merely a means of entertainment or learning.
2. The high academic achievement in volleyball indicates the effectiveness of educational and training programs, and the students' ability to achieve good skill performance despite the pressures.
3. There is a genuine correlation between perceived digital distraction, decision-making stress, and students' academic achievement in volleyball.
4. The areas of digital distraction risk differ in their mechanisms of influence; they do not all operate through the same pathway.
5. Ethical and health risks directly increase decision-making stress as a result of cognitive and physical exhaustion.
6. Academic risks directly affect academic achievement in volleyball.
7. Psychological risks do not directly affect decision-making stress, but they do directly affect academic achievement by weakening focus and emotional stability.
8. Decision-making stress is a crucial variable that directly affects academic achievement in volleyball.

RECOMMENDATIONS

1. Raising students' awareness of the risks of digital immersion and its effects on decision-making stress and academic achievement.
2. Guiding students towards purposeful digital use that serves the educational process and reduces unregulated immersion.
3. Addressing students' mental health through guidance programs that minimize the impact of psychological risks on performance.
4. Implementing psychological guidance programs aimed at reducing decision-making stress resulting from digital use.
5. Reducing the physical and mental stress associated with digital use to improve cognitive performance.
6. Adopting educational strategies that consider the balance between students' cognitive, psychological, and skill-based aspects.

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