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**Article** *in* Business And Management Studies An International Journal · December 2023

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BMIJ
ISSN: 2148-2586

bmij (2023) 11 (4):1260-1274
doi: https://doi.org/10.15295/bmij.v11i4.2284

**Research Article**

# The moderator role of career decidedness in the effect of artificial intelligence anxiety on employment hope

## Yapay zekâ kaygısının iş umuduna etkisinde kariyer kararlılığının düzenleyici rolü

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## Abstract

The rapid rise of artificial intelligence in every sector and the anxiety created by technological change affect university students' job prospects and future career determination. The main purpose of this study is to determine whether career decidedness has a moderating role in the effect of artificial intelligence anxiety on university students' job hopes. The study sample consists of 389 students (264 female, 125 male) selected by convenience sampling method from a foundation university in Istanbul. The ages of the participants are between 18-34+. The questionnaire comprises four sections: demographic information, artificial intelligence anxiety, employment hope, and career decidedness. The questionnaire, which is a quantitative research method, consists of 5-point Likert statements. A total of 36 statements were included for three variables. The data analysis was tested using Spearman correlation analysis and quantile regression analysis. Spearman correlation analysis revealed weak and very weak relationships between the scales. As a result of quantile regression analysis, it was determined that career determination did not have a moderating role in the effect of artificial intelligence anxiety on employment hope.

**Keywords:** Artificial Intelligence Anxiety, Employment Hope, Career Decidedness

**Jel Codes:** M0, M1, M10

## Öz

Yapay zekanın her sektördeki hızla yükselişi ve teknolojik değişimin yarattığı kaygı, üniversite öğrencilerinin hem iş bulma umudu hemde gelecekteki kariyer kararlılığını etkilemektedir. Bu çalışmanın temel amacı, yapay zekâ kaygısının üniversite öğrencilerinin iş umutları üzerindeki etkisinde kariyer kararlılığının düzenleyici bir rolü olup olmadığını belirlemektir. Çalışmanın örneklemini İstanbul'daki bir vakıf üniversitesinden kolayda örnekleme yöntemi ile seçilen 389 kişilik (264 kadın, 125 erkek) bir öğrenci grubu oluşturmaktadır. Katılımcıların yaşları ise, 18-34+ arasındadır. Anket demografik bilgiler, yapay zekâ kaygısı, istihdam umudu ve kariyer kararlılığı olmak üzere dört bölümden oluşmaktadır. Nicel bir araştırma yöntemi olan anket 5'li Likert ifadelerden oluşmaktadır. Üç değişken için toplam 36 ifadeye yer verilmiştir. Verilerin analizi, spearman korelasyon analizi ve quantile regresyon analizi ile test edilmiştir. Spearman korelasyon analizi sonucunda, ölçekler arasında zayıf ve çok zayıf yönlü ilişkiler tespit edilmiştir. Quantile regresyon analizi sonucunda ise, yapay zeka kaygısının iş umutları üzerindeki etkisinde kariyer kararlılığının düzenleyici bir rolü olmadığı tespit edilmiştir.

**Anahtar Kelimeler:** Yapay Zeka Kaygısı, İş Umudu, Kariyer Kararlılığı

**Jel Kodları:** M0, M1, M10

**Submitted:** 10/08/2023

**Revised:** 20/09/2023

**Accepted:** 27/09/2023

**Online Published:** 25/12/2023

**Citation:** Yazıcı, A.M., The moderator role of career decidedness in the effect of artificial intelligence anxiety on employment hope, bmij (2023) 11 (4): 1260-1274, doi: https://doi.org/10.15295/bmij.v11i4.2284

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## Introduction

The oldest and most profound concerns of human beings are uncertainty and fear of the future (Carleton, Gosselin & Asmundson, 2010). Freud defined anxiety as akin to fear, an emotional state arising from real objects in the external world, rooted in the inability to feel safe. Technology is a real object in this external world (Szollosy, 2017).

As artificial intelligence technologies advance rapidly, questions like "Will the human race cease to exist?" or "Will robots replace human labour?" arise in people's minds. These questions lead to the concern that artificial intelligence technologies might subject people to more challenges compared to previous centuries.

In addition to the challenges posed by artificial intelligence, an opposing perspective exists. Jarrahi (2018) suggests that despite their capabilities, artificial intelligence technologies might not yield the right outcomes in situations requiring creativity, imagination, and intuition. Given that AI lacks emotional intelligence, it seems unrealistic that it poses a real threat to humanity; instead, concerns revolve around its potential misuse and malicious purposes.

Trust levels in artificial intelligence are determined by elements like imagination, intuition, and creativity (Gillath, Branicky, Keshmiri, Davison & Spaulding, 2021). Efforts are underway to incorporate human-specific traits, such as common sense and intuition, into artificial intelligence to address trust issues. However, researchers have divergent views on this approach's feasibility (İşgüzar, 2021).

Concerns about artificial intelligence are accompanied by worries that computers threaten the very essence of being "human" (Wang & Wang, 2022). Numerous studies have measured computer anxiety (Heinssen, Glass & Knight, 1987; Marcoulides, 1989; Torkzadeh & Angulo, 1992; Bozionelos, 2001; Beckers & Schmidt, 2003; Achim & Kassim, 2015; Eryilmaz & Cigdemoglu, 2019; Ogunsanya, Solanke & Olatoye, 2020; Meneses, 2022), internet anxiety (Chou, 2003; Joiner, Gavin, Duffield, Brosnan, Crook, Durndell, Maras, Miller, Scott & Lovatt 2005; Thatcher, Loughry, Lim & Micknight 2007; Paul & Glassman, 2017), robot anxiety (Nomura, Suziki, Kanda & Kato, 2006; Chanseau, Dautenhah & Koay, 2016; Kuchenbrandt & Eyssel, 2012), and technology anxiety (Meuter, Ostrom, Bitner & Roundtree, 2003; Saadé & Kira, 2007; Johnson, Wisniewski, Kuhlemeyer, Isaacs & Krzykowski, 2012; Mokyr, Vickers & Ziebarth, 2015).

University students' perspectives on employment and vocational orientations are important in their career decisions. Employment hope helps individuals to plan their future careers, use their skills effectively, and find solutions to difficulties (Gerçek, 2020).

## Literature review

### Artificial intelligence anxiety

Artificial intelligence anxiety refers to the fear or concern that people may have about the impact of artificial intelligence on various aspects of society, including employment, privacy, ethics, and overall human prosperity (Spath, Ganschar, Gerlach, Hämmerler, Krause & Schlund, 2013; Dorst Hahn, Knafla, Loewen & Rosen, 2015; Rotatori, Lee & Sleeva, 2021). It is a common topic of discussion as artificial intelligence technology continues to advance and integrate into different areas of our lives.

The fourth industrial revolution has brought significant developments in smart technologies (Huber & Kaiser, 2015; Porter & Heppelmann, 2015; Hecklau, Galeitzke, Flachs & Kohl, 2016). Technologies such as artificial intelligence, machine learning, robotics, and the Internet of Things are among these areas (Gower, 2018). These examples only scratch how smart technologies are applied across various industries. It is estimated that 33% of some occupations will be eliminated by 2025 due to the development of low-cost autonomous units (Frey & Osborne, 2013; Thibodeau, 2014). According to The Boston Consulting Group 2015 report, the share of robot tasks will increase from a global average of about 10% across all manufacturing industries today to about 25% in 2025 (Sirkin, Zinser & Rose, 2015). Beijing is Made in China 2025 plan, a strategy to improve the country's industrial sector and reduce dependence on foreign technology, aims for local robot manufacturers to supply 70% of the domestic market by 2025 (Wübbeke, Meissner, Zenglein, Ives & Conrad, 2016). According to the report of McKinsey Global Institute, it is estimated that 400 to 800 million employees will be replaced by artificial intelligence by 2030 (Manyika, Lund, Chui, Bughin, Woetzel, Batra, Ko & Sanghvi, 2017). It is argued that artificial intelligence will directly replace 13% of jobs, including more brain-intensive and financially rewarding jobs such as finance, accounting, and senior management (Liu & Zhan, 2020).

Artificial intelligence anxiety can be defined as excessive fear arising from the changes and problems caused by artificial intelligence technologies in personal or social life (Altintas, Uylas Aksu & Gümüş,

2021; Yazıcı, 2022). The artificial intelligence anxiety scale consists of four dimensions: learning, job change, sociotechnical blindness, and artificial intelligence configuration (Akkaya, Özkan & Özkan, 2021). The first three dimensions utilize occupational insecurity in different ways. The learning dimension consists of questions that ask participants to rate the extent to which learning about artificial intelligence creates anxiety for them (Wang & Wang, 2022). The sociocultural blindness dimension addresses the potential dangers of misusing artificial intelligence. Items of the artificial intelligence construct dimension ask respondents to indicate whether they find artificial intelligence daunting or frightening (Roll, De Witte & Wang, 2023). The job change dimension of artificial intelligence anxiety is used to measure the anxiety levels of individuals who may lose their jobs by developing artificial intelligence techniques and products (Terzi, 2020).

There is consensus in favour of artificial intelligence anxiety becoming a universal phenomenon that will greatly influence individuals' future education, work, and life paths (Scherer, 2015; Johnson & Verdicchio, 2017). In the coming years, it will become more difficult for employees to adapt to new technologies. In this case, employees need to be properly trained and prepared with the skills of new technologies to meet future employment needs. Proper training of employees, preparing them for this new technological era, and acquiring new skills are important for employees to achieve their career goals (Wang & Wang, 2022).

Dealing with artificial intelligence anxiety requires a combination of education, transparency, and proactive measures. Promoting public understanding of artificial intelligence technology, its capabilities, and its limitations is crucial. Governments, organizations, and researchers should prioritize ethical considerations like fairness, transparency, and accountability when developing and deploying artificial intelligence systems. Open dialogue and collaboration among stakeholders can help address concerns and ensure that artificial intelligence is developed and used for the benefit of society.

**Employment hope**

As a concept, hope is the emotional belief in the possibility of positive outcomes related to events and situations in one's personal life (Synder, Harris, Anderson, Holleran, Irving, Sigman, Yoshinobu, Gibb, Langelle & Harney, 1991). Hope includes alternative paths, optimism, courage, and, most importantly, self-sufficiency to achieve goals and a struggle (Snyder, 2000). Therefore, it can be said that hope is closely related to performing much better in academic achievement at school (Lopez, Rose, Robinson, Marques & Pais-Ribeiro, 2009). Hope can also be defined as the feelings and thoughts of individuals about their goals, their motivation while moving towards their goals and objectives, and how they can achieve them (Snyder, 1995; Niles, Yoon, Balin & Amundson, 2010). In terms of conceptualizing hope, hope is divided into three basic components. These three basic components are goals, agency, and pathways. Hope is individuals' setting a goal for academic success, drawing a route to reach this goal, and motivating themselves to initiate and sustain the necessary effort along this route (Synder et al., 1991). Employment hope, which is integrated with the components of hope, is conceptualized in this context (Hong, Joshua & Terri, 2012).

If employment hope is expressed based on hope, it can be explained as people's effort, expectation, and desire to obtain a job to meet their compulsory needs. After the individual gains the necessary preliminary preparation and equipment to find a job, he/she will expect to find the job that suits him/her and continue his/her search within the framework of hope (Umutlu & Bayar, 2018). Job hope is the state in which the individual has high motivation toward the goals and objectives of the job (Hong & Choi, 2013).

The concept of employment hope has two dimensions. These are psychological empowerment and goal-oriented path. Self-efficacy and self-esteem are the belief in one's abilities; this phenomenon is called psychological empowerment. The goal-oriented path is the opportunities that the individual has to achieve his/her goals (Akın, Hamedoğlu, Kaya & Satıçam, 2013). Employment hope emerges when individuals' self-confidence, intuition of success, and the paths leading them to their goals intersect (Küpana, 2017).

**Career decidedness**

Career decidedness is oriented toward developing occupational identity, career planning, and development. Clarity about occupational identity facilitates young people's connections with the career exploration process and their occupational future (Diemer & Blustein, 2007). Individuals must identify available job opportunities and occupations when choosing and deciding on a profession. In addition, it is important to evaluate whether these occupations will meet individuals' expectations and decide on the most appropriate one among the options (Arslan & Uyar, 2020). An individual's career decidedness

refers to certainty regarding a particular career choice or career-related decision (Restubog, Florentino & Garcia, 2010).

Career decidedness has a multidimensional structure. This multidimensional structure consists of certainty, satisfaction, and comfort. In this context, it is mentioned that students who have made a definite career decision are self-confident individuals who believe that they have personal control over their lives, feel good about themselves, are satisfied with their current choices, and believe that they can make good decisions (Gordon, 1998).

Hope is an important factor in career decisions. Hope is an important factor that encourages individuals to believe in themselves, provides motivation, and encourages them to achieve their future goals (Rand & Cheavens, 2009). The concept of hope is positively correlated with the concept of career determination (Hirschi, 2014). A study conducted on university students found that students' determination in their career choices was effective on the level of hope (Yakushko & Sokolova, 2010). In another study conducted on undergraduate students, it was found that hopelessness negatively affected career determination (Ulaş & Yıldırım, 2016).

Students' career decision-making during their education period is very important for their later life. Many university students have difficulty making career choices and decisions (Gianakos, 1999). The inability of students to reach any decision in their career choices may be a difficult period for them in the future (Zakay & Barak, 1984).

## Methodology

### Research hypotheses and model

The hypotheses of the research are given below.

***$H_1$:*** *Career decidedness has an impact on artificial intelligence anxiety.*

***$H_2$:*** *Career decidedness has an impact on employment hope.*

***$H_3$:*** *Artificial intelligence anxiety has an impact on employment hope.*

***$H_4$:*** *Career decidedness has a moderator role in the relationship between artificial intelligence anxiety and employment hope.*

The model of the research on the moderator role of career decidedness in the effect of artificial intelligence anxiety on employment hope is shown in Figure 1 below.

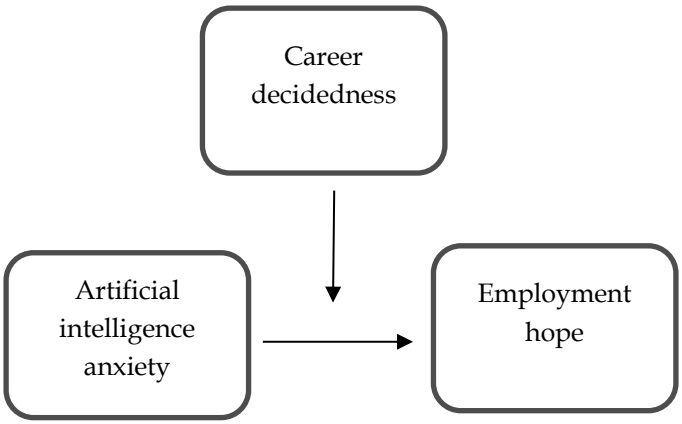



**Figure 1:** Research Model

**Source:** Produced by the author.

### Sample, data collection, and measurements

The research population consists of foundation universities operating in the province of Istanbul in the 2022-2023 academic year. The number of foundation universities operating in Istanbul in the 2022-2023 academic year is 44 (YÖK, 2023). The number of students studying at foundation universities in Istanbul is 568.997 (YÖK, 2023). For the main mass, the number of which is unknown but assumed to be high, the sufficient sample size to represent the main mass with a 5% margin of error and 95% confidence interval is 384. In addition, the sample size should be five times the number of statements of the scales used (Gürbüz & Şahin, 2018:130-320). In the study, the scales were applied to 401 students. The answers of 12 people in the questionnaires were eliminated because they were inconsistent. A sample of 389

completed questionnaires was taken into consideration. A sample size of 389 is considered reliable for the research.

The confidentiality of all participants was ensured, and they were free to terminate their participation at any time. The questionnaire comprises four sections: demographic information, artificial intelligence anxiety, employment hope, and career decidedness. The questionnaire, which is a quantitative research method, consists of 5-point Likert statements. A total of 36 statements were included for three variables.

In the study, the artificial intelligence anxiety scale developed by Wang & Wang (2019) and adapted into Turkish by Akkaya et al. (2021) was used. The artificial intelligence scale consists of four dimensions (learning, job change, sociotechnical blindness, and artificial intelligence configuration) and 16 items.

The employment hope scale developed by Hong et al. (2012) and adapted into Turkish by Akın et al. (2013) was used in the study. The employment hope scale consists of two dimensions (goal-oriented path and psychological empowerment) and 14 items.

The study used the career decidedness scale developed by Lounsbury et al. (1999) and adapted into Turkish by Akçakanat & Uzunbacak (2019). The career decidedness scale consists of one dimension and six items. The data in the study were tested with SPSS 22.0 and AMOS programs.

To use the survey questions related to data collection, firstly, "Ethics Committee Permission" dated 22.03.2023 and numbered 2023/03 was obtained from Istanbul Rumeli University Ethics Committee. Permissions were obtained for all scales used in the study.

**Data analysis**

The data obtained in the study were tested with exploratory factor analysis for scale validity. The Kaiser-Meyer-Olkin coefficient and the Barlett Sphericity test were analyzed with the reliability test of the scales. Spearman's correlation analysis examined relationships between the three variables. The model of this research was analyzed and tested by quantible regression analysis. As a result of these analyses, findings and conclusions are presented

## Findings

**Distribution of demographic characteristics**

401 students participated in the research. However, according to the analyses made in line with the answers given, some answers were excluded from the analyses because they formed extreme values. The analyses continued with the answers given by 389 students.

The demographic characteristics of the participants in the sample group are shown in Table 1 below.

**Table 1:** Distribution of Demographic Characteristics

| | | Frequency | % |
|---|---|---|---|
| **Gender** | Female | 264 | 67.9% |
| | Male | 125 | 32.1% |
| **Age** | 18-21 | 32 | 8.2% |
| | 22-25 | 58 | 14.9% |
| | 26-29 | 96 | 24.7% |
| | 30-33 | 132 | 33.9% |
| | 34+ | 71 | 18.3% |
| **Marital status** | Married | 102 | 26.2% |
| | Single | 287 | 73.8% |
| **Education status** | Associate | 187 | 48.1% |
| | Undergraduate | 144 | 37.0% |
| | Postgraduate | 58 | 14.9% |
| **Employment status** | Yes | 261 | 67.1% |
| | No | 128 | 32.9% |
| **Artificial intelligence knowledge** | Exist | 321 | 82.5% |
| | None | 68 | 17.5% |
| **Artificial intelligence usage** | Yes | 292 | 75.1% |
| | No | 97 | 24.9% |
| **Artificial intelligence to human labour** | Yes | 354 | 91.0% |
| | No | 35 | 9.0% |

**Source:** Produced by the author.

67.9% of the participants were women, 264 were women, 32.1% were men, 33.9% were between the ages of 30-33, and the least 8.2% were between 18-21. 73.8% of the participants are single, and the rest are married. It is understood that 82.5% of the participants know about artificial intelligence, 75.1% have used it before, and 91% think that artificial intelligence can replace human labour in the future.

**Validity and reliability analysis**

The validity of the scales was tested with exploratory factor analysis. The results of the validity of the scales and the percentage of total variance explained by factor analysis are shown in Table 2 below.

**Table 2:** Validity Results of the Scales and Percentage Values of Total Variance According to Factor Analysis

| | Kaiser-Meyer-Olkin | Bartlett's Test | | | |
|---|---|---|---|---|---|
| **Variables** | **(KMO)** | **$x^2$** | **sd** | **p** | **Variance %** |
| **Career Decidedness** | 0.734 | 526.52 | 15 | 0.000 | 62.46 |
| **Artificial Intelligence Anxiety** | 0.767 | 1310.23 | 120 | 0.000 | 58.08 |
| **Employment Hope** | 0.678 | 655.60 | 91 | 0.000 | 55.77 |
| **Total Survey** | 0.755 | 3176.573 | 630 | 0.000 | |

**Source:** Produced by the author.

The Kaiser-Meyer-Olkin (KMO) coefficient of the career decidedness scale was 0.734, the KMO coefficient of the artificial intelligence anxiety scale was 0.767, and the coefficient of the employment hope scale was 0.678. SPSS 22.0 program was used for the related analyses. Since the lower limit of the KMO values is 0.50 (Field, 2002), it is seen that the KMO values of all three scales are above this lower limit. In this context, the sample size is sufficient. In the factor analysis of career decidedness, 62.46% of the total variance, 58.08% in artificial intelligence anxiety, and 55.77% in employment hopes are explained.

In the analysis of Cronbach's Alpha coefficients to assess the reliability of the scales, the number of items indicated in Table 3 shows the scales. It shows the Cronbach's Alpha coefficients, the averages and standard deviations of the answers given to the scales.

**Table 3:** Reliability Analysis Results

| | Items | Cronbach Alpha | Mean | Standard deviation | Min.-Max. |
|---|---|---|---|---|---|
| **Career Decidedness** | 6 | 0.740 | 3.77 | 0.695 | 1-5 |
| **Artificial Intelligence Anxiety** | 16 | 0.749 | 3.59 | 0.484 | 1-5 |
| **Employment Hope** | 14 | 0.701 | 4.31 | 0.283 | 1-5 |
| **Total Survey** | 36 | 0.776 | 3.90 | 1.010 | 1-5 |

**Source:** Produced by the author.

In Table 3, the reliability coefficient of career determination is 0.74, artificial intelligence anxiety is 0.749, and employment hope is 0.701. It is seen that the internal consistency values of the items in these scales are higher than or equal to the generally accepted value of 0.70.

In the continuation of the analyses, since it was necessary to determine whether the data met the normality assumption, the collected data were subjected to a normality test. Table 4 below analyses Skewness and Kurtosis values since p values were less than 0.05 in Kolmogorov-Smirnov and Shapiro-Wilk normality tests.

**Table 4:** Descriptive Values of Scores

| | Kolmogorov-Smirnov | | | Shapiro-Wilk | | | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|
| | **Statistic** | **df** | **Sig.** | **Statistic** | **df** | **Sig.** | **Statistic** | **Statistic** |
| **Career Decidedness** | 0.155 | 389 | 0.000 | 0.926 | 389 | 0.000 | -0.725 | -0.277 |
| **Artificial Intelligence Anxiety** | 0.098 | 389 | 0.000 | 0.966 | 389 | 0.000 | -0.986 | 2.302 |
| **Employment Hope** | 0.196 | 389 | 0.000 | 0.906 | 389 | 0.000 | -1.600 | 6.558 |

**Source:** Produced by the author.

When Kolmogorov-Smirnov and Shapiro-Wilk values are examined, nonparametric tests should be performed since the significant p value is less than 0.05. However, to be sure, skewness, kurtosis values, and q-q plot graphs should also be examined.

In deciding whether to use parametric or nonparametric tests for the analysis, for sample sizes larger than 300, the absolute skewness and kurtosis values are considered without considering z values (Özkan & Salepçioğlu, 2022). Skewness and Kurtosis values should be between +1 and -1 (Lorcu, 2015).

The fact that the skewness absolute values in Table 4 are less than 1 indicates that the data distribution is normal for career determination, while it is not normal for artificial intelligence anxiety and employment hope. However, when the q-q plot graph of career decidedness is analyzed, although the skewness and kurtosis values are reversed, the distribution does not appear normal. Therefore, performing nonparametric tests for all three variables is deemed appropriate.

## Relationships between variables

Spearman correlation analysis results are given in Table 5.

**Table 5:** Spearman Correlation Statistics between Variables

| Variables | N | r | p |
|---|---|---|---|
| **Career Decidedness**<br>**Artificial Intelligence Anxiety** | 389 | 0.264** | 0.000 |
| **Career Decidedness**<br>**Employment Hope** | 389 | 0.296** | 0.000 |
| **Artificial Intelligence Anxiety**<br>**Employment Hope** | 389 | 0.148** | 0.000 |

**:p<0,01 r: Spearman Correlation Coefficient

**Source:** Produced by the author.

**Table 6:** Grading Table of Spearman Correlation Coefficient (p)

| Grading Standards | Correlation Degree |
|---|---|
| p=0 | No correlation |
| 0 < \| p \| ≤ 0.19 | Very week |
| 0.20 ≤ \| p \| ≤ 0.39 | Week |
| 0.40 ≤ \| p \| ≤ 0.59 | Moderate |
| 0.60 ≤ \| p \| ≤0.79 | Strong |
| 0.80 ≤ \| p \| ≤ 1.00 | Very strong |
| 1.00 | Monotonic correlation |

**Source:** http://www.statstutor.ac.uk/resources/uploaded/spearmans.pdf

When Table 6 is analyzed, it is seen that there is a weak relationship between career decidedness and artificial intelligence anxiety scores (r=0,264; p<0,05). It is also understood that there is a weak relationship between career decidedness and employment hope scores (r=0,296; p<0,05). There is also a weak relationship between artificial intelligence anxiety and employment hope scores (r=0,148; p<0,05).

## Moderator role analysis

The moderator role variable is expressed as a variable that can affect the direction and severity of the relationship and effect between the dependent and independent variables (Gürbüz & Şahin, 2018). Career decidedness was determined as a moderator variable in this study. In order to determine whether career decidedness has a moderator role in the effect of artificial intelligence anxiety on employment hope, a quantile analysis model was established through the SPSS program. The findings of the analysis are presented in Table 7 below.

**Table 7:** Quantile Regression Analysis

| Quantile | Variable | Coefficient | Std.Err. | t Value | P>\|t\| | Conf. Int. Low | Conf. Int. High | Pseudo R^2 | VIF – Career Decidedness | VIF - Artificial Intelligence Anxiety |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | Interaction | 3.2375 | 0.112 | 28.929 | 0 | 3.017 | 3.458 | 0.14045 | 1.04 | 1.04 |
| 0.25 | Career Decidedness | 0.1511 | 0.017 | 9.088 | 0 | 0.118 | 0.184 | 0.14045 | 1.04 | 1.04 |
| 0.25 | Artificial Intelligence Anxiety | 0.1097 | 0.027 | 4.005 | 0 | 0.056 | 0.164 | 0.14045 | 1.04 | 1.04 |
| 0,5 | Interaction | 3.8152 | 0.091 | 41.95 | 0 | 3.636 | 3.994 | 0.03085 | 1.04 | 1.04 |
| 0,5 | Career Decidedness | 0.0859 | 0.016 | 5.464 | 0 | 0.055 | 0.117 | 0.03085 | 1.04 | 1.04 |
| 0,5 | Artificial Intelligence Anxiety | 0.0514 | 0.023 | 2.275 | 0.023 | 0.007 | 0.096 | 0.03085 | 1.04 | 1.04 |
| 0,75 | Interaction | 4.1443 | 0.103 | 40.409 | 0 | 3.943 | 4.346 | 0.00602 | 1.04 | 1.04 |
| 0,75 | Career Decidedness | 0.0248 | 0.016 | 1.57 | 0.117 | -0.006 | 0.056 | 0.00602 | 1.04 | 1.04 |
| 0,75 | Artificial Intelligence Anxiety | 0.0576 | 0.025 | 2.277 | 0.023 | 0.008 | 0.107 | 0.00602 | 1.04 | 1.04 |

**Source:** Produced by the author.

According to the findings, the following values are valid when the quantile is based on 0.50.

The Pseudo R-squared value of the model is 0.03085. This model explains 3.085% of the variance of employment hope. The coefficient of career decidedness is 0.0859. P value < 0.05, so it is statistically significant. The coefficient of artificial intelligence anxiety is 0.0514. P value < 0.05, so it is statistically significant.

Based on these results, we can say that career decidedness and artificial intelligence anxiety variables statistically affect employment hope. However, the model's explanatory power (pseudo-R-square) is low, which means that the model explains only a small part of the variance of the employment hope variable. The model's coefficients indicate how much a one-unit change in career decidedness and artificial intelligence anxiety variables will cause a change in the employment hope variable. For example, a one-unit increase in the career decidedness variable increases the value of the employment hope variable by approximately 0.0859 units, holding all other variables constant. Similarly, a one-unit increase in the artificial intelligence anxiety variable increases the value of the employment hope variable by approximately 0.0514 units, holding all other variables constant.

The Coefficient column shows the coefficient of each independent variable. The P>|t| column shows whether each coefficient is statistically significant. If the value is less than 0.05, the coefficient is statistically significant. The determination Coefficient (Pseudo R^2) shows how much the model explains the variance of the dependent variable. In this case, the model explains approximately 3.085% of the variance of the dependent variable. Durbin-Watson Value measures the autocorrelation of the model's errors (the relationship of one error term to the previous one). It should generally be between 1.5 and 2.5. In this case, the value is 0.115, which indicates positive autocorrelation between the errors. VIF measures multicollinearity between independent variables. Since the values are greater than 10, we can say there is a high degree of multicollinearity between the independent variables.

**Table 8:** Quantile Regression Results with Interaction

| Quantile | Variable | Coefficient | Std.Err. | t-Value | P>\|t\| | Conf. Int. Low | Conf. Int. High | Pseudo R^2 | VIF - Career Decidedness | VIF - Artificial Intelligence Anxiety | VIF - Interaction |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | Intercept | 1.8255 | 0.541 | 3.376 | 0.001 | 0.762 | 2.889 | 0.14931 | 67.55121 | 32.24742 | 117.0579 |
| 0.25 | Career Decidedness | 0.5467 | 0.144 | 3.792 | 0 | 0.263 | 0.83 | 0.14931 | 67.55121 | 32.24742 | 117.0579 |
| 0.25 | Artificial Intelligence Anxiety | 0.4807 | 0.146 | 3.285 | 0.001 | 0.193 | 0.768 | 0.14931 | 67.55121 | 32.24742 | 117.0579 |
| 0.25 | Career Decidedness: Artificial Intelligence Anxiety | -0.104 | 0.039 | -2.691 | 0.007 | -0.18 | -0.028 | 0.14931 | 67.55121 | 32.24742 | 117.0579 |
| 0.5 | Interaction | 3.6562 | 0.463 | 7.891 | 0 | 2.745 | 4.567 | 0.030893 | 67.55121 | 32.24742 | 117.0579 |
| 0.5 | Career Decidedness | 0.1228 | 0.127 | 0.968 | 0.334 | -0.127 | 0.372 | 0.030893 | 67.55121 | 32.24742 | 117.0579 |
| 0.5 | Artificial Intelligence Anxiety | 0.1002 | 0.126 | 0.795 | 0.427 | -0.148 | 0.348 | 0.030893 | 67.55121 | 32.24742 | 117.0579 |
| 0.5 | Career Decidedness: Artificial Intelligence Anxiety | -0.0114 | 0.034 | -0.332 | 0.74 | -0.079 | 0.056 | 0.030893 | 67.55121 | 32.24742 | 117.0579 |
| 0.75 | Interaction | 5.9777 | 0.483 | 12.377 | 0 | 5.028 | 6.927 | 0.019075 | 67.55121 | 32.24742 | 117.0579 |
| 0.75 | Career Decidedness | -0.4341 | 0.138 | -3.157 | 0.002 | -0.704 | -0.164 | 0.019075 | 67.55121 | 32.24742 | 117.0579 |
| 0.75 | Artificial Intelligence Anxiety | -0.4398 | 0.131 | -3.364 | 0.001 | -0.697 | -0.183 | 0.019075 | 67.55121 | 32.24742 | 117.0579 |
| 0.75 | Career Decidedness: Artificial Intelligence Anxiety | 0.1237 | 0.037 | 3.348 | 0.001 | 0.051 | 0.196 | 0.019075 | 67.55121 | 32.24742 | 117.0579 |

**Source:** Produced by the author.

This study analysed the effects of career decidedness and artificial intelligence anxiety variables on employment hope by quantile regression analysis. The interaction term was also taken into account in the model.

Without Interaction Term: The effects of career decidedness and artificial intelligence anxiety on employment hope were found to be statistically significant. Since VIF values are below 10, it is concluded that multicollinearity is not a problem in this model.

Interaction Term: The effects of career decidedness, artificial intelligence anxiety, and the interaction term of these two variables on employment hope are statistically significant. However, when VIF values are greater than 10, it is determined that there may be a multicollinearity problem in this model. Since the interaction term is formed by multiplying two independent variables by each other, there will naturally be a high correlation between these variables.

The addition of the interaction term increased the significance of the model but also caused an increase in the VIF values. It shows that the interaction term is important for the model, but extra care should be taken when assessing the accuracy and significance of the model when considering this term.

Conclusion: These findings suggest that the effects of career decidedness and artificial intelligence anxiety on employment hope may differ in different quantiles. In particular, when the interaction term is considered, it is concluded that the effect of the relationship between these variables on employment hope may vary. Therefore, to fully understand the effects of these two variables on employment hope, it is important to consider the interaction term.

By looking at the results of the interaction term (Career Decidedness: Artificial Intelligence Anxiety):

1. 25 percent for the quantile:

- Coefficient: -0.1040

- t-Value: -2.691

- p-Value: 0.007

The interaction term is statistically significant for this quantile ($p < 0.05$) and has a negative coefficient. As a result, it shows that each unit increase in "Career Determination" will increase the negative effect of "AI Anxiety" on "Employment Prospects".

2. For the 50th quantile:

- Coefficient: -0.0114

- t-Value: -0.332

- p-Value: 0.740

The interaction term is not statistically significant for this quantile ($p > 0.05$), so we can conclude that "Career Decidedness" does not have a moderating role for this quantile.

For the 3rd 75% quantile:

- Coefficient: 0.1237

- t-Value: 3.348

- p-Value: 0.001

The interaction term is statistically significant for this quantile ($p < 0.05$) and has a positive coefficient. This means that a one-unit increase in "Career Decidedness" will increase the positive effect of "Artificial Intelligence Anxiety" on "Employment Hope".

Conclusion: We can conclude that in the quantiles where the interaction term is statistically significant (i.e., the 25% and 75% quantiles), the Career Decidedness variable moderates the effect of the Artificial Intelligence Anxiety variable on Employment Hope. However, this moderating effect may have different directions in different quantiles. In particular, the effect is negative for the 25% quantile, while for the 75% quantile, it is positive.

## Discussion and conclusion

The study evaluated artificial intelligence anxiety, and employment hope anxiety of university students. The study determined that career determination did not have a moderating role in the effect of artificial intelligence anxiety on university student's job prospects. According to the results of the correlation analysis, a low level of positive correlation was found between the variables.

In a study conducted by Taş & Alparslan (2020), it was determined that hope positively affects the career adaptability of students studying in different faculties. (Gerçek, 2020) found a positive relationship between university students' hopes of finding a job and academic subject satisfaction, psychological empowerment, and path towards the goal. Özer & Altun (2011) found that as students' hope levels increase, laziness and fear of failure, sub-dimensions of procrastination behaviour, decrease. Şen-Baz (2019), it was found that hope is positively associated with life satisfaction, positive with positive concepts (satisfaction, psychological empowerment, etc.) and negative with negative concepts (laziness) among students studying in various undergraduate departments.

According to Küpana's (2017) study, in which vocational music education undergraduate students' vocational hope levels were evaluated, it was determined that vocational music education students' vocational hope scores showed significant differences in age, department and class variables. It was observed that the student's educational environment encouraged them to work, and the job hope levels of the students were higher in both dimensions than those of the students who were not encouraged.

**Implications**

Future research could be done by adding other aspects to the questionnaire that address new opportunities and challenges in the survey sections. Secondly, the study focused on students' opinions at a private university in Istanbul. The backgrounds and views of students from different cultures and backgrounds may differ. Therefore, it will be necessary to conduct education-related studies in other parts of the world, considering the emerging differences in technology readiness and employment hope. The employment hope factor should be carefully integrated into artificial intelligence applications.

**Limitations and further research**

In this study, it was determined that university students had artificial intelligence concerns. It is thought that activities such as symposiums and conferences about artificial intelligence technology, which is increasingly used in different fields, can enrich university students' perceptions. Giving undergraduate students lectures about current artificial intelligence applications and usage in related fields may enable them to re-examine their negative perceptions about the subject and be aware of technological developments related to their professions. University students concerned about artificial intelligence should be given in-university training and directed to important future occupational groups where artificial intelligence is integrated. In addition, providing artificial intelligence centres or courses on artificial intelligence to students within the university can significantly contribute to reducing artificial intelligence anxiety.

**Peer-review:**

Externally peer-reviewed

**Conflict of interests:**

The author has no conflict of interest to declare.

**Grant Support:**

The author declared that this study has received no financial support.

**Ethics Committee Approval:**

Ethics committee approval was received for this study from Istanbul Rumeli University's Ethics Committee on 22/03/2023 and 2023-03 document number.

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