

MANAGERIAL IMPLICATIONS OF TECHNOLOGICAL UNEMPLOYMENT ANXIETY: A DIMENSIONAL STUDY

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First Received/ Makale İlk Gönderim Tarihi: 06.03.2025

Accepted/ Makale Kabul Tarihi: 30.04.2025

Citation/©: Pehlivanoglu, M. Ç., & Civelek, M. E. (2025). Managerial implications of technological unemployment anxiety: a dimensional study. *Journal of International Management Research and Applications*, 4(1), 1-11.

Abstract

The main purpose of this study is to understand the extent to which technological unemployment anxiety of employees affect the businesses in managerial context. For this reason, an inference has been done by compiling the results of the studies that relates the technological unemployment anxiety with various concepts such as job satisfaction, organizational identification, and employee burnout, at different times in diverse samples. The concept of technological unemployment anxiety is having an increasing impact on the human workforce in the modern era. The dimensions of the concept and various management scales were investigated in this study. As the results were obtained using an original scale developed by the research authors, the study makes a significant contribution to the literature on the concept of technological unemployment anxiety. The research data was gathered from Turkish employees.

Keywords: Technological Unemployment Anxiety, Job Satisfaction, Organizational Identification, Employee Burnout.

TEKNOLOJİK İŞSİZLİK KAYGISININ YÖNETSEL ETKİLERİ: BOYUTSAL BİR ÇALIŞMA

Atıf/©: Pehlivanoglu, M. Ç., & Civelek, M. E. (2025). Teknolojik işsizlik kaygısının yönetsel etkileri: boyutsal bir çalışma. *Ulusal Yönetim Araştırmaları ve Uygulamaları Dergisi*, 4(1), 1-11.

Özet

Bu çalışmanın temel amacı, çalışanların teknolojik işsizlik kaygısının işletmeleri yönetsel bağlamda ne ölçüde etkilediğini araştırmaktır. Bu nedenle, teknolojik işsizlik kaygısını iş tatmini, örgütsel özdeşleşme ve çalışan tükenmişliği gibi çeşitli kavramlarla ilişkilendiren çalışmaların sonuçları farklı zamanlarda ve farklı örneklemelerde derlenerek bir çıkarımda bulunulmuştur. Teknolojik işsizlik kaygısı kavramı, modern çağda insan işgücü üzerinde artan bir etkiye sahiptir. Bu çalışmada kavramın boyutları ile çeşitli yönetim ölçekleri arasındaki ilişkiler incelenmiştir. Sonuçlar araştırma yazarları tarafından geliştirilen özgün bir ölçek kullanılarak elde edildiğinden, çalışma teknolojik işsizlik kaygısı kavramına ilişkin alan yazına katkı sağlamaktadır. Araştırma verileri Türkiye'de çalışan kişilerden toplanmıştır.

Anahtar Kelimeler: Teknolojik İşsizlik Kaygısı, İş Tatmini, Örgütsel Özdeşleşme, Çalışan Tükenmişliği.

1. INTRODUCTION

Regarding its prevalence and the effects, it has on the economy and society, technological unemployment is a contentious issue with opposing viewpoints. Whether it is a normal and inevitable part of economic development that increases human productivity or a negative aspect that causes social unrest and income inequality, it has sociological and organizational aspects as a source of anxiety. Technological unemployment anxiety is a result of the effects of digitalization in the new eco-social system. Many factors such as individual characteristics, social environment, economic conditions, and policy interventions play a role in this concern. While all humans are affected by technological advances, employees are also being impacted by the change as well. Therefore, technological unemployment anxiety could have several potential organizational outcomes in this context. Within this regard, this

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study has been carried out to gain a broader understanding of the related constructs by investigating the dimensional compilation of Technological Unemployment Anxiety and other management scales. The research on this topic has been found to be scarce the literature. A quantitative analysis of employees' Technological Unemployment Anxiety could yield important results. As a result, this original study contributes to accumulation of knowledge by providing a more detailed understanding of the evolution of Technological Unemployment Anxiety in the light of new data. This study aims to clarify the extent to which technological unemployment anxiety of employees affect the businesses in managerial context. For this reason, an inference has been done by compiling the results of the studies that relates the technological unemployment anxiety with different concepts at different times in different samples. Covered concepts in this study are job satisfaction, organizational identification, and employee burnout. These three concepts are among the leading factors that affect employee productivity in the enterprises. These dimensions were chosen because of their key role in determining the negative impact of technological unemployment perception on employee productivity. It is important to examine the managerial implications of technological unemployment on employee productivity based on dimensions. This study aims to create a framework that will shed light on future research using Technological Unemployment Anxiety scale.

2. TECHNOLOGICAL UNEMPLOYMENT AS A CONCEPT

Technological unemployment refers to the job losses stems from the adoption of new technologies. It happens when the technological advancements render some jobs unnecessary, either by completely replacing them or by improving their efficiency and lowering the number of workers required. As a result, this may lead to underemployment or unemployment. As a concept it is a phenomenon affecting human behavior from various aspects. Consequently, it exerts influence on management of organization. Numerous researchers from a variety of fields, including economics, management, sociology, psychology, political science, have studied the theoretical concept and its effects on people and society. In the early 1800s, economists such as Ricardo (1817), have frequently disputed the notion that technology wouldn't result in widespread unemployment and mentioned that the introduction of new machines might lead to a general decline in the welfare of the working class. Keynes (1931) revived technological unemployment as an economic concept, referring to the future as age leisure because technological unemployment was a disease that afflicted everyone and there would be no need for employment. The Luddite movement is the origin of the concept of technological unemployment. Luddism was founded by British handweavers at the end of the 18th century to destroy textile machines. Handweavers were concerned about losing their jobs due to technological unemployment. This is known as the Luddite fallacy because machines created more jobs than expected (Schneider, 2017). Even though there are many different points of view in the literature on this subject, there are contemporary studies that support the opinion that technology causes unemployment. Author et al. (1998) has conducted in-depth study on how computer technology affects the labor market and as well as how technological unemployment may result in income inequality and social unrest. Ford (2015) has argued that legislation to support those whose jobs are negatively impacted by technological change and has spoken out against the possibility that technological unemployment will result in social unrest. McAfee and Brynjolfsson (2016) examined the effects of technology's transformation of the nature of work on the economy and society. Civelek (2018) investigated the impact of automation and other technological advances on labor demand, concluding that automation may lower labor demand while increasing productivity. This phenomenon is vicious cycle of the digital economy.

For the authors of this study, technological unemployment is not a fallacy. The concept is thoroughly researched in the literature. Furthermore, by conducting research on technological unemployment anxiety in the earlier studies, the authors have also created a new scale, revealed the relationships with various concepts and have added a new extent to the literature. Although opinions on whether technology causes unemployment still to differ, the issue needs to be clarified through more scientific research on a diverse set of samples. Because there are studies in the literature that support the viewpoint that technology causes unemployment, the presence of anxiety led by technological unemployment on employees should be investigated as well. In this regard, the authors previously developed a

measurement tool to measure technological unemployment anxiety, and it was demonstrated that this anxiety exactly exists in the tested sample. Building on the former findings, the purpose of this research is to determine the potential organizational outcomes linked to technological unemployment anxiety in context of compilation of discrete quantitative data.

3. CONCEPTION OF TECHNOLOGICAL UNEMPLOYMENT ANXIETY SCALE

Scholars continue to conduct research on technological unemployment whether it is a fallacy or not. In the anxiety aspect, the fear or worry that people or groups may have about losing their jobs because of technological advancements is referred to as Technological Unemployment Anxiety. According to Civelek and Pehlivanoglu (2020) Technological Unemployment Anxiety has three sub-dimensions: (1) Lack of Technical Skill, (2) Incremental Technological Improvements and (3) Technological Disruption. Statements of the scales are shown in Table 1.

3.1. Lack of Technical Skill

Lack of technical skills refers to the absence or lack of technical and functional abilities required to use a specific technology or complete a specific task in practice. Because many jobs now require a certain level of technical expertise, a lack of technical skills can be a barrier to employment or advancement in some fields. Additionally, it may make it more difficult for people to keep up with the quick pace of technological advancement and adapt to new technologies. This dimension results from the personal perception that while performing their duties people find it challenging to improve themselves because of technological advancements and feel uneasy utilizing new tools and systems. This anxiety is most prevalent among workers with limited technical skills. Because of technical limitations, these individuals are frequently unable to advance in their careers. The factors influencing this perception of an individual stem from various conceptions, such as the predictions that technological advancements will render current professional technical knowledge insufficient, that current educational levels will not be adequate to meet future professional needs, that difficulties in adjusting to technological systems will continue to worsen with time, that it will become more difficult to live at peace with internet and mobile technologies, and that individual job performance will decline as a result of technological developments (Civelek and Pehlivanoglu, 2020; Pehlivanoglu and Civelek, 2022).

3.2. Incremental Technological Improvements

Incremental technological improvements refer to gradual improvements made by new technologies or processes over time. The creation of new features, the optimization of already existing ones, or the incorporation of cutting-edge technology into current systems may all be part of these improvements. To meet the new demands of humans, technological advancements are made. This has been an unavoidable and ongoing process since the dawn of human history.

This evolution gradually accelerated from the earliest basic hand tools to contemporary computers controlled by artificial intelligence. The main factors of this perception are that the person believes that as systems used in the workplace continue to advance, the need for people will diminish over time; that as technology advances, the current job description will change in a way that will negatively impact the employees; and that changes in business procedures brought on by these developments will lead to dissatisfied workers in the future (Civelek and Pehlivanoglu, 2020; Pehlivanoglu and Civelek, 2022).

3.3. Technological Disruption

The process by which modern inventions or business practices upend and reshape established markets, industries, and ways of operating an activity is referred to as technological disruption. It occurs when an innovation or new technology significantly changes how goods and services are produced and placed along the value chain.

The main drivers of people's perceptions of technological disruption are their convictions that many businesses will go out of business, many people will be unemployed for the rest of their lives, their

education may be useless, and many organizations will cease to exist because of technological advancements. While there are many ways in which technological advancements improve human life, there are also some drawbacks. From this vantage point, it becomes obvious and inevitable that some people will continuously react negatively to technological advancements (Civelek and Pehlivanoğlu, 2020; Pehlivanoğlu and Civelek, 2022).

Table 1. Statements of the Technological Unemployment Anxiety Scale

Title of Sub-Dimension	Statement
Lack of Technical Skill	I think I will lag behind in terms of performance as technology advances.
	I do not feel comfortable using the technologies such as the internet and smartphones.
	I do not think I will be able to improve myself aptly so that I can adapt to technological advances.
	I find it difficult to adapt to the systems I use while doing my job.
Incremental Technical Improvement	I think that the change in the business processes due to the technological advancements will make me unhappy in the future.
	I think that the continuous improvement of the systems used in the workplace will reduce the need for me over time.
	I think my business life will become shorter as a result of the technological advancements.
	As a result of the continuous advancement of technology, I think my current job description will change in a way that will affect me negatively.
Technological Disruption	I am worried that I may spend the rest of my life as unemployed due to the new technologies.
	I think that the education I have received at school will be invalid due to technological advances.
	I think that technological advances may cause the organization I am working for to close down in the future.
	I think that technological advancements can completely eliminate the business line I have trained.

4. PROMINENT CONSTRUCTS IN TECHNOLOGICAL UNEMPLOYMENT ANXIETY MODELS AND OUTSTANDING RELATIONSHIPS

To shed light on future research and to create comprehensive models, correlation analyzes were carried out, ignoring directions of the relationships and without developing hypotheses. Below there are models created with data obtained from three separated field studies on organizational identification, job satisfaction and employee burnout. These field studies have been conducted by Pehlivanoğlu and Civelek in 2022. Models are shown in Figure 1-3, respectively. Additionally, correlation analysis results are given in Table 2.

4.1. Organizational Identification in the Context of Technological Unemployment Anxiety

Organizational identification is basically described as employees' emotional ties to their organizations. This bond formed with the organization based on a sense of pride (Lythreathis, et al., 2019), commitment and affiliation (O'Reilly and Chatman, 1986). The social identity theory (Tajfel, 1978), which states that individuals form their identities based on the groups to which they belong, is regarded as a theoretical foundation for understanding organizational identification by scholars (Van Dick et al., 2005). Similarly, individuals associate themselves with their organization in organizational identification (Dutton et al., 1994). Individuals with strong organizational identification are more likely to be optimistic about organizational goals (Cheney, 1983; Edwards, 2005). These individuals have a greater tendency than others to engage in organizational-supporting behaviors. As a result, people with strong organizational identification are more motivated to work hard (Riketta, 2005), be loyal to the organization (Rotondi, 1975), and exhibit possessive work behaviors (Lee, 1971).

Employees' positive attitudes toward the company may decline with respect to some factors affecting organizational identification. With regards to technology, there is a possibility that organizational identification will be affected by technological unemployment anxiety. Examining how the concepts relate to one another in this framework is crucial to illuminating the relationship between the employee and the organization. For the field research to reveal these relationships, the following conceptual model in Figure 1 was created. The measurement tools to carry out this research are: (1) The Technological Unemployment Anxiety scale developed by Civelek and Pehlivanoglu (2020); (2) The Organizational Identification scale developed by Mael and Ashforth (1992). The Technological Unemployment Anxiety scale has 12 items and three dimensions: lack of technical skill, incremental technological improvements, and technological disruption. The Organizational Identification scale has a single dimensioned scale and 6 items.

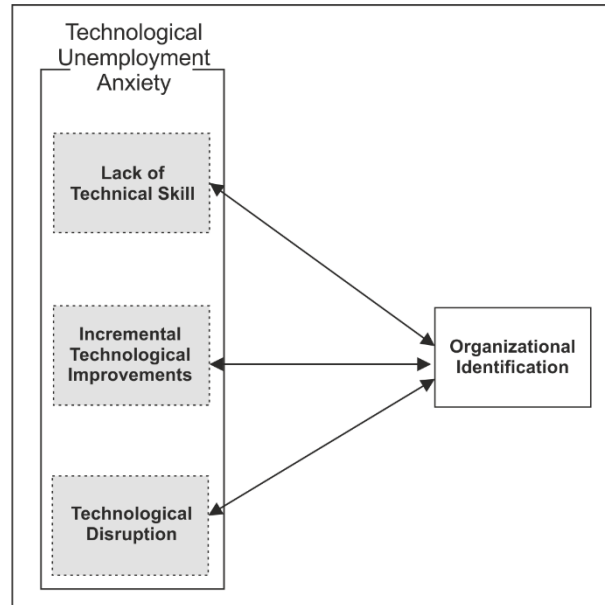


Figure 1. Conceptual Model for Field Study I

4.2. Job Satisfaction in the Context of Technological Unemployment Anxiety

Job satisfaction refers to a person's overall satisfaction with work. It is a concept that affects mental and physical health (Faragher et al., 2005), interpersonal relationships (Utriainen and Kyngas, 2009; Castaneda and Scanlan, 2014), and overall well-being (Bowling et al., 2010) of people. Job satisfaction can be influenced by a range of factors including compensation (Tobing, 2016; Ramli, 2018), rewards (Kalleberg, 1977; Morgan et al., 2013), working environment (Taheri et al., 2020; Hayes et al., 2015),

management style (Lucas, 1991; Rita and Rowles, 1997; Mehrad, 2015), the nature of the job characteristics (Hackman and Oldham, 1975; Jansen et al., 1996; Braun and Baumgärtner, 2006; Steyn and Vawda, 2014) and many others. In the literature, the research highlight that low levels of job satisfaction can result in exhaustion (Kalliath and Morris, 2002; Bovier et al., 2009), absenteeism (Song et al., 1997; Davey et al., 2009) and retention (Ellenbecker et al., 2008; Putra et al., 2020), whereas high levels are typically linked to increased motivation (Gholizade et al., 2014) and performance (Nathanson and Becker, 1973; Karem et al., 2019).

Given the negative effects of dissatisfied employees on organizational efficiency, it is necessary to identify the factors that may contribute to this phenomenon. To better understand the causes, more meta-analysis is required. Possible root causes include technological unemployment anxiety. At this point, investigating whether technological unemployment anxiety has a negative impact on job satisfaction can yield relevant results. The conceptual model in Figure 2 was created to investigate the relationships between the concepts. The measurement tools to carry out this research are: (1) The Technological Unemployment Anxiety scale developed by Civelek and Pehlivanoglu (2020); (2) The Job Satisfaction scale developed by Brayfield and Rothe (1951), as condensed by Judge et al. (1998). The Technological Unemployment Anxiety scale has 12 items and three dimensions: lack of technical skill, incremental technological improvements, and technological disruption. The Job Satisfaction scale has a single dimensioned scale and 5 items.

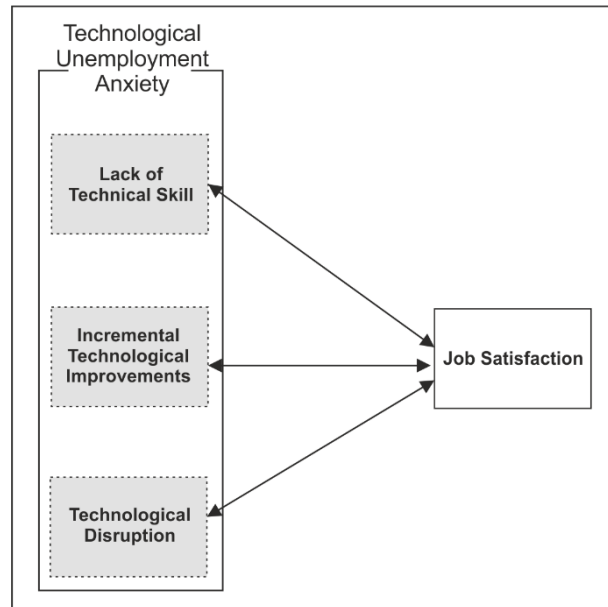


Figure 2. Conceptual Model for Field Study II

4.3. Employee Burnout in the Context of Technological Unemployment Anxiety

Employee burnout is characterized by physical, emotional, and mental exhaustion and is caused by ongoing workplace stress (Freudenberger, 1974; Maslach and Jackson, 1986; Jackson et al., 1986). Burnout leads to diminished motivation (Leiter and Maslach, 2017), reduced productivity (Kahill, 1998), lower performance (Maslach et al., 2001; Prentice and Thaichon, 2019), turnover intentions (Schaufeli and Bakker, 2004), and a variety of other negative effects on the individual. Burnout can therefore have serious adverse effects on both the individual and the organization. The connection between burnout and technology is intricate and waiting to be discovered. Although technological advancements make people's lives easier, the workforce may face increased work-related demands and stress because of the accelerated pace of business life brought on by technological advancements, leading to burnout. Technology has made it simple to access everyone via twenty-four-hour messaging

systems, which has resulted in broader expectations from employers and an always-on business culture. People feel under pressure to be always available, even after regular business hours. Consequently, with the technological advances there might be less separation between personal and professional life. Working hours' boundaries are blurring.

Therefore, it is critical to reveal the relationships between burnout and technological unemployment anxiety. To investigate the relationships between the two concepts, the following conceptual model was developed. The measurement tools to carry out this research are: (1) The Technological Unemployment Anxiety scale developed by Civelek and Pehlivanoğlu (2020); (2) The Maslach Burnout Inventory suggested by Maslach and Jackson (1981). The Technological Unemployment Anxiety scale has 12 items and three dimensions: lack of technical skill, incremental technological improvements, and technological disruption. The initial Maslach Burnout Inventory used in this research has 25 items and four dimensions: emotional exhaustion, depersonalization, lack of personal accomplishment, and involvement.

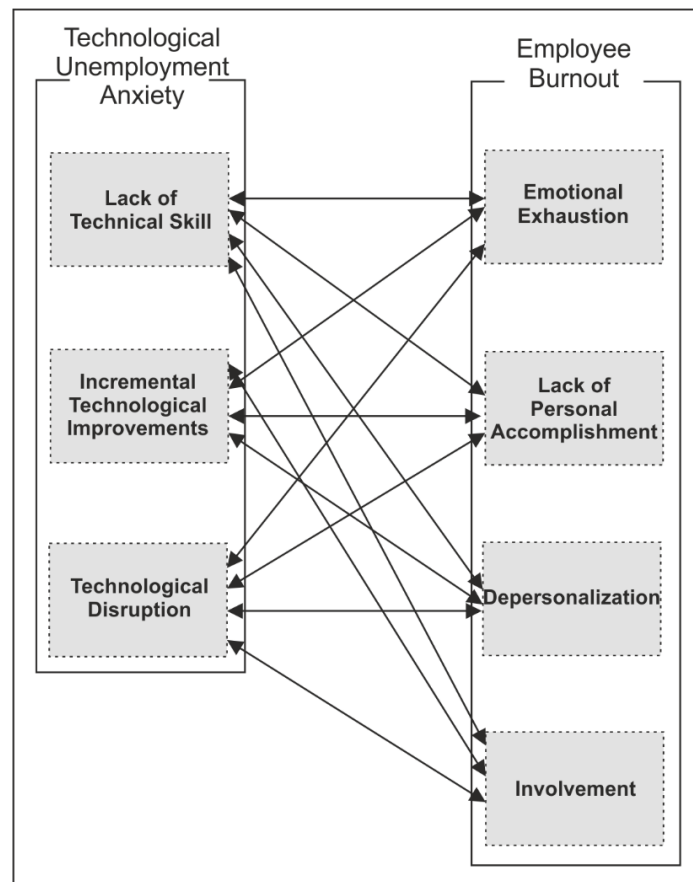


Figure 3. Conceptual Model for Field Study III

Table 2. Correlation Analyses Results

Relationships		Correlation Coefficients	P Values
Lack of Technical Skill	↔ Organizational Identification	0.020	0.706
Incremental Tech. Improvements	↔ Organizational Identification	0.019	0.716
Technological disruption	↔ Organizational Identification	0.016	0.753
Lack of Technical Skill	↔ Job Satisfaction	-0.186*	0.000
Incremental Tech. Improvements	↔ Job Satisfaction	-0.239*	0.000
Technological disruption	↔ Job Satisfaction	-0.264*	0.000
Lack of Technical Skill	↔ Emotional Exhaustion	0.203*	0.000

Incremental Tech. Improvements ↔ Emotional Exhaustion	0.357*	0.000
Technological disruption ↔ Emotional Exhaustion	0.132*	0.033
Lack of Technical Skill ↔ Lack of Personal Accomplishment	-0.202*	0.001
Incremental Tech. Improvements ↔ Lack of Personal Accomplishment	-0.425*	0.000
Technological disruption ↔ Lack of Personal Accomplishment	-0.270*	0.001
Lack of Technical Skill ↔ Depersonalization	0.317*	0.000
Incremental Tech. Improvements ↔ Depersonalization	0.331*	0.000
Technological disruption ↔ Depersonalization	0.158*	0.011
Lack of Technical Skill ↔ Involvement	-0.065	0.301
Incremental Tech. Improvements ↔ Involvement	-0.044	0.480
Technological disruption ↔ Involvement	-0.252*	0.000

*p < 0.05

5. DEDUCTIONS IN ORGANIZATIONAL CONTEXT

The results of the correlation analyses performed in this study are given respectively. There was no significant correlation between the dimensions of TUA and Organizational Identification. Negative correlation values were found between all dimensions of TUA and Job Satisfaction. The correlation values between TUA and Employee Burnout were evaluated in terms of sub-dimensions and the results are as follows: There is a significant correlation between all dimensions of TUA and Emotional Exhaustion. There is a significant negative correlation between all dimensions of TUA and Lack of Personal Accomplishment. There is a significant correlation between all dimensions of TUA and Depersonalization. There is a significant negative correlation between the Technological Disruption dimension of TUA and Involvement. All the theories investigated in this research regarding technological unemployment are crucial concepts in organizational behavior and management. As a result, each may have a big influence on how an employee behaves, feels motivated, and performs. The commitment, productivity, and overall organizational effectiveness of an organization can increase when it can cultivate a solid sense of identification and satisfaction among its employees. Concerns about the impact of technology on the economy, the labor market, and the nature of work are linked to broader societal skepticism. The idea that technological advancements might lead to job loss or the inability to pick up new skills is contentious. Since it necessitates addressing both individual and societal factors, dealing with technological unemployment anxiety can be challenging. Organizations need to take action to enhance communication, increase transparency, and provide workforce technology trainings in order to address the negative organizational effects of technological unemployment anxiety. This could entail making changes in leadership, procedures, or policies, as well as efforts to regain the workforce's trust in conjunction with technological advancements. Additionally, effective technology management can have advantageous organizational outcomes, including higher efficiency and flexibility, and can support employee job satisfaction, organizational identification, and reducing the likelihood of burnout. Only this research sample size is relevant to the findings. The findings must be assessed considering the study's limitations. Results of the study are based on opinions of Turkish employees. Utilizing a universal sample from various countries may allow for the completion of a more thorough analysis as future research. In this context, this study creates a framework that will shed light on future research using Technological Unemployment Anxiety scale.

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