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Investigating the Relationship between Transformational Leadership and Employee Creativity: Moderating Role of STARA Awareness[a]

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Investigating the Relationship between Transformational Leadership and Employee Creativity: Moderating Role of STARA Awareness

Dönüştürücü Liderlik ile Çalışan Yaratıcılığı Arasındaki İlişkinin İncelenmesi: AYZERA Farkındalığının Düzenleyici Rolü

Abstract

Background. Although previous studies have revealed the relationship between transformational leadership and employee creativity, the role of recently conceptualized phenomena, such as STARA (smart technologies, artificial intelligence, robotics, and algorithms) awareness in this process should be investigated. STARA awareness has the potential to be a negative phenomenon for the medical services management sector as it refers to the occupational anxiety felt by employees due to smart technologies.

Aim. This research aimed to examine the relationship between transformational leadership and employee creativity and investigated the moderating role of STARA awareness.

Method. Data were collected from 307 employees in the medical services management sector in Istanbul and Ankara using a questionnaire technique. The hypotheses were tested employing linear regression and moderation effect analysis.

Findings. The findings indicated that all four dimensions of transformational leadership, known as idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, positively influenced employee creativity. However, STARA awareness moderated this relationship by weakening the effects of idealized influence, inspirational motivation, and intellectual stimulation on creativity, while the relationship between individualized consideration and creativity remained unaffected.

Conclusion. The findings are expected to provide new perspectives on how transformational leadership interacts with employees' perceptions of technology and contribute to increasing employee creativity.

Keywords: Transformational leadership, employee creativity, STARA awareness, moderator effect.

Öz

Arka plan. Dönüştürücü liderlik ve çalışan yaratıcılığı arasındaki ilişki önceki çalışmalarla ortaya koyulmuş olmasına rağmen AYZERA (akıllı teknolojiler, yapay zekâ, robotik ve algoritmalar) farkındalığı gibi yeni kavramsallaştırılan olguların bu süreçteki rolü araştırılmalıdır. AYZERA farkındalığı akıllı teknolojilerden dolayı çalışanların hissettiği mesleki kaygıları ifade ettiğinden tıbbi hizmetler yönetimi sektörü için olumsuz bir olgu potansiyeli taşımaktadır.

Amaç. Bu araştırmanın amacı, dönüştürücü liderlik ile çalışan yaratıcılığı arasındaki ilişkiyi incelemek ve bu ilişkide AYZERA farkındalığının düzenleyici rolünü araştırmaktır.

Yöntem. Araştırmanın verisi İstanbul ve Ankara'da tıbbi hizmetler yönetimi sektöründe çalışan 307 çalışandan anket tekniği kullanılarak toplanmıştır. Araştırmanın hipotezleri doğrusal regresyon ve düzenleyici etki analizleri kullanılarak test edilmiştir.

Bulgular. Bulgular, dönüştürücü liderliğin idealize edilmiş etki, ilham verici motivasyon, entelektüel uyarım ve bireysel ilgi olarak bilinen dört boyutunun çalışan yaratıcılığını olumlu yönde etkilediğini göstermiştir. Ancak AYZERA farkındalığı idealize edilmiş etkinin, ilham verici motivasyonun ve entelektüel uyarımın çalışan yaratıcılığı üzerindeki etkilerini azaltarak bu ilişkilerin şiddetini yumuşatmıştır. Buna karşın AYZERA farkındalığı bireyselleştirilmiş ilginin çalışan yaratıcılığı üzerindeki etkisini değiştirmemiştir.

Sonuç. Bulguların dönüştürücü liderliğin çalışanların teknolojiye ilişkin algılarıyla nasıl etkileşime girdiğine dair yeni bakış açıları sunacağına ve çalışanların yaratıcılığının artırılmasına katkı sunacağına inanılmaktadır.

Anahtar Kelimeler: Dönüştürücü liderlik, çalışan yaratıcılığı, AYZERA farkındalığı, düzenleyici etki.

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1. Introduction

Leadership plays a crucial role in shaping organizational success, especially in fostering employee creativity in the workplace. In recent years, transformational leadership has emerged over numerous leadership styles for its ability to inspire and motivate employees to achieve better results. As a unique leadership style coupled with behaviors that foster trust, encourage innovation, and stimulate creative thinking among employees, it has been pointed out as a key driver of organizational success (Bass & Avolio, 1993). Over the years, the transformational leadership model has gained prominence, attempting to align individual values, goals, and interests with the organization's (Başar et al., 2021). It has been identified as a key driver of organizational success, characterized by behaviors that foster trust, encourage innovation, and stimulate creative thinking among employees (Bass & Avolio, 1993). However, as organizations face rapid technological advancements, employees' attitudes toward these phenomena, such as their STARA awareness and the role of leadership styles in this process, have become critical areas of study. STARA (i.e., smart technologies, artificial intelligence, robotics, and algorithms) awareness reflects employees' attitudes toward and concerns about technological advancements, possibly replacing or modifying their jobs. This negative phenomenon can influence their creativity and their response to leadership practices. By integrating STARA awareness into the relationship between transformational leadership and employee creativity, this research aims to investigate whether it buffers this process. Therefore, this research focuses on the moderating role of STARA awareness because it is one of the under-researched conditions that must be clarified.

Research has extensively examined transformational leadership and its impact on employee creativity, demonstrating that transformational leadership enhances creativity by inspiring employees and fostering a sense of purpose (Bass & Riggio, 2006; Jyoti & Dev, 2015; Kasımoğlu & Ammari, 2020; Ma et al., 2020; Shafi et al., 2020). More recent studies (Brougham & Haar, 2018; Hur & Shin, 2024; Teng et al., 2025) highlighted the psychological effects of technological disruptions, expanding on how STARA awareness could trigger job insecurity, affect employees' engagement and performance, and thus shape workplace dynamics. However, little is known about how these factors interact. Does awareness of smart technologies, artificial intelligence, robotics, and algorithms (i.e., STARA awareness) enhance or hinder the effectiveness of transformational leadership? Are specific leadership dimensions, like individualized consideration or intellectual stimulation, more resilient to the moderating effects of STARA awareness? By addressing these questions, the study offers insights into how transformational leadership interacts with STARA awareness to shape employee creativity. As the importance of digitalization improves these days due to its significant impact on business processes, revealing how employees' STARA awareness acts in the relationship between transformational leadership can help managers and employees figure out its unavoidable role in sustaining organizational innovativeness, competitiveness, and survival in a fast-changing environment.

Accordingly, the theoretical framework section outlines key concepts of transformational leadership, creativity, and STARA awareness, supported by relevant literature. Hypotheses are developed in this section in line with the presented rationale. Then, the methodology section details the sample characteristics, data collection procedures, and analysis techniques. The fourth section presents the findings, highlighting the relationships between transformational leadership, STARA awareness, and creativity. The fifth section discusses the results, emphasizing theoretical and practical

implications, limitations, and recommendations for future research. Finally, the conclusion summarizes the key insights and contributions of the study.

2. Theoretical Framework

2.1. Transformational Leadership

Even though there are numerous definitions of leadership, the idea of a person inspiring a group to labor toward a common objective is the most frequent (Anderson, 2023). The literature underscores that effective leaders possess various characteristics, including commitment, communication skills, trustworthiness, creativity, integrity, and charisma (Abusebaa, 2023). DeRue (2011) described leadership as a dynamic, social-oriented, and adaptive process beyond reacting to environmental conditions. It involves ongoing interactional exchanges between leaders and followers within specific contexts, creating and re-creating outcomes over time (Dinh et al., 2014).

The development of transformational leadership theory has been a gradual process shaped by the contributions of several scholars. Burns (1978) introduced the transformational leadership model, with its first application primarily focused on politics. During that period, the United States saw significant rivalry between Asian and European nations. This situation required developing more efficacious leadership models within political organizations and companies (Conger, 1999). Burns (1978) fundamentally differentiated leadership into two distinct styles: Transactional and transformational. He emphasized the pivotal role of leaders in elevating followers' conscientiousness, fostering an ennobled moral dimension, and enticing individuals to adopt higher ethical standards.

Transformational leadership requires leaders to build unique connections with subordinates. It explains how leaders inspire subordinates by creating a shared vision and reciprocal relationship that exceeds expectations (Gray, 2022). Transformational leaders can affect a shift in the values, aspirations, needs, and expectations of the people they lead toward shared organizational goals. Followers embrace and integrate shared goals in this manner (Başar et al., 2021). In contrast, transactional leadership revolves around a dynamic exchange relationship where leaders promise rewards to followers in return for goal fulfillment (Yukl, 1981). Bass (1985) compared it to an "if-then" approach, wherein employees receive rewards if they meet prescribed goals and performance standards. According to Odumeru and Ogbonna (2013), transactional leadership operates on a system of rewards and punishments, primarily using external motivational factors. Transactional leadership has been criticized for its short-term character, potential for fostering animosity among workers, and limited applicability in different contexts (McClesky, 2014). When considered alone, transactional leadership must be recognized for enhancing employee engagement. Nevertheless, it catalyzes by establishing the necessary conditions for the effectiveness of transformational leadership (Blomme et al., 2015). The literature suggests combining transformational and transactional leadership styles significantly impacts employee engagement (Breevaart et al., 2014). Building upon Burns (1978), Bass (1985) improved the concept by adapting it to organizational context with his full range of leadership modeling, which includes four elements: Idealized influence, inspirational motivation, intellectual stimulation, and individual consideration, namely the dimensions of transformational leadership. Transformational leadership received further development over time, with new research examining its roles in individuals, groups, and organizations.

2.1.1. Dimensions of Transformational Leadership

The transformational leadership style has four dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Jaiswal & Dhar, 2015; Sun & Anderson, 2012). Jaiswal and Dhar (2015) and Sun and Anderson (2012) have proposed that the four dimensions are integrated and jointly used to foster a feeling of affiliation within the group and organization, demonstrate exemplary conduct as a role model, and exhibit care for subordinates' needs.

Idealized influence comprises two aspects. They are behaviors and attributes. They refer to the degree to which an individual exhibits behaviors that foster followers' identification with their leaders (Braun et al., 2013). Idealized influence attributes are associated with charismatic behavior and involve the leader using interpersonal skills, meaningful actions, and intentions to build trust with subordinates (Franke & Felfe, 2011). Idealized influence behaviors refer to the extra-role efforts of a leader to be exemplary and moral (Abbas et al., 2012). Transformational leaders' charismatic and extra-role model conduct inspires followers' devotion, adoration, and trust. Transformational leaders prioritize employee interests and progress by upholding strong ethics, morality, values, and fairness (Boamah et al., 2018).

Inspirational motivation involves how a person articulates a vision to inspire followers (Braun et al., 2013). Transformational leadership inspires followers to prioritize collective goals over self-interest through various mechanisms, including inspirational motivation and persuasive communication (Rafferty & Griffin, 2004). This approach fosters meaningful work experiences as subordinates align their roles with the organization's objectives, enhancing their connection to leaders, groups, and the organization (Tims et al., 2011). Furthermore, it creates a shared sense of purpose in the workplace (Nielsen & Daniels, 2012).

Intellectual stimulation encompasses the degree to which an individual instills people to inquire about prevailing beliefs and encourage risk-taking action (Braun et al., 2013). Leadership-follower interactions extend supervisors' professional relationship view. The transformational leader-follower connection empowers both (Barbuto, 2005). The transformational leader boosts followers' self-actualization and self-efficacy and motivates them to think creatively and solve challenges (Nguyen et al., 2019). Transformational leaders use intellectual stimulation to question followers' assumptions and foster creative and inventive thinking (Franke & Felfe, 2011). Thus, intellectual stimulation pushes followers to find inventive ways to complete work responsibilities and enjoy their jobs.

Individual consideration denotes the level of effort applied by an individual in addressing the distinct needs of followers (Braun et al., 2013). Individual consideration looks at each follower's needs and aims to give them the resources they need to create an atmosphere for learning (Ghasabeh et al., 2015). Leaders with this feature may foster a good work environment where people can share their knowledge (Rawung et al., 2015). Individually considered leaders exhibit emotional care for subordinates' needs and wants via individual coaching and mentoring (Abbas et al., 2012). These personalized leader-follower interactions boost subordinate self-esteem, value, and empowerment to contribute to the group (De Oliveira et al., 2012). The leader's focus on the follower's development shows that they are willing to give them the time, empathy, training, and coaching they need to succeed and contribute to team and organizational goals, recognizing the follower's distinctiveness and contribution to the team, group, and organization while assessing their growth (Nguyen et al.,

2019). Leaders with individualized consideration assume a dual role of coach and mentor, paying specific attention to the needs of followers in an attempt to create a supportive environment (Bass & Riggio, 2006).

2.3. Employee Creativity

Creativity has been approached from various perspectives, with an ongoing debate on whether it is an outcome or a mental process leading to an outcome. In empirical investigations, creativity is frequently designated as a result, emphasizing measurable and objective data that includes work methods, products, services, and processes (Shalley et al., 2004). Csikszentmihalyi and Asakawa (2016) identified creativity as an act, idea, or product that changes an existing domain into a new one. Therefore, a creative person is someone whose thoughts or actions evoke change (Csikszentmihalyi, 1996). However, this definition could be confused when applied to innovation, a process encompassing both the generation and execution of ideas (Anderson et al., 2014). The Woodman et al.'s (1993) definition is widely utilized in the workplace. They described creativity as "creating a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system" (Woodman et al., 1993, p. 293).

2.4. Transformational Leadership and Employee Creativity

The convergence of multiple studies reveals a consistent and robust relationship between transformational leadership and heightened employee creativity. Extensive research underscores that transformational leaders cultivate environments that foster employees' confidence, trust, and willingness to act and take calculated risks for organizational goals. Shafi et al. (2020) indicate that transformational leadership encourages employees to embrace innovative approaches to completing tasks, fostering employee creativity. Consequently, transformational leaders ensure that followers have their support for risk-taking behavior and that they own the consequences of the actions of their followers. This supports changes in employees' attitudes and encourages them to involve themselves in creative work processes. Transformational leaders facilitate the exchange of knowledge, promote the development of innovative ideas, and assist staff in thinking creatively (Prasad & Junni, 2016). They also encourage people to overcome their fear of taking risks and change the conventional working methods, resulting in better creativity (Shafi et al., 2020). Transformational leadership comprises four dimensions that can significantly influence employee creativity. Among these dimensions, idealized influence stands out as a pivotal element. Idealized influence refers to leaders who serve as role models, inspiring trust, admiration, and respect among employees through exemplary behavior and actions (Bass & Avolio, 1995). Kammerhoff et al. (2019) highlight how leaders, through their idealized influence, establish a strong rapport with their teams, fostering an environment of trust and admiration. When leaders exhibit behaviors that encourage risk-taking, perseverance, ethical conduct, and commitment to principles, they set a standard for employees to emulate these qualities and foster a culture that nurtures creativity. They set up an environment encouraging employees to embrace innovative thinking and non-conventional approaches. Adding to this point, Kasasbeh et al. (2015) highlighted the role of idealized influence in transformational leadership by demonstrating its connection to enhanced creative abilities among employees in industrial settings (Suifan & Al Janini, 2017). In a certain way, when employees witness their leaders embodying these characteristics, they may feel more empowered to delve into new endeavors (Gilmore et al., 2013). The key aspect here is that leaders act as role models. They influence

followers' behaviors and shape the organizational atmosphere through idealized influence. This environment fosters thinking, knowledge exchange, and a culture that values innovation. Consequently, employees are motivated to engage in creative problem-solving, cultivating a workplace culture that encourages creativity. Likewise, Gilmore et al. (2013) underscore the positive impact of idealized influence on employees' creativity. They emphasize how transformational leaders, through their embodiment of admirable traits, stimulate employees to think innovatively and contribute creatively to their work environment. Kasımoğlu and Ammari (2020) compared the impact of transformational leadership components on employee creativity in Turkey and Algeria, considering the mediating role of employees' creative role identity and bringing valuable insights. As depicted by them, Algerian managers acknowledged the connection between employees' creative role identity and employee creativity. However, Turkish managers tended to believe in the individual effectiveness of each component of transformational leadership. Their findings suggest that within the transformational leadership framework, the notion of idealized influence, a key component, might have a positive impact on fostering employee creativity. This implies that when leaders demonstrate idealized influence, it will likely impact how employees imaginatively see their positions, possibly improving their creativity in the workplace. Çekmecelioğlu and Özbağ (2016) found that idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration promote creativity by creating a supportive organizational climate. Idealized influence, often synonymous with charisma, instills pride in followers for being connected with the leader. It shows that a leader would make personal sacrifices for the group. Guillory (2023) found a significant relationship between idealized influence and employee creativity. Moreover, employee job satisfaction moderated this relationship, with higher job satisfaction making idealized influence more effective. Accordingly, the first hypothesis is developed as follows:

Hypothesis 1: A positive relationship exists between idealized influence and employee creativity.

The second dimension of transformational leadership, inspirational motivation, involves leveraging symbols and emotional appeals to motivate group members to surpass their self-interest and achieve higher objectives. Leaders can create an attractive and convincing vision that inspires employees to work towards common goals by effectively expressing the vision, demonstrating confidence, and exhibiting energy and excitement. By synchronizing their efforts with this shared vision, leaders stimulate employees' creativity and inspire them to make valuable contributions (Popa, 2012). As added by Çekmecelioğlu and Özbağ (2016), communicating confidence in followers helps employees reframe troubles, perceive them as opportunities, and attempt novel approaches that can lead to creative solutions for problems emerging in their tasks. It creates an environment where creative ideas are welcomed and cultivated (Popa, 2012). A connection can be observed between inspirational motivation and employee creativity, as employees are more inclined to exhibit creativity when motivated and inspired by their leaders. Sosik et al. (1998) explain that this encouragement acts as a catalyst, driving employees' ability to explore unfamiliar options and solutions. Transformational leaders create a supportive workplace via inspirational motivation and individualized consideration. Such a supportive environment increases enjoyment and job satisfaction, which might increase employees' motivation to engage in complex work and creative initiatives (Mahmood et al., 2019). This environment also provides support and feedback in the search for innovative and optimal solutions (Tse et al., 2018). Hence, based on this premise, the second hypothesis is developed as follows:

Hypothesis 2: A positive relationship exists between inspirational motivation and employee creativity.

The third dimension of transformational leadership, intellectual stimulation, refers to a leader's behavior that stimulates employees' ability to think outside the box while solving problems and refreshing their minds (Farahdiba et al., 2022). Empirical research strongly supports the positive association between intellectual stimulation and employee creativity. This dimension, as outlined by Hater and Bass (1988), involves promoting the adoption of new views, prioritizing problem-solving skills, and emphasizing reasoning before taking action. This approach naturally fosters a mentality that actively seeks creative solutions instead of adhering to traditional methods (Cheung & Wong, 2011). Cheung and Wong (2011) posit that followers are motivated to question established norms and old assumptions, redefine problems, satisfy their intellectual curiosity, and use boundless imagination. By practicing intellectual stimulation, transformational leaders prompt employees to question established norms and create an environment that fosters curiosity and unleashes limitless imagination. It forces a shift in focus, marked by a workplace where employees or followers are more inclined to concentrate on the task rather than excessively worrying about external threats. Thus, they are better positioned to explore creative approaches to problem-solving. According to Sandvik et al. (2018), intrinsic motivation and autonomy influence the relationship between stimulation and the development of a creative environment. The research focused on how intellectual stimulation affects creating a climate within teams in professional service firms, emphasizing the role of leadership behavior in fostering such an atmosphere. The findings indicated that intrinsic motivation and autonomy entirely mediated the impact of stimulation in establishing this kind of climate. Likewise, according to Gilmore et al. (2013), intellectual stimulation improves employees' creativity and innovation. Others, like Khazanchi and Masterson (2011), suggest that innovative leaders effectively utilize existing resources and motivate their employees to think creatively to achieve their objectives. Palupi (2020) indicates that intellectual stimulation can enhance employee creativity. Therefore, transformational leaders must cultivate an environment where those involved in identifying and resolving problems can confidently share and expand on their ideas (Farahdiba et al., 2022). Accordingly, the third hypothesis is developed as follows:

Hypothesis 3: A positive relationship exists between intellectual stimulation and employee creativity.

The fourth dimension of transformational leadership, individualized consideration, involves personalized attention and support leaders provide to their followers. Transformational leaders see each employee as unique, with distinct needs, attributes, strengths, and weaknesses (Popa, 2012). Transformational leaders value each contribution. It can be understood that when leaders adjust how they operate things to fit the needs of each employee, they are more likely to create an environment where creativity thrives because everyone feels supported and respected, which leads to a more creative workforce. This personalized focus allows leaders to recognize and cultivate unique abilities, which can result in heightened levels of creativity and innovation among employees (Farahdiba et al., 2022). Also, such leaders offer communication channels to facilitate fresh learning opportunities and encourage individuals to act beyond typical behavior and explore new ideas that may flow from their divergent thinking (Çekmecelioğlu & Özbağ, 2016). Li et al. (2015) explain that personalized attention creates a reciprocal obligation among employees, fostering behaviors that benefit the organization. In other words, if a superior shows highly individualized consideration, an employee

can engage in helpful behaviors and take the required action to address challenges for the organization, including heading up with original ideas (Li et al., 2015). Ding and Lin (2021) explain the fact that through individualized consideration, transformational leaders demonstrate a genuine concern for the unique needs of each subordinate, which allows subordinates to perceive that the organization cares about their well-being and values their creative contributions, in turn, leads to increased positive affect (Caesenset al., 2016). Accordingly, the fourth hypothesis is developed as follows:

Hypothesis 4: A positive relationship exists between individualized consideration and employee creativity.

2.5. STARA Awareness

STARA is an acronym for Smart Technology, Artificial intelligence (AI), Robotics, and Algorithms. STARA awareness reflects employees' perspectives on how STARA could affect future job prospects (Brougham & Haar, 2018). STARA refers to a collection of technologies that have the potential to replace humans who perform various simple and complex jobs. STARA has transformative potential in reshaping the employment landscape (Kang et al., 2023). It is estimated that one-third of jobs that exist today could be performed by STARA by 2025 due to advances in robotic intelligence and affordable autonomous units and their outperformance in manual and conceptual jobs compared to humans (Frey & Osborne, 2013). Experts like Stephen Hawking warned that robots take human jobs and move society toward more inequality (Rathi, 2015). Brynjolfsson and McAfee (2011) resemble the impact of STARA in the service industry to a transformative industrial revolution that will take decades to fundamentally reshape employment landscapes. On the other hand, this transformation is also anticipated to create more than ninety million new roles better suited to the evolving collaboration between humans, machines, and algorithms (Tan et al., 2023).

The seeds of automation took hold during the Industrial Revolution, which predominantly focused on manufacturing and mechanization. In the mid-20th century, the introduction of computers and early automation systems began to captivate attention. Spohrer and Maglio (2008) detailed that workers typically migrated to the emerging tertiary (service) sector over time as new jobs were created. Doing so, a shift toward service-oriented economies prompted discussions regarding technology's potential impact on service roles. Starting in the 1990s, the digital age and the algorithmic revolution were spurred. During this era, the internet became widely accessible, marked by technological advancements. This led to an increase in the quantity of data and the ability to process it efficiently. In the 1990s, the digital era and the rise of algorithms began. The Internet and computer advancements led to data availability and processing capabilities explosion. As we entered the 21st century, significant advancements were made in computers, artificial intelligence, and robotics, paving the way for advanced automation (Brougham & Haar, 2018). According to Feng and Graetz (2015), the market is losing middle-class jobs due to technology like STARA's increased efficiency. The rapid advancement of technology has initiated debates and conversations about the dangers of over-reliance on technology and the possible consequences of system failures or disruptions. Ethical considerations, such as artificial intelligence bias and these technologies' impact on society, have gained prominence. Today's understanding of STARA awareness reflects a comprehensive perspective influenced by new technologies, more public debate, academic study, moral concerns, and educational initiatives.

2.6. Moderating Role of STARA Awareness

As discussed earlier, idealized influence involves leaders being role models and inspiring creativity among their followers. Individuals with strong STARA awareness may have heightened expectations for leaders to incorporate and leverage innovative technologies, AI, robotics, and algorithms to foster creativity. It becomes apparent that employees who strongly perceive their positions as vulnerable to replacement may experience heightened levels of job insecurity. Idealized influence typically fosters an environment of trust, inspiration, and commitment among followers (Braun et al., 2013). However, in the presence of STARA awareness, with employees harboring concerns about the potential obsolescence of their roles, the effectiveness of transformational leadership in inspiring creativity may be compromised. The perceived threat posed by STARA may undermine the trust and admiration typically fostered by transformational leaders through idealized influence. That negative perception may erode followers' admiration for their leaders' charismatic behavior and moral conduct, resulting in a weakened sense of connection and identification. In doing so, employees may be less receptive to the inspirational messages and visionary goals set forth by their leaders as their primary concern shifts toward job security and stability. Accordingly, the fifth hypothesis is developed as follows.

Hypothesis 5: The positive relationship between idealized influence and employee creativity will be weaker for those strongly aware of STARA.

Nguon (2022) emphasizes the interpersonal aspects essential for inspirational motivation in transformational leadership, highlighting leaders' extra-role model behavior, attentive listening, and handling team performance issues. However, transformational leaders may encounter challenges during their efforts to motivate employees toward common goals by leveraging symbols and emotional appeals. The fear of job insecurity imposed by STARA awareness may overshadow leaders' inspirational messages. Employees who strongly perceive their positions as vulnerable in front of AI revolutions and smart technologies may experience high anxiety regarding their future job prospects. As employees cope with heightened anxiety and uncertainty about their future career prospects, they may struggle to fully embrace the shared vision articulated by leaders fully, hindering their ability to make valuable contributions and explore creative solutions to organizational challenges (Popa, 2012). This specific workplace may lead some employees to view leadership through a lens of distrust marked by skepticism, resulting in an erosion of trust and confidence in leadership, which may diminish the influence of transformational leadership on employee creativity. Accordingly, the sixth hypothesis is developed as follows.

Hypothesis 6: The positive relationship between inspirational motivation and employee creativity will be weaker for those strongly aware of STARA.

As a transformational leadership component, intellectual stimulation involves challenging followers to think innovatively (Yasin et al., 2014), encouraging them to question assumptions, and fostering a culture of intellectual curiosity (Braun et al., 2013). Employees with heightened job insecurity are trapped by significant cognitive burdens, limiting their capacity to fully engage with intellectual stimulation initiatives to promote thinking outside the box (Farahdiba et al., 2022). They may prioritize concerns about their future employability over engaging in intellectually stimulating activities. This negative perception tends to engender a prioritization of skills acquisition and job preservation among employees, reflecting their immediate needs for adaptation and preservation,

diverging from the transformative vision of intellectual curiosity and innovation advocated by transformational leadership. As a result, the safeguard established climate reduces the resonance of transformational leadership efforts in fostering employee creativity. Accordingly, the seventh hypothesis is developed as follows.

Hypothesis 7: The positive relationship between intellectual stimulation and employee creativity will be weaker for those strongly aware of STARA.

The individualized support transformational leaders offer is perhaps less aligned with the self-directed learning and career trajectory most associated with technology-driven innovations. Furthermore, the threat of job loss from the expanded use of AI and robotics might lead employees to focus more on security than the personalized career development associated with individualized consideration. In this context, the model of attention that emphasizes personal growth could be overshadowed by concerns and relatives about job loss. According to Kang et al. (2023), the one-on-one support traditionally associated with attention may be seen as less relevant when compared to the urgent current need for technological skills. From that perspective, the link between individualized consideration and employee creativity could weaken (Brougham & Haar, 2018).

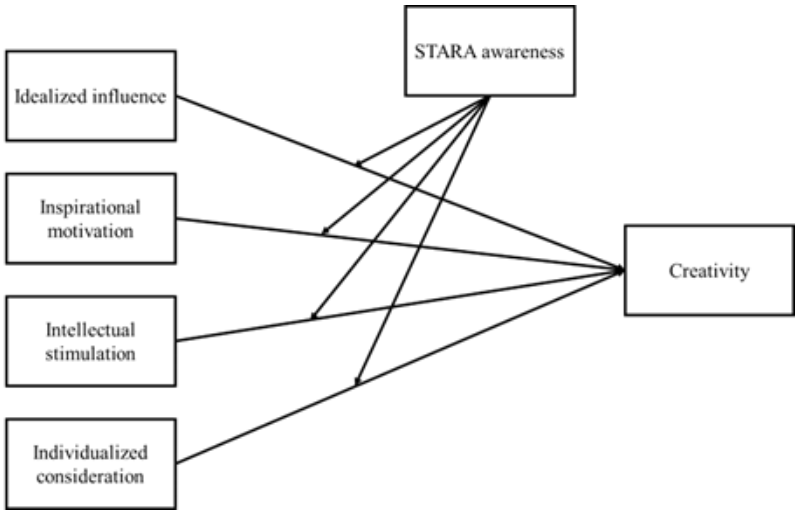
The cultural dimensions theory, developed by Hofstede (1980, 1993), gives a new frame to analyze how cultural factors influence individuals' responses to change and uncertainty (Howell, 2001; Merkin, 2006). Cultures with high uncertainty avoidance scores demonstrate exceptionally high resistance to change (Hofstede, 2001). From this point, employees in such organizations may be less receptive to initiatives promoting individualized consideration. As a result, when leaders attempt to offer employees a customized approach and create a support strategy that addresses each employee’s personal needs and expectations, they may face extreme rejection. Employees may even perceive the attention as a superficial attempt to mitigate their fears of job displacement. Furthermore, employees with high STARA awareness may exhibit psychological distance or detachment from their work environment. As suggested by Trope and Liberman (2010), the concept could reduce employees' emotional attachment to their work, making them less emotionally invested and less receptive to personalized support and development initiatives their leaders offer. As a result, we put forward the last hypothesis as follows:

Hypothesis 8: The positive relationship between individualized consideration and employee creativity will be weaker for those strongly aware of STARA.

Based on the hypotheses, the theoretical model is presented in Figure 1.

Figure 1

Theoretical Model



3. Method

3.1. Participants and Research Design

This research employed a cross-sectional design. The data were collected through a digital questionnaire survey from 307 employees who work in 12 companies operating in the medical services management sector, particularly on medical tourism and related services in Istanbul and Ankara. The total number of employees working in these companies was approximately 1500, which was the population size. This was an approximate number because a precise number could not be obtained from company managers for confidentiality reasons. This information was obtained from employees who participated in this research. At a 95% confidence level, 307 participants can represent 1500 individuals (Gürbüz & Şahin, 2018). Therefore, the sample size was considered adequate. STARA awareness can be perceived as a threat by every employee, regardless of their work sector, because smart technologies and intelligent systems are used in every business sector to varying degrees. These 12 companies operating in the medical services management sector were selected because the possibilities of the first author allowed only this option. The companies were mainly Turkish-owned and offered medical services for international patients. These services include facilitating medical procedures, coordinating patient care, translation, patient relations management, and logistical arrangements. The sample was determined using convenience sampling and comprised employees of diverse cultural and ethnic backgrounds of African origin. Because all participants were fluent in Turkish, the survey was conducted in Turkish. In line with the nature of their jobs, sometimes, participants work in the office and sometimes in the field. While they worked, they were in constant contact and closely coordinated with their immediate supervisors, both face-to-face and digitally. Therefore, the authors thought that perceived transformational leadership could be investigated on them. Of the participants, 244 (79.5%) were males, 63 (20.5%) were females, 200 (65.10%) were single, 107 (34.9%) were married, 19 (6.2%) had a high school degree, 2 (0.7%) had a college degree, 153 (49.8%) had a bachelor's degree, 118 (38.4%) had a master's degree, and 15 (4.9%) had a doctorate. Their tenure varied between 0 and 21 years (M = 4.73, SD = 3.70), and their ages varied between 18 and 47 years (M = 30.75, SD = 5.60).

3.2. Data Collection Instruments

3.2.1. Transformational Leadership Scale

Each participant was asked about the extent to which they perceive their first manager displays transformational leadership behaviors. For this purpose, a scale developed by Bass and Avolio (1992) and adapted to Turkish by Erkuş and Günlü (2008) was used. The scale was four-dimensional, with three items in each dimension.

3.2.2. Employee Creativity Scale

Each participant was asked to indicate to what extent they think they are creative. For this purpose, a scale developed by Zhou and George (2001) and adapted to Turkish by Nart (2015) was used. The scale is unidimensional and comprises thirteen items.

3.2.3. STARA Awareness Scale

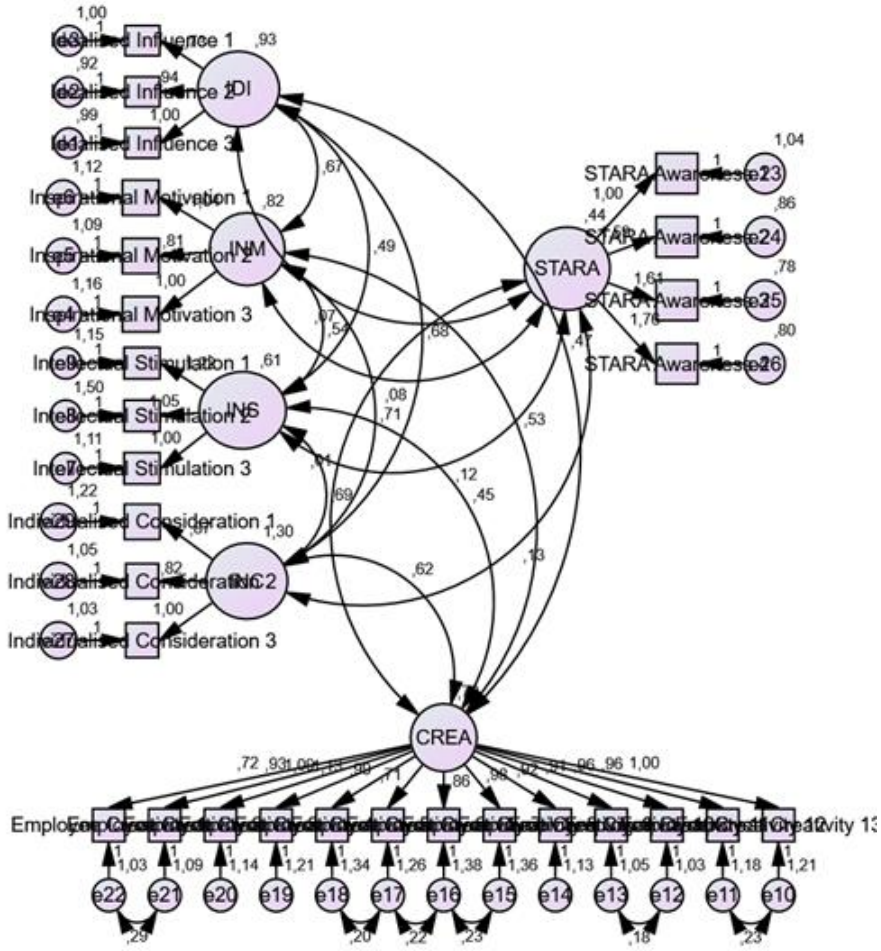
Each participant was asked to indicate to what extent they are aware of smart technologies, artificial intelligence, robotics, and algorithms. For this purpose, a scale developed by Brougham and Haar (2018) and adapted to Turkish by Başar (2023) was used. The scale is unidimensional and comprises four items. Items of each scale were scored on seven points (i.e., 1: completely disagree, 7: completely agree). High scores indicate the level at which the variable is experienced.

3.2.4. Validity and Reliability Tests

A measurement model, shown in Figure 2, was used to test the validity of the scales. Results indicated that the measurement model fits well (χ^2= 495.74, *df* = 356, *p* = 0.000, χ^2/df = 1.39, *GFI* = 0.90, *IFI* = 0.95, *TLI* = 0.94, *RMSEA* = 0.03). Hence, it is possible to say that scales are valid enough (Hair et al., 2010). Cronbach α coefficients were calculated for each scale to test their reliability. The results are shown in Table 1. Because all of them are very close or greater than 0.70, it is possible to say that the scales are reliable enough (Hair et al., 2010).

Figure 2

Measurement Model



3.3. Data Collection and Procedure

Before starting the data collection, ethical approval was taken from the Istanbul Ticaret University Ethics Committee on 03.04.2024. The ethics committee approval number is E-65836846-044-316251.

The data were collected through a digital questionnaire form. The digital questionnaire form was prepared using Google Forms, and the first author sent participants a link to the questionnaire form. Participants were determined according to the convenience sampling technique. Permission was obtained from the responsible managers in the participating organizations to collect data. The study's purpose and ethical considerations were clearly explained to responsible managers. The signed ethical approval document from the university, endorsed by the thesis advisor (i.e., the second author), has been shared with responsible managers and professionals to confirm that the data would be used solely for research purposes. Associations and alumni networks were utilized to locate and reach African employees working in the medical sector. Employees were invited to participate voluntarily, and their confidentiality was guaranteed. A clear and concise message followed the questionnaire link to encourage participation, explaining the importance of their contributions and the study's implications. Only those who consented by clicking the approve button on the first screen could proceed and fill out the questionnaire form. The link was distributed through email and WhatsApp to

maximize accessibility and allow participants to share it with their colleagues easily. Regular reminders were sent to help improve response rates.

3.4. Data Analysis Strategy

The scales' validity tests were performed on IBM SPSS AMOS through a measurement model, their reliability tests were performed on IBM SPSS, and the hypotheses were tested through linear regression on IBM SPSS.

4. Findings

Before testing the hypotheses, correlation coefficients between variables were calculated. The results are shown in Table 1.

Table 1

Descriptives, Reliability Scores, and Correlation Coefficients

	M	*SD*	*Cronbach α*	*IDI*	*INM*	*INS*	*INC*	*CREA*	*STARA*
ID1	4.43	1.02	0.70	1					
INM	4.56	1.05	0.69	0.51**	1				
INS	4.62	1.07	0.68	0.43**	0.48**	1			
INC	4.49	1.18	0.73	0.43**	0.49**	0.53**	1		
CREA	4.84	0.84	0.87	0.45**	0.52**	0.51**	0.52**	1	
STARA	4.71	1.09	0.80	0.09	0.09	0.17**	0.14*	0.03	1

Note. IDI: Idealized influence, INM: Inspirational motivation, INS: Intellectual stimulation, INC: Individualized consideration, CREA: Employee creativity, STARA: STARA awareness
* $p < .05$, ** $p < .01$

Results indicated significant and positive relationships between dimensions of transformational leadership and between employee creativity and dimensions of transformational leadership. However, STARA awareness was significantly and positively related to only intellectual stimulation and individualized consideration. Based on these findings, hypotheses are tested in the following stages. The impact of transformational leadership on employee creativity was first investigated. The results are presented in Table 2.

Table 2

The Relationship between Transformational Leadership and Employee Creativity

Independents variables	Dependent variable – Employee creativity			
	β	R^2	*F*	*Model No*
ID1	0.13*	0.41	54.41***	1
INM	0.24***			
INS	0.21***			
INC	0.23***			

Note. IDI: Idealized influence, INM: Inspirational motivation, INS: Intellectual stimulation, INC: Individualized consideration
* $p < .05$, ** $p < .01$, *** $p < .001$.

Regression model 1, presented in Table 2, indicates that all dimensions of transformational leadership positively change employee creativity. In other words, transformational leadership increases the level of employee creativity. Accordingly, hypotheses 1, 2, 3, and 4 are supported. Subsequently, moderation analyses were performed to test the rest of the hypotheses. Aiken and West's (1991) technique was employed while performing the moderation analyses. According to this technique, first, the moderator variable (i.e., STARA Awareness) and independent variables (i.e., dimensions of transformational leadership) were centralized. Then, interaction terms were produced by multiplying

the centralized scores of independent variables and the centralized score of the moderator variable (i.e., IDIxSTARA, INMxSTARA, INSxSTARA, and INCxSTARA). Following this, independent variables, the moderator variable, and interaction terms were entered into regression analyses as predictors. These tests were performed in Models 2 to 5, presented in Table 3.

Table 3

Moderation Analyses

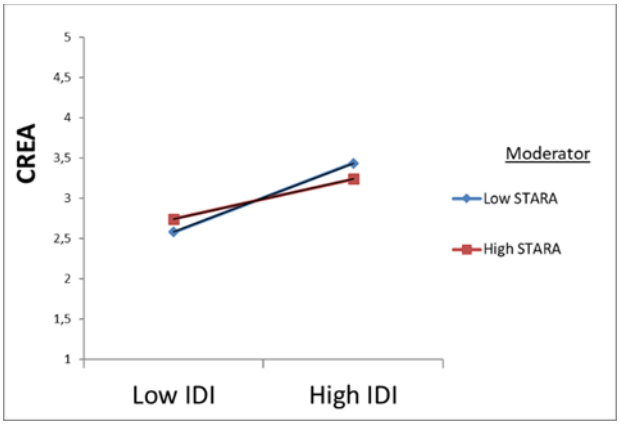
Independents variables	Dependent variable – Employee creativity			
	β	R^2	*F*	*Model No*
IDI	0.39***			
STARA	-0.00	0.21	29.03***	2
IDIxSTARA	-0.14**			
INM	0.48***			
STARA	0.00	0.30	45.45***	3
INMxSTARA	-0.18***			
INS	0.48***			
STARA	-0.04	0.27	40.31***	4
INSxSTARA	-0.14**			
INC	0.51***			
STARA	-0.04	0.27	38.58***	5
INCxSTARA	-0.04			

Note. IDI: Idealized influence, INM: Inspirational motivation, INS: Intellectual stimulation, INC: Individualized consideration, CREA: Employee creativity, STARA: STARA awareness.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Results shown in Model 2, Table 3, indicate a significant moderation (β= -0.14, p<0.01). How this interaction occurs is shown in Figure 3.

Figure 3

Moderating Role of STARA Awareness in the Relationship between Idealized Influence and Employee Creativity

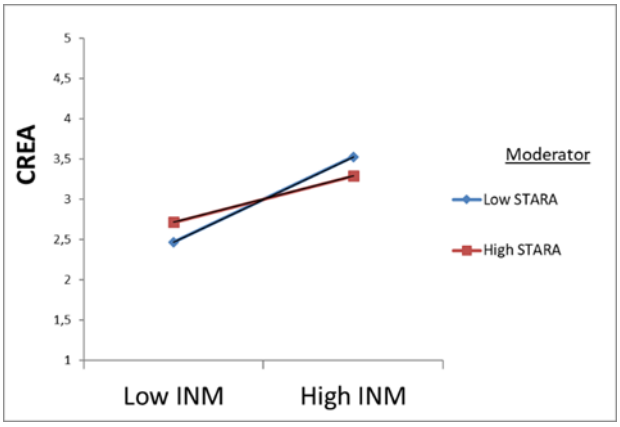


Note. CREA: Employee creativity, IDI: Idealized influence, STARA: STARA awareness

As shown in Figure 3, increased perceived idealized influence results in increased employee creativity, while STARA awareness is low or high. However, this increase is greater when STARA awareness is low and weaker when STARA awareness is high. Accordingly, hypothesis 5 is supported. Likewise, results shown in Model 3, Table 3, indicate a significant moderation (β = -.18, p < .001). How this interaction occurs is shown in Figure 4.

Figure 4

Moderating Role of STARA Awareness in the Relationship between Inspirational Motivation and Employee Creativity

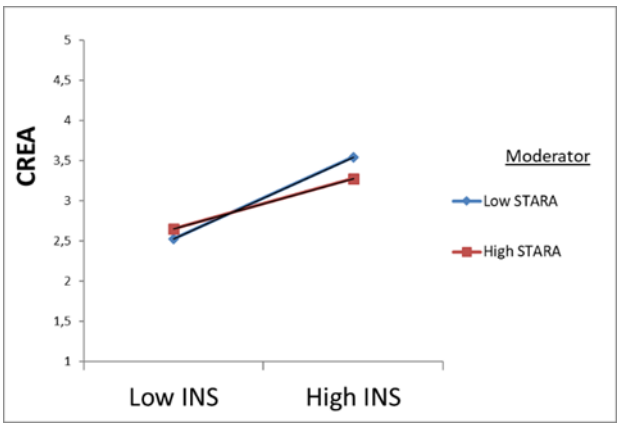


Note. CREA: Employee creativity, INM: Inspirational motivation, STARA: STARA awareness

As shown in Figure 4, increased perceived inspirational motivation results in increased employee creativity, while STARA awareness is low or high. However, this increase is greater when STARA awareness is low and weaker when STARA awareness is high. Accordingly, hypothesis 6 is supported. Similarly, results shown in Model 4, Table 3, indicate a significant moderation (β = -.14, p < .01). How this interaction occurs is shown in Figure 5.

Figure 5

Moderating Role of STARA Awareness in the Relationship between Intellectual Stimulation and Employee Creativity



Note. CREA: Employee creativity, INS: Intellectual stimulation, STARA: STARA awareness

As shown in Figure 5, increased perceived intellectual stimulation results in increased employee creativity, while STARA awareness is low or high. However, this increase is greater when STARA awareness is low and weaker when STARA awareness is high. Accordingly, hypothesis 7 is supported. However, in Model 5, Table 3, the interaction term (i.e., INCxSTARA) does not positively relate to employee creativity, as opposed to these cases. Therefore, hypothesis 8 is not supported.

5. Discussion

This study investigates the relationship between transformational leadership and employee creativity, together with the moderating role of STARA awareness in this process. This study provides valuable insights into leadership dimensions in fostering creative outcomes. The results demonstrate

that all four dimensions of transformational leadership, idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, positively influence employee creativity. This suggests that transformational leaders, as role models, inspire shared visions, challenge conventional thinking, give personalized support, and foster an environment where employees feel empowered to engage in creative problem-solving and innovative thinking. Thus, aligning with previous studies, the results support Bass and Avolio (1995), who emphasized the role of transformational leadership in fostering trust and collaboration, as well as Podsakoff et al. (1990), who identified leadership dimensions like intellectual stimulation and individualized consideration as critical for fostering creativity. These results are also consistent with recent studies like Shafi et al. (2020), which emphasize the role of transformational leadership in driving creativity and adopting innovative thinking. This finding also overlaps with the results of other recent studies, such as Bass and Riggio (2006), Jyoti and Dev (2015), Kasımoğlu and Ammari (2020), and Ma et al. (2020), ensuring the critical role of transformational leadership in fostering employee creativity.

As distinct from earlier studies, this study revealed the moderating role of STARA awareness, indicating that STARA awareness weakens the positive relationships between idealized influence, inspirational motivation, intellectual stimulation, and employee creativity. However, STARA awareness did not significantly moderate the relationship between individualized consideration and employee creativity. STARA awareness weakens the strength of the relationships between three dimensions of transformational leadership and employee creativity because, as indicated in Figures 3 to 5, in conditions when SATA awareness is high, the strength of the relationship between three dimensions of transformational leadership and employee creativity is weaker compared to the conditions when STARA awareness is low. This is how moderation analysis results are interpreted (Aiken & West, 1991). STARA awareness is not a phenomenon specific to the sample of this study. As mentioned, every employee, regardless of sector, is expected to be affected by STARA. This study examined employees in the medical services management sector because the first author had only the means to do so. Based on this, it can be concluded that personalized support and individualized consideration provided by leaders continue to promote creativity regardless of employees' technological concerns or fears. To the authors' knowledge, this is the first time revealing the moderating role of employees' STARA awareness in the relationship between transformational leadership and employee creativity, a significant contribution to the literature on leadership, management, and organization.

From a practical perspective, the results of this study provide valuable insights for leaders and organizations that aim to foster creativity in the workplace. First, understanding the crucial role of transformational leadership can guide organizations in designing and promoting training programs focusing on leaders' abilities to inspire, challenge, and support their followers effectively. Organizations open a road to setting up an adequate workplace for enhanced creativity in this effort to align with desirable leadership abilities. Secondly, recognizing the moderating role of STARA awareness emphasizes the importance of considering employees' concerns about technology. Organizations can implement fitted strategies to provide upskilling opportunities for employees, thus helping to reveal and address their anxieties about job security. Through this approach, employees' mindsets could be set up to accept technology as a tool for enhancing creativity rather than a threat. Ultimately, this can be particularly beneficial in building trust and psychological safety. Additionally, the role of individualized consideration as a leadership dimension not affected by STARA awareness

underscores the value of personal mentoring and individualized support. Managers, in understanding this aspect, have a strategic pivot to strengthen employees' confidence. Investing and taking action to understand and address the unique needs of their employees can provide a sense of stability and encouragement regardless of technological awareness.

Results indicated that medical services management sector employees perceive STARA as a threat, as they do in other sectors (Brougham & Haar, 2018; Hur & Shin, 2024; Teng et al., 2025). Because medical service management sector employees maintain constant contact with their managers and customers, being familiar with high technology and smart devices can ease and simplify their jobs. Intelligent systems and devices in information technology can improve the speed and accuracy of medical transactions and patient satisfaction. Considering the challenges of patients from different countries, such intelligent technologies can help them deal with their anxieties about visiting a foreign environment.

Therefore, new interventions must be designed to eliminate negative perceptions of medical services management sector employees derived from STARA. These interventions can include but are not limited to developing user-friendly software applications for mobile phones and tablet computers, designing simulations for unexpected cases and conditions to be used in training sessions, providing free software and hardware to employees, allocating time for employees to experience these technologies, encouraging voluntary application of employees to developmental activities, and rewarding employees who successfully adapt to STARA. These interventions must make employees familiar with such technologies and be able to use them in their daily operations. This can increase the strength of the positive relationship between transformational leadership and employee creativity.

Although this research has significant contributions, it also has some limitations. Firstly, the sample used for this study comes from the medical services management sector in Istanbul and Ankara, which may limit the applicability of the findings to other sectors and contexts. Expanding the research to include diverse industries and cultural contexts could provide a more comprehensive understanding. Additionally, the sample included employees from varied cultural and technological backgrounds, which was determined according to convenience sampling. Using convenience sampling limits generalizing the findings to larger contexts. Moreover, some may approach technological advancements with a mindset of rapid adaptation, particularly for regions with limited technological infrastructure. This could introduce a bias in how they perceive and respond to leadership and technological changes. A comparison of cultural differences between countries could lead to more global and more profound findings. Qualitative methods, such as interviews, could also complement quantitative approaches used in the study by providing richer insights into employees' perceptions and experiences. Furthermore, the COVID-19 period opened the path to the expansion of digital workplaces where employees interact remotely with organizations. Exploring how transformational leaders incorporate this new reality, marked with limited personal interactions, could offer updated practical guidance for organizations to enhance creativity.

6. Conclusion

The importance of speed, accuracy, and smoothness of medical services and the satisfaction of international patient customers grows these days as medical tourism becomes one of the important economic assets and a factor that enables cures for people regardless of where they are. Therefore, companies delivering medical services require transformational leaders and more creative employees

who can effectively deal with unexpected situations and solve unmet problems. Digitalization is an unavoidable external factor impacting every company irrespective of their sectors. Although it disrupts old habits in organizations, it presents novel ways to do business. However, employees not used to these technologies can perceive them as threatening their jobs. Likewise, the findings proved this. Therefore, company managers at every level must familiarize employees with these technologies. By adopting a learning organizational culture under the guidance of transformational leaders, companies must change themselves and adapt to new conditions. Companies operating in the medical services management sector and other sectors can outperform their competitors and provide more quality services to their customers with employees who can control and use smart technologies. This study underscores this fact by revealing the buffering effect of employees' STARA awareness on the relationship between transformational leadership and employee creativity and addressing the necessity of assisting employees in changing their negative attitudes toward smart technologies.

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