
Exploring Job Satisfaction as a Mediator in the Relationship Between Digital Transformational Leadership and Employee Retention in Public Sector Organizations

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Abstract This study explores the relationship between Digital Transformational Leadership (DTL) and Employee Retention (ER), while also investigating the role of Job Satisfaction (JS) as a mediating factor in this relationship. Much disruption and change have resulted from political unrest, economic uncertainty, and digital development. Therefore, change management continues to be a major concern for HR directors and is currently a popular trend in the industry related to policy implementation in the public sector organizations in Egypt. Employees are becoming less agile to adapt to change and administrative efficiency is at stake. Prioritizing employee job satisfaction to align with the latest theories related to Behavioral Economics where employees' decision making aligns with both policy implementation of digital transformation in leadership strategies and employee retention enhances the originality of the research. The study's technique methodology is convergent mixed methods. The sample included employees from 10 companies that produced military products in Egypt (following the Military Production Ministry) made up the sample, in addition, 200 HR managers and staff members working with technology in the chosen companies were the focus of this study. Regression analysis, correlation, and the structural equation module are statistical analytical tools that apply SPSS. This study demonstrated that the relationship between Digital Transformational Leadership and Employee Retention is mediated by Job Satisfaction. Moreover, it endeavors to develop and validate a framework that underscores the significance of Job Satisfaction (JS) in enhancing employee performance within the context of Digital Transformational Leadership (DTL) and Employee Retention (ER) in the workplace.

Keywords: Public Administration, Management Digital transformational leadership, Employee retention, Job satisfaction

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Introduction

Traditional leadership approaches are insufficient for managing, leading, and directing during digital transformations because of the additional complexity of digital ecosystems. New perspectives on leadership and a revaluation of leadership behaviours and abilities are needed Mirhosseini et al., (2020). While e-leadership and digital leadership are new paradigms in leadership that have been brought about by digitalisation, their focus is on the use of digital use and the digital workforce (Araujo et al., 2021; Torre & Sarti, 2020). According to recent studies, it's critical to switch from high level management to people-sloping leadership techniques (Henderikx & Stoffers, 2022; Ready et al., 2020). Research evaluating digital changes and leadership indicates that soft skills and behaviours are becoming increasingly important in public sector organizations (Henderikx & Stoffers, 2022; Klus, & Müller, 2020; Ready et al., 2020).

One of the top priorities is digital transformation for the continuation of modern organisations to shape people's lives on two levels: professional and personal (Roblek et al., 2021; Volberda et al., 2021). They are causing a disruptive change driven by technology (Henderikx & Stoffers, 2022; Volberda et al., 2021). Technological innovations have become increasingly dominant and used intensively on the administrative reform levels in public sector organizations. Since digital transformation leadership remains a reasonably new and rapidly changing phenomenon whose effect is not yet implicit, people typically categorize it as a major change, like deregulation and globalization (Christensen et al., 2015; Westerman et al., 2014). Many studies have examined the issues of strategic leadership connected to the emergence in the context of digital transformation and leadership given its impending ascent (Tetik, 2020; Kurzhals et al., 2020; Vial, 2019). Given that digital transformation is widespread in lots of businesses on a private level, it is becoming clear that these leadership issues apply to all industries in the public sector domain. The direction of innovation practices since the 90's to heal the disruption of technological evolution according to (Kamel 2003), was explored through competitiveness that is invading public sector service delivery in Egypt and its impact on citizens. So, advancing technology and its uses in domains of leading is a competitive edge leading to a dynamic interplay between digital leadership and employee retention.

The shift in leadership modes related to technology also aligns with the New Public Management studies related to the model of Behavioral

Economics (Chetty, 2015) where new tools to change behaviors are considered a new prescription applied in decision making, enhancing job satisfaction and mitigating the risks of uncertainties stemming of citizens' behavior and acceptance of change. Focusing on these consequences at the macro level, shifting to organizational-led innovation, especially in the public sector, is what digital leadership does in current literature, in addition to dynamic capability and innovation management where innovation capability and digital leadership are strongly correlated

(Sasmoko et al., 2019; Mihardjo et al., 2019; Hutagalung & Furinto, 2020). According to Sasmoko et al. (2019), innovation capability and digital leadership are strongly correlated.

The gap this study aims to address is related to both the evidence gap and the knowledge gap. In terms of the evidence gap, despite the growing interest in digital transformation, there is a lack of concrete, empirical studies specifically examining the impact of digital transformational leadership (DTL) on employee retention within public sector organizations. Most research focuses on the private sector, where digital transformation is often more advanced. The evidence regarding how digital leadership styles influence employee outcomes in the public sector remains insufficient.

Regarding the knowledge gap, the concept of digital transformational leadership is relatively new and lacks a universally accepted definition or framework. While transformational leadership is well-established, its digital dimension (i.e., the use of technology, digital tools, and innovation in leadership practices) is still evolving. There is a need for a clearer understanding of how digital leadership specifically impacts employee satisfaction and retention, particularly in the public sector.

The main problem in the selected industry and training center is rooted in government policy implementation requirements. As part of the new 2030 strategy, several initiatives have been introduced, one of which is training employees in the public sector. All public sector employees received training by National Institute for Governance and Sustainable Development (NIGSD) (NIGSD, 2023), most of employees in the public sector have received digital skills training (MCIT, 2024), including Digital Capacity Building Programs by the Ministry of Communication and Information technology targeting employees in the governorates and subordinate directorates at the governmental institutions. One of the criteria of the Ministry of Military production targets the aged 25-45 receiving digital skills training (MOMP strategy). However, many employees, particularly those displaying talent in this field, opt to take unpaid leave and move to private companies for higher

wages, bonuses, and financial benefits. Therefore, one of the crucial policies is that HR directors must assist staff members in adjusting to change, minimizing any negative effects they may have on their jobs, and, above all, looking out for their well-being to ensure satisfaction on both physical and psychological levels. This entails investing in leadership development to assist leaders in successfully navigating change, offering tools to support staff members during transition times, and encouraging open communication.

Change management is a methodical policy for handling the shift or modification of an organization's objectives, procedures, or technological infrastructure. The application of techniques to bring about change, manage change, and assist individuals in adapting to change is the aim of change management. This results in a leadership pattern which entails in that context of digital leadership advocacy changing operational practices to align specific goals with new cultural trends and engage in operational agility towards technology adoption (Younis, 2022). As there is no single recipe for leadership, so the direction in public sector organizations as in all organizations is to inspire and motivate employees to remain within the workplace, strive to keep a motivating environment, and assort the needs of employees, which are met by numerous policies under employee retention to be able to increase job satisfaction and reduce the cost of recruiting new talent according to Nazia & Begum (2013). Staying in the organization as long as they can finish their work takes place under organization retention policies that foster employee communication effectively and can also improve the engagement of employees and boost workplace advantages (Kaur, 2017). Employee retention is a key issue in today's business and failure to do so, could be further elaborated from the Behavioral Theory embedded in social norms, interpersonal preferences to stay in the status-quo and procrastination towards adopting digital transformation leadership strategies (Solek, 2014). The cost of training and recruitment is increasing because of the high turnover of employees, which affects workflow and productivity. Organizations must recognize the importance of employee retention programs and employee engagement strategies to implement and identify solutions.

An organization must now undergo digital transformation to thrive in a cut-throat environment (Khan, 2015). This idea encompasses more than just the organization's employees using computers and the Internet for work-related purposes. Digital transformation is the process of using technology to manage an organization's operations, services, and activities, as well as to process and analyze data, facilitate member communication, and carry out all transactions electronically. All these

tasks must be performed in a safe and secure data environment. Data conversion into digital content that can be processed, shared, and stored is known as digitization. According to (Abbu et al., 2021; De Villiers, Cerbone, & van , 2020) most businesses are creating new digital business strategies, but they may not be aware of the importance of digital leadership. In these firms, a deficiency in digital leaders leads to poor company performance. The required skills are needed for digital leaders to oversee digital transformation.

As the post-COVID-19, with the New Normal era, the technological revolution became one of the essential components for industry to survive in the market and achieve its goal. There is a call for all sectors as one of the 2030 strategies and to meet the 17th SDGs to work toward continuous development by applying contemporary methods in Public Administration, including digital transformation, as an essential factor for improving organization performance and achieving organizational excellence.

Military production companies producing material for civil use play an important role in the Egyptian public and productive industry, providing greater job opportunities in the market for well-educated young generations graduating from public universities. Normally, public university graduates in Egypt who lack technology skills do not meet the requirements; however, these companies must adapt the technology to meet the market with their products. Employees in these companies must reach the required level of technology and upgrade their systems toward digital transformation. Many employees in these companies become barriers to digital transformation, and they believe that technology will replace their jobs, and many generations, after they gain experience at the technical level, would like to remain retained in their companies.

The main objective of this study is to discover the relationship between **Digital Transformational Leadership (DTL)** and **Employee Retention (ER)**, while also investigating the role of **Job Satisfaction (JS)** as a mediating factor in this relationship in the Egyptian public sector industry and its employees.

Literature Review

Digital Transformational Leadership (DTL) in public sector organizations

In Egypt, digital transformational leadership, or DTL, is essential to upgrading public sector institutions and achieving Egypt's Vision 2030 goals. DTL offers the leadership structure required to propel digital

transformation projects as the country strives for sustainable growth and a competitive, knowledge-based economy. DTL gives public sector executives the ability to use technology to boost citizen involvement, expedite services, and strengthen governance. DTL guarantees that public sector organizations are prepared to adjust to quickly evolving technological landscapes by cultivating an innovative and agile culture. Additionally, it encourages the use of cutting-edge digital tools like data analytics and artificial intelligence to enhance decision-making and service delivery. This leadership style not only supports Egypt's Vision 2030 objectives of efficiency, transparency, and inclusivity but also addresses challenges such as bureaucratic inertia and resource limitations, ensuring the public sector evolves to meet the demands of a digital-first future.

The umbrella of New Public Management encourages the convergence between sustainability and digitalization which aligns with the 2030 Agenda for Sustainable Development highlighting science, technology and innovation (STI) as a key action area for achieving SDG's (Cybercom,2021). Digital Transformational Leadership is a concept different from traditional transformational leadership. Traditional leadership under the traditional public administration paradigm approaches are insufficient for leading, guiding, and managing digital transformations because of the additional complexity of digital ecosystems. Instead, new understandings of leadership and a re-evaluation of leadership behaviors and skills are needed especially in the public sector (Mirhosseini et al., 2020). The advent of digitalization has given rise to new leadership paradigms, such as e-leadership and digital leadership, but these strategies typically focus on the use of digital assets and a digital workforce (Araujo et al., 2021; Torre & Sarti, 2020); Torre & Sarti, 2020). Research such as (Klus, & Müller, 2020; Ready, Cohen, Kiron, & Pring, 2020) evaluating digital transitions and leadership points to an increasing demand for soft skills and attitudes, in combination with digital intelligence (Boughzala et al., 2020). Every policy advocacy in public sector including areas of public health, education, transportation, and other areas, is experiencing digitalization, which is described as the greatest impact of Industry 4.0, the last industrial revolution, and information technologies that have developed concurrently with Industry 4.0 (Mihardjo et al., 2019). Public sector organizations are one of the areas that digital transformation is affecting. As a general direction of "Digital transformation in businesses" is referring to the synchronization of business processes with digital technologies created by organizations, so public sector organizations under this new technology must use new organizational structures,

management techniques, and business processes because of digital transformation (Benitez et al., 2022).

A digital transformation encompasses a series of intentional shifts leveraging state-of-the-art technologies (Bresciani et al., 2021). Public sector organizations in that direction will be transitioning towards the use of mobile technologies cloud, and big data analytics, and mobile technologies to distribute their offerings through social media networks. Moreover, it offers a chance to adapt organizational aspects, procedures, and cultures to better respond to emerging trends (Bresciani et al., 2021).

The advancement of technological innovation in today's world is central to digital transformation in public sector organizations where the recipient citizen of the service is aligned with users' perspectives in private sector ones (Nasiri et al., 2020). This process involves First, redefining and reassessing organizational boundaries; Second, encouraging community feedback and reducing proprietary barriers; and third, restructuring product and organizational identities (Parmentier & Mangematin, 2013). According to (Del Giudice et al., 2021) Digital transformation holds the potential to profoundly reshape institutions, impacting both organizations and fields. It encompasses a blend of digital innovations and technologies, giving rise to new players, frameworks, behaviors, communities, structures, ideas, or values that transform current fields, industries, and ecosystems, or even recast accepted standards considering what has been mentioned by Scuotto et al., (2021). Furthermore, these changes extend to the employment experiences of both employees and leaders, and they reshape organizational culture. According to (Tangi et al., 2020) Public organizations are increasingly recognizing the imperative to transform their operations to harness the benefits of digitalization. To Achieve digital transformation in the public sector necessitates novel leadership approaches to stakeholder engagement, innovative techniques for providing services, as well as the development of new connections. Focusing on the system as a whole and not on self-reflecting leadership patterns is crucial for the phase of transformation where Eco- leadership prevails to ensure smooth transition towards digitalization. The process to adopt change in this context depends on co-creating structures, open communication conversations, enhance engagement and participation and implementing innovation for hyperconnectivity and machine learning (Stokes, 2020). Digital leadership (DL) is crucial to achieving administrative efficiency stemming from the paradigm shifts in the digital economy studies towards digital sustainability defined by George et al. (2020, 36) as "the organizational activities that seek to advance the

sustainable development goals through creative deployment of technologies that create, use, transmit, or source electronic data”.

Leadership/Leader Exchange Theory as a base for motivations strategies towards DL

According to LMX theory, leaders handle each subordinate uniquely (Hassan et al., 2013; Jensen & Luthans, 2006). cultivates connections in the subordinate-dyad leadership paradigm that is outlined in three potential stages of life cycle models: (1) In the initial phase of the relationship, where leaders and subordinates assess each other's intentions and attitudes toward resources as well as the possible resources that may be needed and the development of a shared role expectation. Some partnerships unfortunately have never passed this initial phase in several public sector organizations. (2) when the initial phase is accomplished proceeding to the second phase guarantees mutual trust, loyalty, and respect and exchange agreements are cleaned up. (3) Some exchange partnerships advance to the mature third stage, where self-made exchanges become a mutual dedication to the work's goal. Situational leadership theory intervenes here to assess the ability and willingness to pass through different stages of development where on one hand guaranteed ability and unwillingness to change, entail the use of a directive style of transactional leadership as task-oriented initiatives, and inability and willingness on the other hand require more of a transformative coaching and supportive leading patterns towards a new phase of administering Digital Leadership (Hughes, 2022). The universal use of the theory in both public and private sector organizations pave the way for the new motivation strategies under the new institutional approach theory which is based on innovation in building institutions capable of functioning by connecting diversity of partners leading to guarantee innovative technology usages (Selim,2006).

Employees Retain (ER)

Employee retention depends on employee satisfaction with their work and the people they work for (FMI, 2013). The goal of employee retention is to motivate staff members to work for the company for as long as possible according to Lahkar & Baruah, (2013). Recruitment and onboarding procedures are part of employee retention as they encourage commitment from new recruits. Affective commitment "represents an emotional bond between an employee and his or her organization," and people who have high levels of it are more likely to

be kept on staff. Affective commitment in an employee is impacted by both the business and the individual's shared aims and beliefs as well as by personal fulfilment resulting from needs met and satisfying work experiences based on Chew et al., (2005). Scholarly research has demonstrated a favorable relationship between an organization's effectiveness and its degree of commitment which is sometimes lacking in several public sector entities due to job insecurity and results in higher employee attrition (Fatima, 2011).

Job Satisfaction (JS)

From a global perspective, job satisfaction can be defined as the degree to which an employee's feelings and emotions influence their work experience (Price, 2001) or as an individual assessment of how well the work fulfils personal expectations and needs (McKenna, 2020) Job satisfaction can be defined as a favorable emotional state that arises from a critical assessment of one's work experience. When one's expectations are not fulfilled, job discontent results. According to Locke & Latham (2006), job satisfaction is a happy emotional state or positive emotion derived from a job assessment or a person's work experience. This definition encompasses cognitive, affective, and evaluative behavioral attitudes that are crucial in defining the development of Organizational Behavior studies in our century. (Statt, 2004), also defines Job Satisfaction from the degree to which an employee is satisfied with the benefits they receive from their work, particularly in terms of intrinsic motivation.

Job satisfaction is one of the most important requirements for retaining staff especially in public sector organizations (Andrejić et al., 2022) When workers believe their work is worthwhile and significant, turnover is less likely to occur, and more engagement happens. Job satisfaction aligns with employees 'motivation when designing job characteristics model and matching its components with the Person-job fit theory in the public sector organizations (Robbins, 2024). Numerous factors such as working hours, conditions, pay scale, pay, autonomy, work design, task identity, skill variety, significance, feedback, promotions, demography, HR development, leadership style, and stress level have an impact on job satisfaction from this perspective. Therefore, managers are becoming more aware of the importance of job satisfaction in assessing employees' motivation (Ko et al., 2021; Ližbetinová et al., 2021), provided examples of motivational variables, such as financial, occupational, social, relationship, and career factors. These indicators play a role in the Psychological Contract agreement between employers and employees in public sector organizations

especially in the transitional change towards digitalization (Rousseau, 2013).

Under the umbrella of new Public Management and with all the challenges faced by public sector organizations, job satisfaction is a tool describing prospects of how people feel and act about their jobs where good and positive attitudes toward one's work are signs of job satisfaction. On the other hand, unfavorable and negative views regarding one's employment are signs of job discontent (Armstrong, 2006). Work satisfaction is the assortment of thoughts and emotions that people have regarding their present employment. Extreme levels of job satisfaction and discontent can be found in people. In addition to opinions regarding employment. According to (George & Jones, 2008), people can also have attitudes toward many aspects of their occupations, including the type of work they do, their coworkers, superiors, or subordinates, and their remuneration.

Work satisfaction is a broad and nuanced term that signifies different things to different individuals. Motivation and job satisfaction are typically associated; however, the exact nature of this relationship remains unclear. However, motivation and satisfaction were not the same. Job satisfaction is an attitude or interior condition as it might be linked to a subjective sense of achievement, for instance, it might be linked to a subjective sense of achievement, whether quantitative or qualitative (Mullins, 2005). Cranny et. (1992) defined job satisfaction as a widespread manifestation of a cheerful outlook on work. According to them, an individual who is highly content with their work usually has a positive attitude, and an individual who is not satisfied with their work typically has a negative view. These mindsets are crucial aspects of the profession, much like actual labour, compensation, opportunities for advancement, supervision, and relationships with coworkers. Paul and Phua (2011) define job satisfaction as the extent to which results fulfil or surpass expectations. Therefore, according to Cropanzano (2005), employee satisfaction depends on the exchange theory and goes parallel with the amount of trust and credibility embedded by the leadership process and transcended to employees to ensure that digitalization is not a threat to their tenure. Therefore, transparent communication is needed to create a base of organizational support that works with an agile plan of transformation to ensure a smooth transition towards change (Kurtessis et al, 2015). In this conceptual framework, only an exponential leader is the one who works on meeting expectations of employees in different situations by using different hats in challenging phases in the life cycle of organizations. To lead a digital Transformation approach is not an isolated silo but an exploratory

process that enables different employees to experience different perspectives to generate creative ideas towards implementing change (Kivunja, 2015).

Deploying change in that sense relies on innovation strategies by the administrative reform level in public sector organizations, which includes the changes advocated in the process of all the areas of the administration in the organization regarding the rules, procedures and policies needed for such reforms. It also tackles the change in the culture of the organization to help in the adjustment and implementation of the innovation plan. (Jimnez and Sanz, 2008).

The Relationship between Digital Transformational Leadership, Job Satisfaction and employee retention reflecting on the study hypotheses:

Many studies have tested the relationship between DTL and JS, including those by Novitasari, et al. (2020). Digital transformational leadership has a favorable and significant impact on job satisfaction, according to a different study by Hutagalung et al. (2020), which is corroborated by Hyun et al. (2021). Further research, like that conducted by Cahyono et al. (2020), supports the idea that job satisfaction is positively and significantly impacted by Digital Transformational Leadership. However, with many searchings of the literature, we found that there is no direct relationship between DTL and Employee Retention (ER) related to our sector. Therefore, the study considers the following hypotheses:

H1: Digital Transformational Leadership (DTL) and Job Satisfaction (JS) have a significant positive relationship.

H2: Digital Transformational Leadership (DTL) and Employee Retention (ER) have a significantly negative relationship.

H3: Job satisfaction and employee retention have a significant positive relationship.

The Relationships between Job Satisfaction and Employee Retention

The positive and negative emotions that employees experience in their jobs is combined to form job satisfaction. Job satisfaction reflects the degree to which expectations align with actual rewards. A person's behaviour at work is related to how satisfied they are with their job (Davis, 1985). Additionally, job satisfaction is a desirable quality for workers and a crucial component of employee retention; nevertheless, it can only be attained by ensuring the physical and psychological comfort of employees. The inflationary tendencies of the market economy make

it harder to find jobs. Employee retention is becoming increasingly challenging as the talent pool becomes increasingly saturated. According to (Al-Kandari et al.(2009), a competent employer should be able to draw in and maintain their talent.

H4: Job Satisfaction (JS) mediates the relationship between Digital Transformational Leadership (DTL) and Employee Retention (ER) relationship.

Mediating Role of Job Satisfaction between Digital Transformational Leadership and Employee Retention Relationships

In an organizational context, job satisfaction encompasses the emotional response of individuals towards their roles and responsibilities, which can yield either positive or negative impacts. Ndulue and Ekechukwu (2016) characterize job satisfaction as the emotional reaction of employees to their tasks within a charged environment. It reflects the alignment or disjunction between employees' expectations and the reality of their experiences within the organization. Drawing from Maslow's hierarchy of needs, which delineates human needs into distinct categories, we identify several key components:

First, Physiological Needs: These pertain to fundamental requirements such as thirst, hunger, shelter, and sleep necessities for survival. Second, Security Needs: This category involves the need for safety, both physical and psychological, providing a sense of protection and stability. Third, Social Needs: Social needs revolve around the desire for acceptance within one's environment, the need for love and companionship, and the pursuit of friendships. Fourth, Esteem Needs: These encompass the desire for recognition, achievement in one's work, respect from others, and a sense of self-worth. Fifth, Self-Actualization: At the apex of the hierarchy lies self-actualization, representing the realization of one's potential and the fulfilment of personal aspirations, fully utilizing one's unique abilities. In summary, job satisfaction embodies the intricate interplay between individuals' emotional states and their fulfilment of various hierarchical needs within the organizational context, as outlined by Maslow's theory. Therefore, Job Satisfaction is sectional for DTL to keep employees remaining in the organisation.

Long et al. (2014) elucidate the correlation between the transformational leadership approach and job satisfaction, and job satisfaction and retention in the organisation. Effective leadership, characterized by transformational qualities, plays a pivotal role in fostering high levels of job satisfaction among employees. This entails

leaders offering support, creating opportunities, extending assistance, and providing benefits geared towards the welfare of their staff. Muhammad et al. (2016) and Kenny (2019) further delve into the association between transformational leadership and job satisfaction, highlighting both partial and simultaneous relationships. Their study underscores that individualized attention and intellectual stimulation, key facets of transformational leadership, exert positive influences on employee satisfaction levels. These findings underscore the significance of leadership style in shaping the overall satisfaction levels within the workforce.

According to most studies, transformational leadership is a reliable indicator of both employee performance and retention, as well as job happiness (Braun et al., 2013). Similarly, several academics have claimed that, in the age of digital transformation, transformational leadership has a major positive impact on worker.

A study conducted by Ly (2023) determined that digital transformational leadership directly impacts both job performance and job satisfaction. Additionally, job satisfaction directly influences job performance and affective commitment. Moreover, the study revealed that job satisfaction serves as an intermediary in the connection between digital transformational leadership and affective commitment, as well as between digital transformational leadership and job performance and retention is one of the most important concepts in performance. Leadership yields mutual benefits for both employees and organizations, particularly, Transformational Leadership (TL) influences Employee Retention (ER) Khan et al. (2012). Moreover, Transformational Leadership influences employees' decisions to remain with an organization according to their satisfaction.

Conceptual framework: (Figure 1)

Figure 1 shows that the main variables of this study are the independent variable digital transformation Leadership, the dependent variable employee retention and the mediation variable Job satisfaction.

Data Collection and Methodology**Sample:**

The main target sample of this study was employees working in HR from 15 companies who produced military products directors in the Military Production Ministry. This employee poll was identified by the CEO of those companies, especially those who were selected by the ministry and passed different assessments to be eligible to take training related to technology. The Ministry invested by sending them to different training courses nationally and internationally. The population is 3000 employees. A total of 350 employees were included in this study according to (Sekaran & Bougie, 2016).

Instrument

Quantitative approach: The questionnaire included four parts (shown in Appendix 1): First, the respondents' demographic types. The second was the *Digital Leadership Scale* developed by Kaygin et al. (2022), which includes six questions. The third part was *Job Satisfaction*, which includes 9 statements developed by Spector (1985). The fourth section covers *Employee Retention* and comprises 11 statements, adapted from El Dakhla (2013). The questionnaire was applied, ranging from 1 (strongly disagree) to 5 (agree) on a 5-point Likert scale. All participants were informed that their participation in the questionnaire was voluntary and that their identities would be protected before they started. The four-part questionnaire was presented in a controlled order using the Latin square process, which also helped reduce common method bias.

Qualitative approach: A focus group discussion was conducted to confirm the statistical results of the questionnaire. Three groups were selected from the respondents, each group with 15 members, the statistical result was presented to them, and they agreed and confirmed the result.

Procedure

Participants were approached at their offices and asked to complete the questionnaire. They were assured that their participation was voluntary, and their anonymity was guaranteed. To control the order of presenting the four-part questionnaire and minimizing common method bias, the Latin square procedure was used.

Results

Table 1 presents the demographic profile of respondents from the military production ministry. The table includes the demographic characteristics; gender, employment rank such as management or directors and employees in years for the respondents of this study. A total number of 200 participants responded to the survey including 125 (62 %) males, and 75 (38%) females. Thus, the majority participation from male participants represents the military production ministry companies to be a male-dominated sector. Similarly, these participants represent 1 age group including 25- 45 years. Therefore, the majority of participants are represented by the young and middle age groups represented. Furthermore, based on education, all the sample are university graduates, the majority received MSc or/and PhD degrees in their specialization, but this is not included in the study.

Moreover, the survey indicates the participation of respondents from the Ministry. Therefore, many of these participants belong to the population of Ministry employees. Finally, Table 1 presents two categories related to Gender and management rank.

Table 1 *Demographic Summary*

Characteristics	N	%
Gender	200	100%
Female	75	38%
Male	125	62%
Management level		
Directors	25	12%
Employees	175	88%

Reliability

As shown in Table 2, Cronbach's alpha is presented to measure reliability. The reliability of the scales was tested by calculating their Cronbach's Alpha Coefficients and the scales were found to be quite reliable and valid. The adaptive values of the scales are presented in Table (2) Based on the data provided in the table, the reliability coefficients of Cronbach's alpha for the dependent, independent, and mediator variables exceed the acceptable threshold of 0.70 (Hair et al., 2016).

Table 2: *Testing all variables Reliability*

Scale	Digital Transformational Leadership	Job Satisfaction	Employee retention
Alpha	.655	.919	.801

The statistical results in Table 2 show that there is a correlation A panel of five academics, and five experts reviewed the four-part questionnaire, analyzing its content and determining whether it was appropriate given Egyptian cultural norms. Each academic and expert's response suggested that the surveys were valid and suitable for the target culture.

Table 3

The Average, Standard Deviation and Correlation Values (n= 350)

	<i>M</i>	<i>SD</i>	1	2	3
1. Digital transformation leadership	75.91	18.74	1		
2. Job Satisfaction	24.35	6.93	.83**	1	
3. Employee Retention	32.56	9.58	-.45*	.81**	1

Regression Analysis

In testing H4, assuming that job satisfaction mediates the relationship between Digital transformation Leadership and Employee retention.

Table 4: Regression analysis:

<i>Model</i>	Model Summary			
	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>
1	.137 ^a	.075	.075	8.34549
2	.446 ^b	.291	.284	6.65411

a. Predictors: (Constant), DTI

b. Predictors: (Constant), DTL, ER.

Table (4) ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1406.120	1	1306.145	18.617	.000b
	Residual	18076.365	256	70.923		
	Total	19290.500	367			
2	Regression	3510.360	2	1845.180	29.411	.000c
	Residual	17960.142	263	70.543		
	Total	18290.500	367			
a. Dependent Variable: Job Satisfaction						
b. Predictors: (Constant), DTL						
c. Predictors: (Constant), DTL, ER						

As evidenced by the preceding results and tables, the regression coefficient for DTL significantly doubled with the inclusion of Job Satisfaction. This suggests complete mediation of the relationship between responsible and sustainable leadership. This outcome was further validated through hierarchical multiple regression analysis, where both the R and R-squared values increased, as shown in Table (4). Consequently, the H4 were accepted.

Table (5) Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	79.655	3.360		25.863	.000
	Digital Transformational Leadership	.254	.080	.234	5.165	.000
2	(Constant)	76.413	6.182		25.872	.000
	Employee retention	-.089	.080	-.088	-1.130	.275
	Job Satisfaction	.182	.015	.567	8.892	.000
a. Dependent Variable: Job Satisfaction						

The findings from the multiple regression analysis indicate a significant interaction between job satisfaction and DTL, impacting employee retention. This supports hypothesis four and confirmed.

Discussion of findings

These findings contribute to the understanding of how leadership in digital transformation indirectly influences employee retention through Job satisfaction. In recent years, there has been a surge in Human Resources studies linking to digitalization and new applications, underscoring the scientific community's profound interest in individuals' role within organizations, particularly in today's digital business landscape. If anything, HR in the digital age is characterized by its ability to transform data into valuable insights (Bendak, Sikhli, & Abdel-Razek, 2020). Hiring new employees represents just one of the many direct expenses associated with employee turnover. However, there are also unintended consequences, such as decreased productivity, a learning curve, or damage to the employer's reputation.

This study's findings indicate an established relationship between DLT and job satisfaction, as well as a significant relationship between job satisfaction and ER. This relationship, supported by various studies mentioned in the literature review section above, corroborates Hypothesis 4. The study was conducted on a sample of companies owned by the public sector, referred to as "government-owned corporations." Therefore, the employees within these companies are public sector employees and are subject to the employment laws applicable to this sector.

Given the nature of employment in the public sector, employees may feel a sense of insecurity. They may seize any opportunity to take unpaid leave and transition to the private sector for potentially higher wages and rewards or opt for early retirement and seek employment in private sector companies, particularly if they possess digital skills. However, those who experience satisfaction are more likely to remain. Satisfaction often stems from a sense of security within the public sector, as well as the perception that working for the government offers advantages over working for private individuals. The impact of DTL has had a notably positive effect on the younger generation of employees, particularly those aged between 30 and 45, which comprised most of the sample (300 individuals), as reflected in this study's sample composition. Moreover, due to the increased reliance on digital tools in response to the COVID-19 pandemic and their integration into workplace practices, a key component of the Egyptian government's

2030 strategies adopted by these companies, it is pertinent to explore how digital transformation influences employee satisfaction and retention within these workplaces.

This study highlights the advantageous relationship between employee retention, satisfaction, and digital transformation. This transformation reshapes how firms select and retain new hires, as well as how they cultivate and retain talent, aligning with the strategic goals outlined in the Egyptian government's 2030 agenda.

The results of this study confirm the significant impact of DTL on ER when the role of JS mediates the relationship. In essence, Big Data-driven digital work platforms enhance the performance of HR departments in managing employees (Larkin & Hystad, 2017). In the digital era, the utilization of such platforms leads to a 9% increase in performance and 7% decrease in costs, thereby improving the balance between supply and demand (Lund, Manyika, & Robinson, 2016). This enhances businesses' capacity to manage personnel and empowers workers to advance in their careers with greater engagement, satisfaction, and productivity (Larkin & Hystad, 2017). Consequently, employees are more likely to remain in their organization due to heightened satisfaction, thereby supporting H2 and H3 while rejecting H1. Job satisfaction is crucial under digital transformational leadership to retain employees within the organization, as evidenced by (Biaison, 2020)

Based on recommendations from the study conducted by (Kaygin, Oktayson, & Topcuglu, 2022), further research with diverse samples is necessary to validate the findings of the current scale-adaptation study. This study was conducted for the benefit of the participating companies in the study.

The results of this study suggest that the relationship between DTL and ER is very weak unless job satisfaction acts as a mediator, thereby this relationship becomes significantly positive.

These findings are corroborated by other researchers such as (Krishna, Upadhyay, Ansari, & Veeralakshmi, 2022), (Jos'e Manuel a, Ignacio Danvila-, & Mariano M'endez-, 2023), and (Bo Sui & Liuyang, 2023). Hence, based on the findings of this study and those of other researchers, it can be inferred that contributes to organizational success. Moreover, they tend to speak positively about their organization when they are highly engaged, thus bolstering the positive employer brand established by employees. Consequently, they are inclined to stay with the organization, leading to reduced turnover and increased effort.

Conclusion

In conclusion, the main objective of this study was to explore the relationship between **Digital Transformational Leadership** (DTL) and **Employee Retention** (ER), while also investigating the role of **Job Satisfaction** (JS) as a mediating factor in this relationship within the **Egyptian public sector industry** and its employees. The result demonstrated that the mediation role is accepted, and the hypotheses are supported.

The hypotheses were tested using a sample of 350 HR managers and staff members, drawn from previous studies and examined. The main findings have been discussed above based on the statistical results and in the discussion section. This study revealed the full mediating effect of digital transformational leadership on employee retention. The results indicated that digital transformational leadership significantly and positively influences employee retention, as demonstrated in the statistical section. This outcome goes parallel with the organization's alignment with the government's 2030 strategy, which emphasizes technology empowerment and talent retention. Digital transformational leadership primarily focuses on innovation in technology and performance-based leadership in digital transformation (Fatima & Masood, 2023). The study's findings suggest a significant positive relationship between digital transformation leadership and employee retention, with job satisfaction acting as a mediator in this relationship.

The originality of this study responds to the necessity of investigating the effects of Digital Transformational Leadership (DTL) and Employee Retention (ER). Additionally, it explores the role of Job Satisfaction (JS) as a mediating factor within this association. Drawing upon theories and perspectives on organizational learning, this study endeavors to develop and validate a framework that underscores the significance of Job Satisfaction (JS) in enhancing employee performance within the context of Digital Transformational Leadership (DTL) and Employee Retention (ER) in the workplace.

Implications

Practical implications:

As a result of the ministry's orientation, all the staff members are required to attend the digital training and pass the assessment. Failure to do so renders them ineligible for promotion or unable to apply for new positions, as experience in technology is now a prerequisite. These findings are supported by different research and previous studies. (Araujo, De Priadana, Paramarta, & Sunarsi, 2021). The study also addresses other aspects, such as linking digital transformational

leadership with job satisfaction and employee retention in this sector, as outlined in the introduction.

To foster a more interactive and welcoming workplace, digital transformational leaders can utilize various technology solutions, including employee feedback systems, collaborative workspaces, and virtual meeting platforms. Leaders embedding digital technologies may foster a culture of empowerment, transparency, and continuous improvement – all essential elements in enhancing job satisfaction and employee retention. For example, managers can utilize digital platforms to recognize staff achievements, provide regular performance evaluations, and involve staff members in decision-making processes.

Digital transformational leaders can also leverage data analytics to comprehend the preferences, motivations, and concerns of their workforce. This insight will enable them to tailor programs and strategies to meet the needs of their employees, thereby enhancing employee satisfaction and retention, executives can utilize this data-driven approach to pinpoint problem areas, ascertain potential causes of dissatisfaction, and implement targeted interventions. Overall, adopting digital transformational leadership practices can assist organizations in fostering a more agile, adaptive, and employee-centric work environment, ultimately resulting in increased levels of job satisfaction and improved employee retention.

Practical recommendations

By embracing the following recommendations, organizations can harness the power of digital transformational leadership in the ministry of military production to create an inclusive and supportive work environment that enhances job satisfaction and fosters employee retention.

First, invest in Developing Digital Skills: Offer training programs and opportunities for employees to enhance their digital literacy and proficiency. Provide resources to help them effectively utilize digital tools and technologies in their roles. Second, encourage Flexibility and Work-Life Balance: Embrace flexible work arrangements and remote work options made possible by digital innovations. Empower employees to manage their work schedules and priorities, fostering a healthier balance between their professional and personal lives.

Third, promote Collaboration and Communication: Cultivate a collaborative work culture by utilizing digital platforms for team collaboration, knowledge sharing, and communication. Foster open channels of communication and facilitate virtual meetings to ensure all

team members feel connected and engaged. Fourth, acknowledge and Reward Contributions: Implement digital systems for recognizing and rewarding employee achievements. Utilize digital platforms to publicly appreciate successes, mark milestones, and provide timely feedback, nurturing a culture of appreciation and recognition. Fifth, facilitate Professional Development Opportunities: Provide access to online learning resources, virtual workshops, and skill-building programs to support employees' professional growth. Encourage ongoing learning and empower employees to drive their own career development. Six, embrace Transparent Leadership: Foster transparency in leadership by sharing organizational goals, strategies, and performance metrics with employees through digital channels. Keep employees informed and engaged in decision-making processes, fostering trust and accountability. Seven, act on Employee Feedback: Implement digital tools for gathering and analysing employee feedback on job satisfaction, work environment, and organizational culture. Use this data to pinpoint areas for improvement and implement targeted initiatives to address employee concerns. Eight, support Mental Health and Well-being: Promote employee well-being by offering digital resources and support services for managing stress, maintaining work-life balance, and addressing mental health issues. Encourage open discussions about mental health and provide access to virtual counselling and support networks.

Theoretical implications

This study provides a clear plan and proposal for future research on understanding the impact of digital transformational leadership on employee issues, especially digital transformation, which is one of the demands of the current business. In addition, a dimension needs to be added to talent, employee retention needs to be added related to technology, and another dimension related to technology needs to be added to the theories. Applying longitudinal research will help in the talent dimensions and digital dimensions and it will add to theoretical knowledge. In addition, more investigation of the following theoretical perspectives underscores the intricate relationship between digital transformation, job satisfaction, and employee retention.

Social Exchange Theory (Cropanzano, 2005) posits that individuals engage in relationships and interactions based on perceived benefits and costs. In the realm of digital transformation, employees may view the adoption of digital tools and technologies as advantageous if they

enhance job satisfaction through streamlined processes, increased efficiency, and opportunities for skill development. Conversely, if digital transformation introduces heightened job demands, complexity, or feelings of job insecurity, it could diminish job satisfaction and prompt employees to seek alternative employment opportunities.

The Job Characteristics Model (Robbins, 2024) asserts that job satisfaction hinges on five

core characteristics: skill variety, task identity, task significance, autonomy, and feedback. Digital transformation can influence these characteristics in diverse ways. For instance, the introduction of digital tools might augment task variety and autonomy by enabling employees to undertake a broader range of tasks and make independent decisions. However, if the implementation of digital technologies results in job fragmentation or undermines task identity and significance, it could adversely impact job satisfaction.

Psychological Contract (Rousseau, 2013), theory refers to the implicit expectations and obligations between employees and employers. Digital transformation has the potential to disrupt traditional employment contracts by reshaping job roles, responsibilities, and expectations. Employees may perceive a breach of the psychological contract if digital transformation escalates job demands without commensurate rewards or recognition. Such a perceived breach may diminish job satisfaction and heighten turnover intentions.

Expectancy Theory (Robbins, 2024) posits that individuals are motivated to exert effort when they anticipate desired outcomes. In the context of digital transformation, employees may be inclined to embrace new technologies and processes if they believe doing so will enhance their job satisfaction by improving performance, fostering recognition, or offering advancement opportunities. However, if employees perceive insufficient support, resources, or training to effectively utilize digital tools, they may disengage and experience reduced job satisfaction.

Organizational Support Theory (Kurtessis et al, 2015) highlights the pivotal role of perceived organizational support (POS) in shaping employee attitudes and behaviors. Digital transformation initiatives accompanied by transparent communication, comprehensive training programs, and robust support mechanisms can bolster employees' perceptions of organizational support and facilitate their adaptation to change. Conversely, a lack of support or perceived neglect during the digital transformation process may engender feelings of alienation, job dissatisfaction, and ultimately, turnover.

Study Limitations:

This study acknowledges several limitations that warrant recognition. Firstly, the scope of trigger events considered was confined to those already documented in existing literature and responses, potentially neglecting other noteworthy triggers. Furthermore, the participants predominantly represented a specific geographic region, specifically individuals from public sector companies in Cairo, Egypt. This may restrict the generalizability of the study's findings. Additionally, depending on participants' memory to recall trigger events introduces the potential for inaccurate recollection or memory bias. Furthermore, the instrument utilized to evaluate trigger events did not encompass participant demographics or psychographics, factors that might have influenced the reported trigger events. Also, this research was restricted to businesses involved in the manufacturing of military hardware. The production of armed forces and civil society applications is supplied along with instruments such as automobiles, vehicle batteries, cooking categories, and casting. These businesses rely heavily on technology to operate, stay current with market trends, and manage their businesses. Employees with strong IT skills are therefore crucial to these businesses, particularly managers, executives, and organizational specialists, who must quickly implement innovative techniques throughout the organization to build agile capabilities. Equipping their task force and honing their digital leadership abilities following digital information management is a crucial component of these organizations' 2030 Egyptian strategy. In addition, a primary limitation of the cross-sectional study design is that, because exposure and outcome are assessed simultaneously, there is generally no evidence of a temporal relationship between them. Without longitudinal data, it may not be possible to establish a true cause-and-effect relationship.

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Appendix (1)

n.	Items	1	2	3	4	5
DTL						
1	I think using digital tools is fun					
2	I would say I am a digital expert					
3	When it comes to digital Knowledge, always up to date					
4	I am driving the digital transformation forward proactively in our unit/company					
5	I can make others enthusiastic about the digital transformation					
6	I have a clear idea of the structures and processes that are needed for the digital transformation					
Job satisfaction						
7	I am happy with my payment					
8	I am happy with my promotion system					
9	I am happy with my supervisor/ manager					
10	I am happy with my benefits					
11	I am happy with my contingent reward					
12	I am happy with the operation procedures					
13	I am happy with my co-workers					
14	I am happy with the nature of my work					
15	I am happy with the community					
ER						

16	The salaries and benefits at the company are competitive					
17	The salaries and benefits at the company are fair and consistent at Ministry					
18	The salaries and benefits at the company guarantee employee loyalty					
19	Company actively creates opportunities for employees to participate in challenging assignments					
20	The work at company matches the employee's abilities and skills					
21	The employment conditions at the company satisfy work-life balance					
22	company avoids to over the working load and working stress more than the employee's ability					
23	There are flexible working hours, at company					
24	Company allows the employee to work from home					
25	The central personnel at the Ministry companies are satisfied with their work.					
26	There is an engagement between workers and their jobs at the company					