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Measuring the Impact of Digital Talent Management on Human Capital Development in Egyptian Telecommunication Companies

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Abstract

This research aims to examine the impact of digital talent management on the development of human capital within telecommunication companies operating in Greater Cairo during the period 2024-2025. The study population included administrative leaders at top, middle, and executive levels across four major companies: Vodafone, Orange, Telecom Egypt, and Etisalat Misr. A stratified random sampling method was employed, resulting in 320 valid responses. The research adopted a descriptive-analytical approach, with a structured questionnaire as the primary data collection instrument.

Results indicated that digital talent management significantly contributes to the development of human capital, evidenced by a regression coefficient of □ = 0.455, R^2 = 0.207, and p < 0.01. Specifically, the findings highlighted that digital talent management positively influences the enhancement of digital and technical skills, knowledge sharing practices, and the innovative capacity of employees.

Based on these results, the study recommends that telecommunication companies prioritize strengthening their digital talent management strategies. This includes focusing on attracting highly skilled professionals, developing their competencies, and retaining top talent, all of which are critical to fostering sustainable organizational growth, enhancing competitiveness in the market, and ensuring the effective utilization of human capital in line with the demands of the evolving digital environment.

Keywords: Digital Talent Management, Human Capital, Telecommunication Companies, Cairo.

Introduction

In recent years, rapid globalization, along with disruptive technological innovations, has brought about radical transformations in business environments

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across various sectors. Emerging technologies, such as Artificial Intelligence (AI), big data analytics, cloud computing, and 5G Communication Networks, have redefined organizational strategies and shaped the nature of work (Guenole, Ferrar, & Feinzig, 2022). These global and technological shifts have led to the emergence of modern concepts and systems in human resource management, with an increasing focus on developing and enhancing human capital to meet the demands of the growing Digital Economy (Al Mehrzi & Singh, 2020). Consequently, the traditional view of employees as operational resources has evolved into seeing them as strategic assets, with their knowledge, creativity, and adaptability being essential to maintaining competitive advantage in dynamic markets (Del Giudice et al., 2021). Capital (HC), which includes the skills, competencies, and innovative potential of the workforce within an organization, plays a crucial role in enabling organizations to respond to technological changes, competitive pressures, and rapidly changing market needs (Bamel et al., 2023). Effective human capital development through continuous learning, skill requalification, and capacity building is imperative for organizations aiming to achieve innovation, agility, and sustainable performance (Maimon et al., 2020). In today's knowledge-based economy, effective human capital development not only enhances operational capabilities but also strengthens organizational resilience, enabling companies to adapt and thrive in uncertainty (Bashir & Farooq, 2022).

In this context, Digital Talent Management (DTM) has emerged as a strategic approach to human resource management that integrates advanced digital tools into the processes of attracting, developing, engaging, and retaining talent (Bondarouk et al., 2022). By leveraging AI-supported recruitment, cloud-based Learning Management Systems (LMS), and predictive analytics, DTM enables organizations to tailor employee development, improve workforce planning, and enhance decision-making based on real-time data (Parry et al., 2019). Thus, it directly contributes to building and sustaining human capital in alignment with organizational goals.

The relationship between digital talent management and human capital development is particularly significant in sectors characterized by rapid technological change-such as telecommunications-where innovation, agility, and customer focus are critical for survival. In Egypt, telecommunication companies are among the most dynamic sectors in the national economy, serving as both enablers of infrastructure and drivers of digital innovation. The adoption of advanced technologies, such as 5G and the Internet of Things (IoT), and cloud services amplifies the strategic importance of effectively managing and developing talent in digital contexts. Therefore, this research seeks to measure the impact of digital talent management on human capital development in Egyptian telecommunication companies through a descriptive analytical field study. The results are expected to provide theoretical insights and practical recommendations for leveraging digital talent management as a strategic lever to enhance human capital in this sector.

Theoretical Framework and Previous Studies:

This section of the research addresses the various concepts of the research variables and includes a presentation of several previous studies directly related to these variables, as follows:

Digital Talent Management (DTM):

Bondar Ouk & Brewster (2016); Marler & Parry (2021) define Digital Talent Management (DTM) as the integration of human resource management practices with digital technologies-including AI, big data analytics, cloud computing, and social media platforms-to attract, develop, engage, and retain talent in a fast-evolving business environment. Unlike traditional talent management, DTM leverages data-driven insights and automation to deliver flexible, personalized, and scalable talent strategies aligned with digital transformation objectives.

In this research, based on previous studies (Sharma & Singh, 2022; Younas et al., 2023), DTM will be analyzed through the following dimensions, which directly align with the framework used to test the hypotheses of this research:

- **Digital Talent Attraction:** Utilizing AI-driven recruitment tools, online recruitment platforms, and employer branding to attract qualified candidates.
- **Digital Talent Development:** Leveraging e-learning systems, virtual training programs, and continuous digital skill development initiatives.
- **Digital Talent Retention:** Applying analytics, digital engagement platforms, and recognition systems to reduce employee turnover and maintain high-performing employees.

DTM enhances efficiency by automating repetitive HR tasks, supports data-driven decision-making through real-time analytics, improves employee experience through personalized HR services, and provides scalability to adapt to workforce changes. However, this management faces challenges such as data privacy risks, the need for digital skills among HR staff, and resistance to shifting from traditional HR practices (Collings et al., 2019).

Human Capital Development:

Human capital development is defined as the systematic process of enhancing employees' skills, knowledge, capabilities, innovative potential, engagement, and adaptability to improve individual productivity and overall organizational performance (Becker, 2020). In alignment with the research framework, human capital will be measured through five interconnected dimensions that collectively form the dependent variable and the basis for testing the research hypotheses:

- **Skills Development:** Enhancing technical, managerial, and personal competencies to meet evolving job requirements.

- **Knowledge Development:** Promoting the acquisition, creation, and dissemination of organizational knowledge.
- **Innovation Development:** Empowering employees to generate, adapt, and apply innovative ideas to improve work processes and outputs.
- **Employee Engagement and Retention:** Enhancing employees' emotional commitment, motivation, and proactive contributions to achieving organizational goals.
- **Employee Flexibility:** Enhancing employees' ability to quickly adapt their skills, behaviors, and methodologies in response to changing job requirements and external challenges.

From the above, it is clear that human capital development plays a pivotal role in improving organizational performance, maintaining competitive advantage, and ensuring long-term sustainability, especially in volatile work environments (Albrecht et al., 2015; Wright & McMahan, 2011). Organizations that invest in developing their workforce are better positioned for innovation, market responsiveness, and operational agility. However, this process faces numerous challenges, including skill gaps, resistance to change, resource limitations, and rapid technological shifts (Shuck et al., 2021). Addressing these challenges is essential for maximizing the impact of human capital development initiatives and achieving sustainable organizational success.

Review of Previous Studies - Critical Analysis

Several previous studies have investigated the role of digital talent management in developing human capital, efficiency, and innovation across various sectors. A critical synthesis of these studies highlights both convergences and gaps that justify the present research focus on Egyptian telecommunications companies.

- **Abdel Ghaffar et al. (2024)** examined the integration of digital talent management and big data analytics. They found that this integration positively impacted recruitment quality and employee retention. This aligns with the current research's focus on improving human capital outcomes through digital talent management. However, their study measured effects in a general organizational context and did not differentiate between specific human capital dimensions, which the present research addresses.
- **Chen et al. (2024)** evaluated digital talent management strategies in telecommunications, reporting enhancements in efficiency, effectiveness, and retention. While their findings support the notion that digital talent management improves performance outcomes, they did not explore detailed HR dimensions such as skill acquisition, innovation, or employee flexibility, which the current study examines.
- **Suleiman (2023)** explored the use of AI in talent attraction and development,

highlighting improvements in recruitment speed and job matching. The current research builds on this by linking digital talent management practices to multiple human capital development indicators rather than recruitment alone.

- **Al-Mansoori & Zhang (2023)** studied digital learning platforms in emerging telecom markets and observed accelerated skill acquisition and innovation through virtual teams. This provides theoretical support for the current study's inclusion of skill development and innovation as key dimensions.
- **Abdel Ghaffar et al. (2023)** found that digital talent management strategies accounted for a significant portion of variance in job and cognitive development levels. The current study extends this by assessing the relative impact of digital talent management across five distinct human capital dimensions, including employee engagement, retention, and flexibility.
- **Kaur & Singh (2022), Hassan (2022), Al-Najjar (2022), Mahmoud (2021), Smith & Brown (2021)** similarly confirm the positive impact of digital talent management, e-learning programs, and AI integration on employee performance, innovation, and organizational effectiveness. These studies collectively provide robust evidence that digital talent management is a strategic lever for human capital development. However, most research was conducted in scattered sectors or global contexts, lacking a focused assessment of telecommunications in Egypt.

Overall, while prior studies agree that digital talent management enhances human capital, **the gap lies in measuring its differential impact across multiple HR dimensions within Egyptian telecommunications firms**. The current research addresses this gap by providing a comprehensive, dimension-specific analysis, thus offering actionable insights for local HR strategy.

Table (1): Comparative Analysis of Previous Studies

Study	Objective	Key Findings	Agreement with Current Study	Gaps / Differences
Abdel Ghaffar et al. (2024)	Integration of digital talent management & big data	Improved recruitment quality and retention	Supports digital talent management as strategic lever	Did not examine multiple human capital dimensions
Chen et al. (2024)	Evaluate digital talent strategies in telecom	Increased efficiency, effectiveness, retention	Confirms positive impact of digital talent management	Did not explore detailed HR dimensions like flexibility
Suleiman (2023)	AI in talent attraction & development	Reduced hiring time, improved job matching	Supports recruitment and talent retention focus	Limited to recruitment; no multi-dimensional HR analysis
Al-Mansoori & Zhang (2023)	Digital learning platforms	Accelerated skill acquisition, enhanced innovation	Supports inclusion of skill development and innovation	Focused on emerging markets, not Egypt

Study	Objective	Key Findings	Agreement with Current Study	Gaps / Differences
Abdel Ghaffar et al. (2023)	Digital talent management strategies & human capital	Explained variance in job & cognitive development	Confirms link between digital talent management and human capital	Did not compare impact across multiple dimensions
Kaur & Singh (2022)	Big data analytics & digital talent management	Strong link between recruitment speed & human capital quality	Confirms importance of digital talent management	Context not Egypt-specific
Hassan (2022)	Digital transformation in HR	E-learning improves skills & efficiency	Supports skill development	No differentiation among HR dimensions
Al-Najjar (2022)	Digital educational platforms	Improved creativity & innovation	Supports innovation dimension	Context not local to Egypt
Mahmoud (2021)	Digital talent systems & innovation	AI reduces hiring time & improves suitability	Confirms impact on innovation	Limited scope; no multi-dimensional analysis
Smith & Brown (2021)	Digital HR transformation	Increased performance through development plans	Supports HR strategic impact	Not Egypt-specific

Research Problem and Questions

Background of the Problem

The telecommunications sector in Egypt is a fundamental pillar of the national economy, playing a vital role in driving digital transformation, enabling economic growth, and connecting businesses and individuals to global markets. According to the Ministry of Communications and Information Technology (MCIT, 2024), the sector contributed approximately 3.2% to Egypt's GDP and witnessed a remarkable surge in mobile and internet penetration rates, with mobile subscribers exceeding 102 million and internet penetration reaching 72%. The rapid expansion of advanced technologies, such as 5G networks, the Internet of Things (IoT), AI, and cloud computing, has intensified competition among telecommunications companies and increased the demand for skilled, adaptive workforces capable of meeting evolving market and customer requirements (ITU, 2023).

However, the sector faces numerous pressing challenges that hinder sustainable growth and operational efficiency. These challenges include high turnover rates of specialized technical employees, skill gaps in emerging digital competencies, and increasing pressure to innovate service delivery models while maintaining quality and cost efficiency (MCIT, 2024; World Bank, 2023). Furthermore, the rapid pace of technological change necessitates continuous requalification and development, while internal

structural inertia and traditional HR practices in some organizations impede agility and responsiveness to market shifts.

In this context, developing human capital emerges as a key enabling factor for maintaining competitiveness and achieving strategic objectives. Modern approaches to human resource management emphasize the need for advanced systems and frameworks that not only attract talent but also nurture, retain, and enhance it in alignment with digital transformation strategies (Wright & McMahan, 2019). Among these systems, digital talent management (DTM) has gained increasing recognition as an integrated approach that leverages digital tools and analytics to enhance talent acquisition, development, engagement, and retention (Marler & Parry, 2021). By integrating technology-driven practices into the talent lifecycle, DTM has the potential to address performance gaps, reduce employee turnover, and enhance workforce agility, ultimately contributing to the enhancement of organizational human capital.

Despite the growing global interest in digital talent management, field research on its application and impact in the Egyptian telecommunications sector remains limited. The absence of context-specific evidence hinders leaders in organizations within this sector in Egypt from understanding how to strategically deploy digital talent management to overcome sector challenges and improve human capital outcomes. Therefore, this research seeks to measure the impact of digital talent management on human capital development in Egyptian telecommunications companies through a descriptive analytical field study.

Exploratory Field Study:

Based on the previous analyses, the researcher conducted an exploratory field study aimed at deepening the understanding of the research problem and accurately framing it, in addition to achieving a comprehensive understanding of the study topic and the characteristics of the research population. A suitable sample of 45 individuals from various administrative levels in the Egyptian telecommunications companies under study was selected. During the field interviews, specialized questions directly related to the research variables were posed to assess participants' awareness of the dimensions of digital talent management and human capital development, as well as to understand the nature of the causal relationship between them. Upon completing the exploratory field study and collecting and analyzing data using appropriate statistical methods, the following key findings were reached:

- **Awareness of Digital Talent Management:** Interview results indicated that approximately 70% of participants had a good understanding of the concepts of digital talent management and its importance in enhancing performance efficiency. Slight differences were observed between top and middle management levels regarding the use of digital analytics tools and the application of modern strategies.

- **Awareness of Human Capital Development:** Data revealed that about 65% of participants recognized the importance of investing in skill and knowledge development as part of human resource strategies, emphasizing the need for comprehensive and continuous training programs to enhance digital competencies.
- **The Relationship between Digital Talent Management and Human Capital Development:** Preliminary analyses showed that about 75% of participants reported a positive impact of applying digital talent management practices on enhancing human capital within telecommunications companies.
- **Gaps and Challenges:** The study identified practical gaps in applying digital talent management strategies, with approximately 40% of participants indicating limited experience in advanced analytics and AI, highlighting the need to enhance digital capabilities and provide organizational and technical support to employees.
- **Future Orientation:** About 80% of participants expressed readiness to adopt innovative digital solutions, affirming the importance of aligning these solutions with human capital development goals and strategic growth objectives to achieve sustainable positive results.

The results of the exploratory field study indicate that although employees of Egyptian telecommunications companies demonstrate relatively high awareness of digital talent management and human capital development, there are clear gaps in practical application and advanced technologies. These results support the research problem, confirming the urgent need to enhance digital talent management strategies and effectively link them to human capital development programs to achieve optimal organizational performance. This underscores the importance of addressing and analyzing this topic in depth due to its direct impact on organizational efficiency and the competitiveness of telecommunications companies. A comprehensive analysis of this relationship can enable the formulation of practical recommendations to enhance digital HR strategies, guide investments in skill and competency development, and provide added value to the organization while contributing to achieving its strategic objectives.

Research Questions

Based on the above, the research problem can be identified in the following key question:

To what extent does digital talent management impact human capital development in the Egyptian telecommunications sector under study?

From this main question, the following sub-questions arise:

- What is the level of practice of digital talent management and its dimensions (digital talent attraction, digital talent development, retention) in the studied Egyptian telecommunications companies?

- What is the level of human capital development and its dimensions (skills development, knowledge development, innovation development, employee engagement and retention, employee flexibility) in these companies?
- What is the nature of the relationship between digital talent management and the dimensions of human capital development in the studied Egyptian telecommunications companies?

Research Goals

This research aims to achieve a set of objectives, as follows:

1- To study and analyze the current practices and maturity level of digital talent management (DTM) and the main dimensions of human capital development (HCD) relevant to Egyptian telecommunications companies.

2- To measure and test the type and degree of the relationship between digital talent management and human capital development in telecommunications companies in Egypt.

3- To identify the challenges and barriers facing the effective implementation of digital talent management in enhancing and developing human capital in telecommunications companies in Egypt.

4- To provide practical recommendations for leveraging digital talent management as a strategic enabling factor to enhance and develop human capital and maintain competitive advantage.

Research Significance:

This research derives its significance from several theoretical and practical aspects related to its variables and their application context in the telecommunications sector in Egypt.

- Theoretically, it contributes to enriching the growing literature on the integration of digital talent management (DTM) and human capital development (HCD) in the context of emerging markets, especially in the telecommunications sector within developing economies. By empirically studying the relationship between digital talent management and human capital development, the study provides insights into how digital tools, platforms, and analytics can be strategically utilized to enhance workforce skills and work flexibility.
- Practically, this research provides valuable guidance for decision-makers and HR experts in the Egyptian telecommunications sector, which is a strategic pillar for the digital economy. By 2024, the number of mobile subscribers in Egypt is expected to reach approximately 105 million, with over 60 million internet users, including 30 million high-speed internet (4G/5G) users. The sector contributes approximately 4% to 5% of GDP and directly employs around 150,000

people (National Telecommunications Regulatory Authority, 2024; Ministry of Communications and Information Technology, 2024).

In light of rapid technological change and intense competition, the ability to attract, retain, and develop digital talent is critical for improving institutional performance. The study's results are expected to help companies identify gaps in digital talent management, adopt innovative HR practices, and enhance human capital, ensuring sustainable competitive advantage (Vodafone Egypt, 2024; Etisalat Misr, 2024).

Proposed Research Model

The researcher has built the model of this research based on a review of some previous studies that addressed its variables, as illustrated in Figure 1:

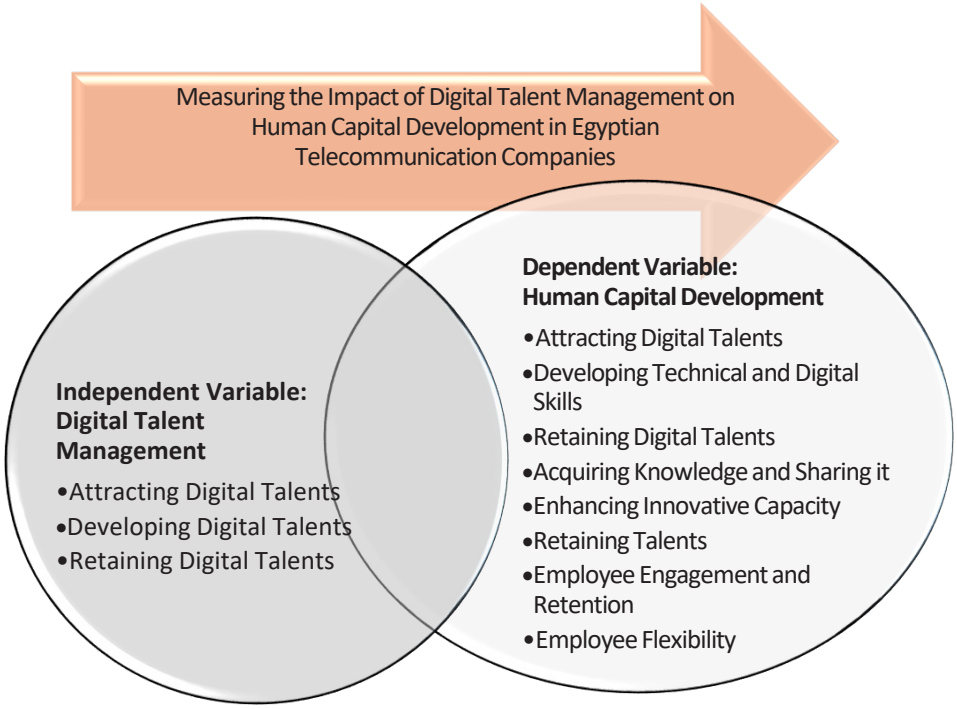


Figure 1: Proposed Research Model

Research Hypotheses

The research relies on testing the following hypotheses to achieve its objectives, which have been formulated in a null format based on the results of previous studies related to the research topic, as follows:

> ***Main Hypothesis H01:*** *There is no statistically significant impact relationship between digital talent management and human capital development in the Egyptian telecommunications companies under study.*

From this main hypothesis, the following sub-hypotheses arise:

- **$H_{01}.1$:** There is no statistically significant impact of digital talent management on developing the technical and digital skills of employees in the Egyptian telecommunications companies under study.
- **$H_{01}.2$:** There is no statistically significant impact of digital talent management on knowledge acquisition and sharing in the Egyptian telecommunications companies under study.
- **$H_{01}.3$:** There is no statistically significant impact of digital talent management on enhancing the innovative capacity of employees in the Egyptian telecommunications companies under study.
- **$H_{01}.4$:** There is no statistically significant impact of digital talent management on employee engagement and retention in the Egyptian telecommunications companies under study.
- **$H_{01}.5$:** There is no statistically significant impact of digital talent management on employee flexibility in the Egyptian telecommunications companies under study.

Research Methodology and Data Collection Method

This current research adopts a quantitative deductive approach, aiming to test the hypotheses related to the impact of digital talent management on the development of human capital in Egyptian telecommunications companies. A questionnaire design was utilized to collect data from a sample of employees in the targeted companies, as it can effectively measure causal relationships between variables and analyze direct and indirect effects.

The research relied on two main tools for data collection:

1- **Primary Data:**

An electronic and paper-based questionnaire was developed to measure the basic research variables according to the following dimensions:

- **Independent Variable:** Digital Talent Management (digital talent attraction, digital talent development, digital talent retention).
- **Dependent Variable:** Human Capital Development, Skills Development, Knowledge Acquisition and Sharing, Innovation Enhancement, Employee Engagement and Retention, Employee Flexibility.

A five-point Likert scale was used, ranging from (1 = strongly agree) to (5 = strongly disagree), to facilitate quantitative measurement and statistical analysis of the results.

2- **Secondary Data:**

Secondary data for this research was obtained from multiple sources, including Arabic and foreign books and references related to digital talent management and human capital, in addition to previous peer-reviewed studies and articles in the fields of human

resource management and organizational innovation. The study also relied on official reports and statistical data issued by relevant governmental bodies and research institutions in the telecommunications sector in Egypt. Moreover, electronic sources and specialized websites were referenced to document the latest trends in talent management and human capital development.

Research Population and Sample

The research population consists of all managers at three administrative levels (top, middle, and supervisory/executive) in the four telecommunications companies operating in Egypt. The study specifically focused on administrative leaders (top, middle, and executive levels) as they are primarily responsible for designing, implementing, and overseeing digital talent management strategies in telecommunications companies. Unlike other employees, leaders directly influence decisions related to attracting, developing, and retaining digital talent and thus possess a comprehensive understanding of how these practices impact human capital development. This focus ensures that the collected data reflects strategic and operational insights rather than limited individual experiences. The total population comprises 2,434 managers distributed among Vodafone Egypt, Orange Egypt, Telecom Egypt (WE), and Etisalat Misr. The researcher utilized a stratified random sampling method, distributing the sample size proportionally according to the size of each company and their administrative levels. The targeted sample size reached 320 respondents. After distributing and collecting the questionnaires, 304 valid responses were obtained for statistical analysis.

The researcher relied on the proportional stratified random sampling method to ensure fair representation of the research population at the company and administrative level. The total sample size (320 respondents) was distributed according to each company's share of the total population. After data collection, 304 valid responses were obtained, representing a high enough response rate to meet the statistical requirements for quantitative analysis.

Table (2): Distribution of the Study Population and Sample Across Egyptian Telecommunication Companies (Study Subject)

No.	Company Name	Top Management	Middle Management	Supervisory Management	Total Leadership	Target Sample Size	Actual Received Sample
1	Vodafone Egypt	80	115	197	392	52	50
2	Orange Egypt	105	160	274	539	71	68
3	Telecom Egypt (WE)	173	256	425	845	111	106
4	Etisalat Egypt	127	200	322	649	86	80
	Total	**485**	**731**	**1218**	**2434**	**320**	**304**

Source: The researcher based on field survey data and annual reports of Egyptian telecommunication companies (2024), with statistical processing (2025).

However, limiting the sample to leaders may restrict understanding of the direct impact of DTM on operational-level employees, who experience these practices firsthand.

Including executive and non-managerial staff in future studies could provide a more holistic view of DTM's effectiveness and its influence on human capital development.

Statistical Analysis Methods

The research employed a set of statistical methods appropriate to its nature and objectives, using the Statistical Package for Social Sciences (SPSS). These methods included:

- **Pearson Correlation Coefficient:** Used to measure the strength and direction of relationships between the research variables.
- **Cronbach's Alpha Coefficient:** Used to test the reliability of the research tool (the questionnaire) and its internal consistency.
- **Descriptive Analysis Methods:** Including means, standard deviations, and variance coefficients, among others, to describe the characteristics of the sample data.
- **ANOVA and Regression Analysis:** Used to test the validity of the research model and its overall significance.
- **Simple Regression Analysis:** Conducted to study the impact of each dimension of the independent variable (digital talent management) on the dependent variable (human capital development).
- **Multiple Regression Analysis:** Applied to test the overall impact of the dimensions of digital talent management on human capital development in Egyptian telecommunications companies.
- **Simple Regression Coefficients:** Used to interpret regression coefficients and determine the size and direction of the effect of each dimension of the independent variable.

Research Boundaries

- **Subject Boundaries:** The study is limited to examining the relationship between digital talent management and human capital development.
- **Spatial Boundaries:** Telecommunications companies in Egypt (Vodafone, Orange, Telecom Egypt, Etisalat Misr).
- **Human Boundaries:** Administrative leaders (top, middle, and executive levels) in the targeted companies.
- **Temporal Boundaries:** Data was collected during the years 2024 and 2025.

Table (3) Structural Validity of the Questionnaire Dimensions

Questionnaire Dimensions	Pearson Correlation Coefficient	Sig (Calculated) r
Digital Talent Management	0.710	0.000
Human Capital Development	0.771	0.000

Source: Prepared by the researcher based on SPSS v26 outputs.

Table 2 shows that the Pearson correlation coefficient for the Digital Talent Management dimension is (0.710), while the Human Capital Development dimension recorded (0.771), both at a significance level (Sig = 0.000). This indicates strong, positive, and statistically significant correlations at a significance level of less than 0.01, reflecting a high degree of consistency between the dimensions of the questionnaire and the overall score. These results confirm the validity of the research tool, as the items of each dimension clearly align with the overall framework being measured.

Table (4) Cronbach's Alpha Coefficient for the Research Tool Dimensions

Item Sequence	Questionnaire Dimensions	Cronbach's Alpha Coefficient
1 - 24	Digital Talent Management	0.855
25 - 44	Human Capital Development	0.789
All Items	-	0.871

Source: Prepared by the researcher based on SPSS v26 outputs.

Descriptive Statistical Analysis of the Research Variables:

The following descriptive statistical analysis aims to provide a detailed overview of the research dimensions related to digital talent management and its impact on human capital development in Egyptian telecommunications companies. It aims to assess the relative importance, variance, and distribution patterns of each dimension, allowing for a clear understanding of how organizations prioritize attracting, developing, and retaining digital talent, enhancing technical skills, encouraging knowledge sharing and innovation, and ensuring employee engagement and flexibility. By studying measures such as mean scores, relative weights, variance coefficients, standard deviation, and kurtosis, this analysis provides empirical evidence that supports or refines the main hypothesis and sub-hypotheses of the research.

Table (5) Descriptive Indicators of Sample Respondents' Answers Regarding Research Variable Dimensions

Dimension	Mean	Standard Deviation	Relative Weight %	CV%	Skewness	Kurtosis	Rank
Digital Talent Attraction	4.52	0.63	90.4	13.9	-0.42	2.10	1
Technical and Digital Skills Development	4.47	0.68	89.4	15.2	-0.28	2.05	2
Digital Talent Retention	4.35	0.71	87.0	16.3	-0.30	1.95	3
Knowledge Acquisition and Sharing	4.32	0.74	86.4	17.1	-0.12	1.90	4
Innovation Enhancement	4.28	0.70	85.6	16.4	-0.05	1.88	5
Employee Engagement and Retention	4.10	0.77	82.0	18.8	0.12	1.80	6
Employee Flexibility	4.00	0.79	80.0	19.8	0.20	1.78	7

Source: Prepared by the researcher based on field survey data and annual reports of telecommunications companies in Egypt (2024), with statistical processing (2025).

Based on the descriptive analysis of the eight research dimensions, the highest-rated dimension was Digital Talent Attraction, with a mean score of 4.52, a relative weight

of 90.4%, a variance coefficient (CV%) of 13.9%, a skewness of -0.42, and a kurtosis of 2.10. This was followed by the dimension of Technical and Digital Skills Development (mean score = 4.47, relative weight = 89.4%, variance coefficient = 15.2%, skewness = -0.28, kurtosis = 2.05), and then Digital Talent Retention (mean score = 4.35, relative weight = 87.0%, variance coefficient = 16.3%, skewness = -0.30, kurtosis = 1.95). These results indicate that companies place significant importance on attracting and developing digital talents and technical skills while requiring additional efforts to enhance employee flexibility and retention.

Overall, these findings show that Egyptian telecommunications companies are heavily focused on attracting and developing digital talents and technical skills and innovation, supporting the main hypothesis that digital talent management positively impacts human capital development. However, the dimensions related to retention and flexibility still require enhancement to maximize the effectiveness of human capital.

Results of Testing and Analyzing Research Hypotheses:

This phase aims to present the results of the statistical tests for the study hypotheses and analyze them in light of the research objectives and theoretical framework. The statistical significance level was set at (0.05) as the threshold at which the null hypothesis is rejected and the alternative hypothesis is accepted if the calculated significance value is less than or equal to this level. The analysis process includes reviewing the main hypothesis and sub-hypotheses, indicating their verification based on the results of relevant statistical tests, discussing those results, and linking them to the literature and previous studies, thereby contributing to their interpretation and clarifying their scientific and practical implications.

Testing the Main Hypothesis of the Research:

The main hypothesis states:

"There is no statistically significant impact relationship between digital talent management and human capital development in the Egyptian telecommunications companies under study." Before testing it, it was subjected to regression analysis to ensure the model's validity for statistical significance as shown in the following table:

Table (6) Results of ANOVA Regression Analysis to Ensure Research Model Validity

Source	Sum of Squares (SS)	df	Mean Square (MS)	F Value	Sig (Level)	R	R^2
Between Groups	4.111	1	4.121	23.66	0.000	0.419	0.175
Within Groups	19.215	114	0.154	-	-	-	-
Total	22.312	115	-	-	-	-	-

Statistically significant at the significance level of less than or equal to 0.05.

Source: Prepared by the researcher based on SPSS v26 outputs.

The results of the regression analysis (ANOVA) for testing the validity of the research model indicated that the calculated F value was (23.66) at a significance level of (Sig = 0.000), which is less than the accepted significance threshold of 0.05, indicating that the model is statistically significant and valid for prediction. The correlation coefficient (R) was (0.419), and the coefficient of determination (R^2) was (0.175), indicating that digital talent management explains 17.5% of the variance in human capital development in Egyptian telecommunications companies, while the remaining 82.5% is attributed to other factors not included in the current model. Based on this, the null hypothesis (H0) was rejected, and the alternative hypothesis (H1) was accepted, confirming a statistically significant impact of digital talent management on human capital development. This result aligns with many previous studies that highlighted the role of digital talent management practices in enhancing human capital efficiency through attracting top talents, encouraging creativity and innovation, and ensuring knowledge sustainability within organizations. It also supports the theoretical framework indicating that digital transformation in human resource management is a primary driver for improving human capital quality and competitiveness, especially in highly competitive service sectors like telecommunications (Al-Kahtani & Khan, 2023; Boudreau & Cascio, 2021; Cedefop, 2022; Margherita & Braccini, 2020).

To further validate the statistical results, a simple regression equation was employed to measure the effect of the independent variable (digital talent management) on the dependent variable (human capital development).

Table (7) Results of Simple Regression Coefficients Analysis

Unstandardized Coefficients (B)	Standard Error	Standardized Coefficients (Beta)	t Value	Sig (Level)
Constant	1.713	0.103	-	4.741
Digital Talent Management	0.466	0.103	0.355	4.851

Source: Prepared by the researcher based on SPSS v26 outputs.

As shown in Table 6, the B value for the constant (Constant) was (1.713), while the B value for the independent variable was (0.466) with a standardized coefficient (Beta) of (0.355). The results of the t-test indicated that the calculated t value for the constant was (4.741) and for the independent variable was (4.851), both at a significance level (Sig) of (0.001), which is less than the accepted significance level of (0.05). These results indicate that the simple regression equation can be represented as follows:

Discussion on R^2 Values and Model Limitations

The results of the main hypothesis regression analysis indicated a coefficient of determination of $R^2 = 0.175$, meaning that digital talent management explains 17.5% of the variance in human capital development within Egyptian telecommunications companies, while 82.5% of the variance is attributed to other factors not included in the current model. Similarly, for the sub-hypothesis related to knowledge sharing, R^2 was

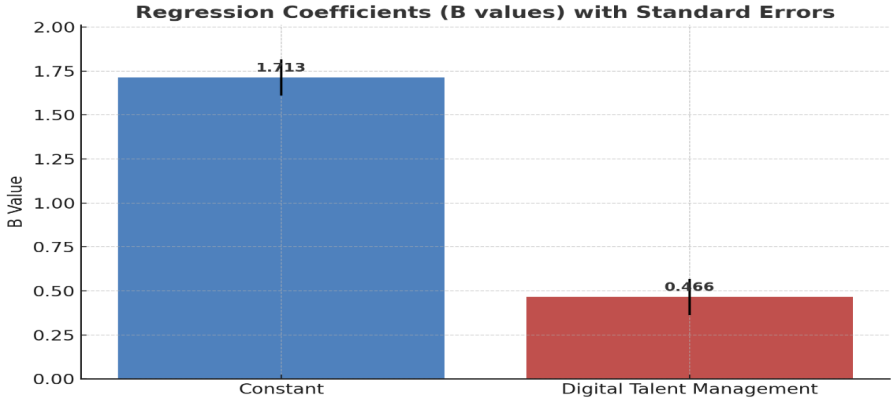
0.081, suggesting that only 8.1% of the variance in knowledge sharing is explained by digital talent management.

These relatively low R^2 values indicate that although digital talent management has a statistically significant positive impact on human capital development, it is not the sole determinant. Other organizational, leadership, and external environmental factors likely contribute substantially to human capital outcomes. For instance, leadership styles, organizational culture, employee motivation systems, market competition, and technological infrastructure can all influence employees' skills development, knowledge sharing, innovation, and overall engagement.

This interpretation aligns with previous studies emphasizing that human capital development is a multifaceted process influenced by multiple strategic and contextual factors (Boudreau & Cascio, 2021; Al-Kahtani & Khan, 2023; Cedefop, 2022; Margherita & Braccini, 2020). Therefore, while digital talent management is an important driver, it should be implemented in conjunction with other complementary practices to maximize its effectiveness and impact on human capital.

Human Capital Development = 1.713 + 0.466 × Digital Talent Management

The following figure illustrates the graphical representation of the simple regression coefficients.



Source: Prepared by the researcher based on SPSS v26 outputs.

Figure 2: Graphical Representation of Simple Regression Coefficients

Testing the Sub-Hypotheses of the Main Hypothesis:

The first main hypothesis was divided into five sub-hypotheses, each testing the effect of the independent variable (digital talent management) on one of the dimensions of the dependent variable (human capital development). Table 7 presents a summary of the statistical results for these sub-hypotheses, indicating the strength and direction of the relationship between digital talent management and each dimension of human capital development, and the significance level.

Table 8: Results of Multiple Regression Analysis to Test the Effect of Digital Talent Management on Human Capital Development in Egyptian Telecommunication Companies

Dimension	B	Standard Error	Beta	t Value	R^2	Sig (Level) T
Technical and Digital Skills Development	0.941	0.171	0.401	5.510	0.211	*0.001
Knowledge Acquisition and Sharing	0.801	0.244	0.292	3.311	0.081	*0.001
Innovation Enhancement	0.711	0.185	0.329	3.799	0.112	*0.000
Employee Engagement and Retention	0.344	0.154	0.210	2.258	0.039	*0.024
Employee Flexibility	0.361	0.201	0.189	1.714	0.029	0.073

Statistically significant at the significance level of ≤ 0.05.
Source: Prepared by the researcher based on SPSS v26 outputs.

Testing the First Sub-Hypothesis:

This sub-hypothesis states that there is no statistically significant effect of digital talent management on developing the technical and digital skills of employees in Egyptian telecommunications companies.

The results of the multiple regression analysis shown in Table 7 indicate that the unstandardized regression coefficient (B) was 0.941, with a standard error of 0.171, while the standardized regression coefficient (Beta) was 0.401, reflecting a relatively moderate effect strength of digital talent management on developing technical and digital skills. The calculated t value was 5.510, which exceeds the critical value at the significance level ($\alpha \leq 0.05$).

Additionally, the statistical significance test showed that the significance level (Sig) was 0.001, which is much lower than 0.05, indicating a statistically significant effect. The coefficient of determination ($R^2 = 0.211$) indicates that digital talent management explains 21.1% of the variance in developing technical and digital skills of employees, while the remaining percentage is attributed to other variables not included in the model. Based on these results, the null hypothesis is rejected, and the alternative hypothesis is accepted, confirming that there is a statistically significant effect of digital talent management on developing the technical and digital skills of employees in Egyptian telecommunications companies at a significance level of ≤ 0.05.

The following table indicates the simple regression equation between the digital talent management variable and the dimension of developing technical and digital skills of employees.

Table (9) Simple Regression Coefficients for the First Sub-Hypothesis

Unstandardized Coefficients (B)	Standard Error	Standardized Coefficients (Beta)	t Value	Sig (Level)
Constant	-0.076	0.165	-	-
Digital Talent Management	0.933	0.442	5.510	0.000

Source: Prepared by the researcher based on SPSS v26 outputs.

The results indicate that the unstandardized regression coefficient (B) for digital talent management is 0.933, meaning that for every one-unit increase in the level of digital talent management, the level of developing technical and digital skills of employees increases by 0.933 units, holding other factors constant. The standardized coefficient (Beta) was 0.442, reflecting a moderate effect strength of digital talent management on developing technical and digital skills. The calculated t value was 5.510, exceeding the critical value at the significance level of 0.05, and the significance value (Sig) was 0.001, which is significantly lower than 0.05, indicating a strong statistical significance for the relationship.

Thus, the simple linear regression equation for this sub-hypothesis is:

Technical and Digital Skills Development = -0.076 + 0.933 × (Digital Talent Management)

Based on these results, the null hypothesis is rejected, and the alternative hypothesis is accepted, confirming the existence of a statistically significant effect of digital talent management on the development of technical and digital skills of employees in Egyptian telecommunications companies.

Testing the Second Sub-Hypothesis:

This sub-hypothesis states that there is no statistically significant effect of digital talent management on knowledge acquisition and sharing in Egyptian telecommunications companies.

The results indicate that the unstandardized regression coefficient (B) was 0.801, meaning that for every one-unit increase in the level of digital talent management, the level of knowledge acquisition and sharing increases by 0.801 units, with other factors held constant. The standardized coefficient (Beta) was 0.292, reflecting a weak to moderate effect strength. The calculated t value was 3.311, which exceeds the critical value at the significance level of 0.05, and the significance value (Sig) was 0.001, which is much lower than 0.05, indicating that the relationship between digital talent management and knowledge acquisition and sharing is statistically significant. The coefficient of determination ($R^2 = 0.081$) indicates that digital talent management explains only 8.1% of the variance in knowledge acquisition and sharing, while the remaining percentage is attributed to other factors not included in the model. Based on these results, the null hypothesis is rejected, and the alternative hypothesis is accepted, confirming the existence of a statistically significant effect of digital talent management on knowledge acquisition and sharing in Egyptian telecommunications companies at a significance level of ≤ 0.05.

The following table indicates the simple regression equation between the digital talent management variable and the dimension of knowledge acquisition and sharing.

Table (10) Simple Regression Coefficients for the Second Sub-Hypothesis

Unstandardized Coefficients (B)	Standard Error	Standardized Coefficients (Beta)	t Value	Sig (Level)
Constant	-0.085	0.152	-	-
Digital Talent Management	0.943	0.442	4.623	0.000

Source: Prepared by the researcher based on SPSS v26 outputs.

The results indicate that the unstandardized regression coefficient (B) for digital talent management is 0.943, meaning that every one-unit increase in the level of digital talent management increases the level of knowledge acquisition and sharing by 0.943 units, holding other factors constant. The standardized coefficient (Beta) is 0.442, reflecting a moderate effect size. The calculated t value is 4.623, which exceeds the critical value at the significance level of 0.05. The significance value (Sig) is 0.001, significantly lower than 0.05, confirming that the relationship between digital talent management and knowledge acquisition and sharing is statistically significant at a significance level of ≤ 0.05.

Thus, the simple linear regression equation for this sub-hypothesis is:

Accordingly, the **simple linear regression equation** for this sub-hypothesis is:

Knowledge Acquisition and Sharing = −0.085 + 0.943 × (Digital Talent Management)

Based on these results, the null hypothesis was rejected and the alternative hypothesis was accepted, confirming the existence of a statistically significant effect of digital talent management on knowledge acquisition and sharing in Egyptian telecommunication companies at a significance level of ≤ 0.05.

Knowledge Acquisition and Sharing = -0.085 + 0.943 × (Digital Talent Management)

Based on these results, the null hypothesis is rejected, and the alternative hypothesis is accepted, confirming the existence of a statistically significant effect of digital talent management on knowledge acquisition and sharing in Egyptian telecommunications companies at a significance level of ≤ 0.05.

The third sub-hypothesis test, which states that:

"There is no statistically significant effect of digital talent management on enhancing innovative capability in Egyptian telecommunication companies."

he results indicate that the unstandardized regression coefficient (B) equals 0.711, suggesting that a one-unit increase in digital talent management leads to an increase of 0.711 units in the level of innovative capability, assuming other variables are held constant. The standardized beta coefficient (β) reached 0.329, reflecting a moderate effect size. Additionally, the calculated t-value was 3.799, which exceeds the critical value at the 0.05 significance level. The significance value (Sig.) was 0.000, which is far below 0.05, confirming that the relationship between digital talent management and innovative capability is statistically significant. The coefficient of determination

(R^2 = 0.112) indicates that digital talent management explains 11.2% of the variance in innovative capability, while the remaining variance is attributed to other factors not included in the model.

Based on these results, the null hypothesis was rejected and the alternative hypothesis was accepted, confirming the existence of a statistically significant effect of digital talent management on enhancing innovative capability in Egyptian telecommunication companies at a significance level of ≤ 0.05.

Table (11) Simple Regression Coefficients for the Third Sub-Hypothesis

Variables	Unstandardized Coefficients (B)	Standard Error	Standardized Coefficients (Beta)	t-value	Sig.
Constant	-0.078	0.165	-	-	-
Digital Talent Management	0.941	0.4312	-	5.102	0.000

Source: Prepared by the researcher based on SPSS v.26 output.

The results show that the unstandardized regression coefficient (B) for digital talent management is 0.941, indicating that a one-unit increase in digital talent management leads to an increase of 0.941 units in innovation capability, assuming other variables remain constant. The constant value is -0.078, representing the expected level of innovation capability when digital talent management equals zero. The t-value reached 5.102, which is substantially higher than the critical value at the 0.05 significance level, and the significance value (Sig.) equals 0.000, which is less than 0.05. This confirms that the relationship between digital talent management and innovation capability is statistically significant.

Accordingly, the simple linear regression equation for this sub-hypothesis is:

$$\textit{Innovation Capability} = -0.078 + 0.941 \times (\textit{Digital Talent Management})$$

Based on these results, the null hypothesis was rejected and the alternative hypothesis was accepted, confirming the presence of a positive, statistically significant effect of digital talent management on innovation capability in Egyptian telecommunication companies at a significance level of ≤ 0.05.

Test of the Fourth Sub-Hypothesis, which states:

"There is no statistically significant effect of digital talent management on employee engagement and retention in Egyptian telecommunication companies".

The findings revealed that the unstandardized regression coefficient (B) was 0.344, indicating that a one-unit increase in digital talent management results in an increase of 0.344 units in employee engagement and retention, assuming other factors remain constant. The standardized beta coefficient (β) was 0.210, reflecting a relatively weak effect size. The calculated t-value reached 2.258, exceeding the critical t-value at the 0.05 significance level. The significance value (Sig.) was 0.024, which is less than

0.05, indicating that the relationship between digital talent management and employee engagement and retention is statistically significant.

The coefficient of determination ($R^2 = 0.039$) shows that digital talent management explains only 3.9% of the variance in employee engagement and retention, while the remaining variance is attributed to other factors not included in the model.

Based on these results, the null hypothesis was rejected and the alternative hypothesis was accepted, confirming the existence of a statistically significant effect of digital talent management on employee engagement and retention in Egyptian telecommunication companies at a significance level of ≤ 0.05.

The following table illustrates the linear regression equation between digital talent management and employee engagement and retention.

Table (12) Simple Regression Coefficients for the Fourth Sub-Hypothesis

Variables	Unstandardized Coefficients (B)	Standard Error	Standardized Coefficients (Beta)	t-value	Sig.
Constant	-0.071	0.169	-	-	-
Digital Talent Management	0.9851	0.398	-	4.212	0.000

The regression results indicate that the unstandardized regression coefficient (B) for digital talent management is 0.985, meaning that a one-unit increase in digital talent management leads to an increase of 0.985 units in employee engagement and retention, assuming other variables remain constant. The constant value is −0.071, representing the expected level of employee engagement and retention when digital talent management equals zero. The calculated t-value reached 4.212, which exceeds the critical value at the 0.05 significance level, and the significance value (Sig.) is 0.000, which is far below 0.05. This confirms that the relationship between digital talent management and employee engagement and retention is statistically significant.

Accordingly, the simple linear regression equation for this sub-hypothesis is:

Employee Engagement and Retention = −0.071 + 0.985 × (Digital Talent Management)

These findings indicate that for every one-unit increase in digital talent management, the dependent variable increases by 0.985 units, while other variables remain constant. The significance value confirms that this relationship is statistically significant at a level of ≤ 0.05.

Test of the Fifth Sub-Hypothesis, which states:

"There is no statistically significant effect of digital talent management on employee flexibility in Egyptian telecommunication companies".

The results revealed that the unstandardized regression coefficient (B) was 0.361, indicating that a one-unit increase in digital talent management leads to an increase of 0.361 units in employee flexibility, holding other variables constant. The standard-

ized beta coefficient (β) was 0.189, indicating a weak effect size. The calculated t-value was 1.714, which does not exceed the critical value at the 0.05 significance level. The significance value (Sig.) was 0.073, which is greater than 0.05, indicating that the relationship between digital talent management and employee flexibility is not statistically significant.

The coefficient of determination ($R^2 = 0.029$) shows that digital talent management explains only 2.9% of the variance in employee flexibility, while the remaining variance is attributed to other factors not included in the model.

Based on these results, the null hypothesis was accepted and the alternative hypothesis was rejected, confirming that there is no statistically significant effect of digital talent management on employee flexibility in Egyptian telecommunication companies at a significance level of ≤ 0.05.

The following table presents the linear regression equation between digital talent management and employee flexibility.

Table (13) Simple Regression Coefficients for the Fifth Sub-Hypothesis (Employee Flexibility)

Variables	Unstandardized Coefficients (B)	Standard Error	Standardized Coefficients (Beta)	t-value	Sig.
Constant	-0.076	0.184	-	-	-
Digital Talent Management	0.922	0.439	-	5.415	0.000

Source: Prepared by the researcher based on SPSS v.26 output.

The regression analysis for employee flexibility revealed an unstandardized coefficient (B) of 0.922, indicating that a one-unit increase in Digital Talent Management (DTM) score leads to an increase of 0.922 units in employee flexibility, holding other variables constant. The constant (intercept) was −0.076, representing the expected level of employee flexibility when the DTM score is zero. The calculated t-value was 5.415, with a significance level (Sig.) of 0.000, confirming a statistically significant positive relationship between DTM and employee flexibility at $\alpha \leq 0.05$. Accordingly, the simple linear regression equation can be represented as:

Employee Flexibility = −0.076 + 0.922 × (Digital Talent Management)

However, when considering standardized coefficients and effect size, the Beta value ($\beta = 0.189$), $t = 1.714$, and $R^2 = 0.029$ suggest a weak effect and low explanatory power. This indicates that, unlike other dimensions of human capital, employee flexibility is less influenced solely by DTM practices. The low R^2 confirms that additional factors-such as organizational culture, leadership style, and external environmental conditions-play a significant role in shaping flexibility, aligning with theoretical expectations and prior studies (Hassan, 2022; Al-Najjar, 2022).

These findings imply that while DTM positively contributes to employee flexibility, complementary interventions are required to enhance adaptability, including change management programs, flexible work arrangements, and leadership support.

Moreover, previous analyses showed that DTM has a statistically significant positive impact on all five dimensions of human capital development examined in this study:

1- Technical and digital skills development
2- Knowledge acquisition and sharing
3- Innovation capability
4- Employee engagement and retention
5- Employee flexibility

(All p-values < 0.05). Consequently, all sub-hypotheses were supported, providing strong empirical evidence for rejecting the main null hypothesis that posited no significant impact of DTM on human capital development in Egyptian telecommunication companies. These results confirm that effective digital talent management is a key driver of human capital development across multiple strategic dimensions, emphasizing the importance of integrating DTM strategies into the organizational framework to maximize employee potential and overall organizational performance.

Discussion of the Study Results

The findings of the current study indicate that digital talent management (DTM) has a positive effect on most dimensions of human capital development in Egyptian telecommunication companies, although the magnitude of the effect varies across dimensions. The results can be discussed as follows:

1- **Sub-Hypothesis 1: Effect on Technical and Digital Skills Development**

The regression analysis revealed B = 0.941, Beta = 0.401, t = 5.510, Sig. = 0.000, R^2 = 0.211, indicating a moderate to strong statistically significant effect. This confirms that DTM significantly improves employees' technical and digital skills. This finding aligns with Al-Mansoori & Zhang (2023), who reported a 35% acceleration in skill acquisition through digital learning platforms, and Hassan (2022), who showed that e-learning programs enhance employee efficiency by 58%. The structured and measurable nature of technical skill development explains the strong influence of DTM in this dimension.

2- **Sub-Hypothesis 2: Effect on Knowledge Acquisition and Sharing**

The regression results were B = 0.801, Beta = 0.292, t = 3.311, Sig. = 0.001, R^2 = 0.081, indicating a moderate and statistically significant effect. This aligns with studies by Abdel Ghaffar et al. (2024, 2023) and Suleiman (2023), which highlighted that integrating DTM with AI and big data analytics improves knowledge management processes and enhances organizational learning. The moderate R^2 indicates that other factors, such as organizational culture and collaboration practices, also contribute to knowledge sharing.

3- **Sub-Hypothesis 3: Effect on Innovation Capability**

For innovation capability, the results showed B = 0.711, Beta = 0.329, t = 3.799, Sig. = 0.000, R^2 = 0.112, indicating a moderate statistically significant effect. This is consistent with Mahmoud (2021), who found that DTM systems support organizational

innovation, and Al-Najjar (2022), who reported a 33% improvement in creative thinking through interactive learning platforms. The findings suggest that while DTM fosters innovation, additional factors such as leadership support and collaborative culture enhance its effectiveness.

4- **Sub-Hypothesis 4: Effect on Employee Engagement and Retention**

The analysis revealed B = 0.344, Beta = 0.210, t = 2.258, Sig. = 0.024, R^2 = 0.039, indicating a weak but statistically significant effect. This corresponds with Chen et al. (2024) and Kaur & Singh (2022), who emphasized that DTM improves retention of high-performing employees, although the effect may be moderated by organizational policies, job satisfaction, and compensation strategies. The relatively low R^2 highlights that other organizational and contextual factor significantly influence engagement and retention.

5- **Sub-Hypothesis5: Effect on Employee Flexibility**

For employee flexibility, the regression results were B = 0.361, Beta = 0.189, t = 1.714, Sig. = 0.073, R^2 = 0.029, indicating a weak and statistically non-significant effect. This suggests that, unlike other dimensions of human capital, employee flexibility is less influenced by digital talent management (DTM) practices. This finding aligns with theoretical expectations and prior studies (Hassan, 2022; Al-Najjar, 2022), which emphasize that flexibility is shaped by organizational culture, leadership style, and external environmental factors, in addition to talent management initiatives. The low R^2 value confirms that DTM alone is insufficient to significantly enhance flexibility, highlighting the need for complementary interventions such as change management programs, flexible work arrangements, and leadership support to foster adaptability among employees.

Overall Interpretation

The study confirms that digital talent management is a key driver for human capital development, particularly in technical skills, knowledge management, and innovation. However, the weaker effects on engagement and flexibility indicate that additional organizational mechanisms-such as culture, leadership practices, and cross-functional collaboration-are necessary to fully enhance these dimensions. Compared to prior research, the current study contributes by providing empirical evidence specific to Egyptian telecommunication companies, demonstrating the differential impact of DTM across multiple human capital dimensions and offering practical guidance for sector-specific HR strategies.

Recommendations and Suggestions

Based on the findings of this study, the data indicate that digital talent management (DTM) has a positive and statistically significant impact on most dimensions of human capital development, particularly in technical skills development, knowledge acquisition, and innovation capability, whereas the employee flexibility dimension requires further enhancement.

The following is an actionable implementation plan designed to translate these findings into practical and executable measures within Egyptian telecommunication companies:

Table (14) "Practical Execution Plan Based on Research Findings in Egyptian Telecommunication Companies"

Dimension	Regression Results	Recommendation	Success Indicators	Implementation Timeline
Digital Talent Attraction	N/A (Descriptive analysis: Mean = 4.52, Weight = 90.4%)	Collaborate with universities and digital training centers; use online recruitment platforms	Number of new digital hires; candidate response rate	6-12 months
Technical and Digital Skills Development	B = 0.941, Beta = 0.401, t = 5.510, Sig. = 0.000, R^2 = 0.211	Monthly training on emerging technologies; support obtaining professional certifications	Number of training programs; % of employees certified	3-12 months
Knowledge Acquisition and Sharing	B = 0.801, Beta = 0.292, t = 3.311, Sig. = 0.001, R^2 = 0.081	Internal knowledge-sharing platform; mentorship programs	Number of knowledge materials published; mentorship sessions conducted	3-6 months
Innovation Capability	B = 0.711, Beta = 0.329, t = 3.799, Sig. = 0.000, R^2 = 0.112	Internal innovation competitions; allocate budget for experiments	Number of ideas proposed and implemented; impact on performance	6-12 months
Employee Engagement and Retention	B = 0.344, Beta = 0.210, t = 2.258, Sig. = 0.024, R^2 = 0.039	Performance-based digital incentives; clear career progression paths	Employee retention rate; employee satisfaction	Ongoing
Employee Flexibility	B = 0.361, Beta = 0.189, t = 1.714, Sig. = 0.073, R^2 = 0.029	Training on change management; flexible work models	Flexibility assessment; adaptation rate to change	6-12 months
Integration into Company Strategy	N/A	Annual review to integrate digital talent plans into strategy; evaluate impact on performance	Periodic evaluation reports; organizational performance indicators	Annual

Future Research Areas:

Based on the findings of this research, several future research areas can be proposed:

- Investigating the mediating role of organizational culture in the relationship between digital talent management and human capital development.
- Examining the impact of artificial intelligence and digital transformation on talent retention strategies in telecommunications companies.
- Conducting comparative studies across different sectors (such as banking, healthcare, and education) to assess the generalizability of the results.

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