Section 1.2. The Effects of Digital Transformation in Female Leadership in Businesses

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Abstract. *Digital transformation is reshaping leadership by widening access to information, networks, and technology-enabled resources that can weaken traditional gender barriers in organizations. In this environment, women's leadership increasingly depends on digital literacy and digital capital, as well as the capacity to use social media, ICT tools, and artificial intelligence for strategic decision-making, visibility, and innovation. However, these advantages are not automatic, because structural bias, unequal access to finance and skills, and weak support ecosystems can preserve or even intensify gender imbalances in technology-intensive sectors and digital projects. This makes the topic especially relevant for understanding how inclusion-oriented digital strategies can improve organizational effectiveness and expand entrepreneurship opportunities, including in regional and rural contexts where digital channels can compensate for limited local infrastructure and markets. The study conceptually examines how AI, social media, and ICT affect women's leadership by enabling empowerment, reducing institutional barriers, and supporting inclusive organizational cultures and policies. Methodologically, it applies an integrative literature-based synthesis across digital transformation frameworks, women's leadership research, and cross-country empirical observations. The analysis structures evidence around enabling mechanisms, constraining factors, and leadership-related outcomes. The synthesis suggests that digital tools increase leadership visibility, expand professional networks, and support flexible work models that facilitate career progression and entrepreneurial action, particularly for women-led SMEs. Yet persistent underrepresentation in senior management and technology roles remains connected to structural barriers and insufficient inclusive policies. Overall, digital transformation strengthens women's leadership when combined with targeted capability development and policies that widen access to skills, finance, and digital infrastructure. Future research should test causal links between digital capital and AI adoption, compare sector-specific barriers, and evaluate which policy mixes most effectively increase women's representation and resilience.*

Keywords: *digital transformation; women's leadership; artificial intelligence; social media; ICT; digital literacy; digital capital; inclusive leadership; entrepreneurship; gender inequality; rural development; organizational culture.*

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1. Digital Transformation. Digital transformation has become the key driver of technology-focused innovations and processes in today's business world. Digital tools such as artificial intelligence, social media, and information and communication technologies are transforming many areas, from organizations' strategic decision-making processes to their operational activities, and require leaders to take on strategic and innovative roles (Areiqat, 2024, p.1087; McCall, 2024, p.1). This process creates a dynamic environment that presents both opportunities and challenges, particularly for women leaders. 2024, p.513). Women's acquisition of digital skills, development of leadership competencies and adoption of an inclusive leadership approach enable them to increase their influence in organizations and participate in innovative entrepreneurship activities (Thomas et al., 2024, p.513).

The representation of women leaders in the business world has historically been limited due to gender inequalities and structural barriers. Nevertheless, the flexible working models, social networking tools, and rapid access to information offered by digital technologies are creating new opportunities that support women's advancement to leadership positions (Alam et al., 2022, p.535; Hazudin et al., 2021, p.1). Digital leadership in regional and rural areas is critical to the development of women entrepreneurs, and social networks and workplace culture perceptions lead to different assessments of the digital transformation of SMEs led by women compared to those led by men (Hazudin et al., 2025, p.1; Sak et al., 2023, p.91).

However, in the digital transformation process, gender imbalance, structural biases, and inadequate support ecosystems emerge as significant barriers limiting the effective participation of women leaders (Syahputra & Shabira, 2025, p.1). Therefore, strengthening women's leadership is possible not only through the development of individual skills but also through the adoption of inclusive policies and leadership programs (Weber-Lewerenz & Vasiliu-Feltes, 2022, p.117; Wulandari & Ahmad, 2025, p.124).

The effects of digital transformation on women's leadership are critical to understanding the transformation process of the business world and the leadership potential of women. Research shows that the proper application of digital technologies enables women to become more visible and effective in leadership roles, while also increasing entrepreneurial opportunities and contributing to sustainable economic growth (Saranya & Chandrasekar, 2023, p.1; McCall, 2024, p.1; Busari et al., 2025, p.1). Therefore, understanding the

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potential of women's leadership in the business world through digital transformation and technology integration is essential for developing inclusive growth and equality strategies at both the corporate and societal levels (Al-Aali, Masmoudi & AlSaffar, 2024, p.18; Krchová & Höesová, 2021, p.524).

The study examines how artificial intelligence, social media, and information and communication technologies (ICT) empower women in leadership roles, reduce organizational barriers, and the impact of inclusive organizational cultures and policy implementation on enhancing gender equality. Furthermore, the contribution of factors such as digital skills, leadership development, financial access and digital capital to the business growth, economic empowerment and sustainable growth of women entrepreneurs is analyzed through regional and global examples. The study offers policy and practice implications for strengthening women's leadership, enhancing the success of digital transformation strategies, and ensuring inclusive economic contributions.

The rapid development of digital technologies is driving fundamental change in societies and economic activities across all sectors. In the transition from the information age to the smart society, transforming data into information has become the fundamental action of the digital age, and adapting to digital transformation has become essential for businesses to survive (Bozkurt et al., 2021, p.35). This process has a profound impact on businesses' operating models, processes, human resources, and customer relationships, increasing productivity and value creation (Ebert & Duarte, 2018, p.16; Tang, 2021, p.9).

Within the framework of Industry 4.0, the process initiated by artificial intelligence, robot technologies, 3D printers, and the Internet of Things has brought cyber-physical systems that integrate the physical and digital worlds into focus in areas such as production, services, logistics, and R&D (Türkel & Yeşilkuş, 2020, p.332; Yankın, 2019, p.1). Digital transformation offers a holistic transformation process that provides competitive advantage by transforming the organizational structure, business models, human resources and customer relations of businesses (Klein, 2020b, p.997; Aksoy, 2024, p.1).

Digital transformation is a multidimensional concept encompassing technology, process, and people-focused components. In the literature, the strategic, cultural, and organizational dimensions of digital transformation are supported by structured frameworks and roadmaps (Verina & Titko, 2019,

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p.1; Zaoui & Souissi, 2020, p.621; Vial, 2021, p.13; Ziyadin et al., 2019, p.408; Henriette et al., 2016, p.1). Digital transformation enables businesses, public institutions, and educational institutions to achieve evolutionary change through the strategic use of technology, the adoption of innovative business models, and data-driven process optimization (Lanzolla & Anderson, 2008, p.72; Gray & Rumpe, 2017, p.307; Tang, 2021, p.9).

To summarize the core logic of digital transformation in relation to women's leadership, Table 1.9 systematizes key dimensions of the transformation, the mechanisms through which they operate, and the typical opportunity and barrier patterns observed in practice.

Table 1.9. Digital transformation dimensions and implications for women's leadership

Dimension	What changes in organizations	Opportunities for women's leadership	Typical constraints that may persist	What management should ensure
Technological layer (AI, platforms, ICT)	Tools expand analytic capacity, communication speed, and automation	Higher visibility, faster access to information, stronger digital personal brand	Digital divide, biased algorithms, unequal access to advanced tools	Equal access to tools, responsible AI rules, role-based training
Process layer (workflows, HRM, operations)	Work becomes measurable, standardized, and traceable	Transparent performance signals, clearer promotion evidence, flexible work design	Informal networks still dominate decisions, unequal workload distribution	Fair metrics, transparent promotion criteria, workload monitoring
Strategic layer (business model, competitiveness)	Digital transformation drives new products, channels, and markets	New entrepreneurial entry points, especially for SMEs and rural contexts	Unequal access to finance and markets, weak support ecosystems	Inclusive innovation funding, market access programs, mentorship
Cultural and governance layer	Norms, leadership models, and inclusion policies shape adoption	Inclusive culture increases participation and retention	Structural bias, glass ceiling effects in tech-intensive roles	Inclusion targets, leadership programs, accountability mechanisms
Ecosystem layer (state, education, infrastructure)	External conditions shape feasibility and scale	Digital infrastructure enables growth beyond local markets	Infrastructure gaps, uneven regional education quality	Public-private partnerships, upskilling pipelines, rural connectivity

Note. Compiled by the author based on the subsection's synthesized arguments.

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As shown in Table 1.9, digital transformation influences women's leadership through multiple channels, but the net effect depends on whether organizations translate technology adoption into fair processes, inclusive governance, and accessible capability development.

Technological developments in the digital transformation process enable businesses to increase their digital maturity levels and develop innovative business models.. Businesses are striving to renew their business processes and increase their digital maturity levels with technologies such as social media, mobile applications, big data, cloud computing, and artificial intelligence (Asiltürk, 2021, p.647; Aksoy, 2024, p.1). Digital leadership plays a critical role in this transformation; integrating technology with business processes and the human factor to drive digital transformation is fundamental to successful implementation (Aksoy, 2024, p.1). Furthermore, a risk-taking culture is an important factor in the digital transformation process, encouraging innovation and providing a competitive advantage (Schwertner, 2017, p.388).

Digitalization has also become prominent in public and private administrations, and service delivery has become more efficient through sensors, advanced networks, wearable technologies, and GPS systems within the scope of the Internet of Things (Göçoğlu, 2020, p.615). The role of the state changes according to economic and social needs; digitalization and artificial intelligence stand out as the basic elements of the new development approach (Tamer & Övgün, 2020, p.775). For example, the Presidential Digital Transformation Office, established in Turkey in 2017, is shaping the future role of the state by monitoring digitalization and artificial intelligence applications (Tamer & Övgün, 2020, p.775). In this context, comprehensive strategies and roadmaps are required for the planning and implementation of digital transformation; otherwise, the process may create more disadvantages than advantages (Klein, 2020b, p.997; Bozkurt et al., 2021, p.35).

Digital transformation continues to make its mark in many areas. These areas encompass digital transformation and mobile applications, chatbots, job applications via QR codes, dashboard analyses, and AI-supported recruitment in the field of Human Resource Management (HRM) (Kırılmaz, 2020, p.188). These applications are critical for businesses to gain a competitive advantage (Kırılmaz, 2020, p.188). Digitalization in education and higher education is transforming learner and teacher profiles and institutional understanding. The transition from Education 1.0 to 4.0 and the digital solutions implemented

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during the pandemic are create examples of transformation in education (Koral Gümüşoğlu, 2017, p.30; Kocaman Karoğlu et al., 2020, p.147).

Digital entrepreneurship plays an important role in economic development, employment growth, and the spread of innovation. A study examining the status of digital entrepreneurs in Turkey and around the world in the regard of digital transformation predicts that the number of digital entrepreneurs will increase in the coming years (Eyel & Sağlam, 2021, p.7). From an economic perspective, digital and mobile ecosystems support economic development and increased prosperity; Information and Communication Technology (ICT) infrastructure investments strengthen economic growth through macroeconomic indicators and sectoral ecosystems (Pakdemirli, 2019, p.665). The effects of digitalization on companies, brands, and public administration increase the efficiency and competitiveness of businesses, and brands create value in global markets through digital transformation strategies (Altuntaş, 2018, p.1).

As a result, digital transformation is reshaping many areas such as society, the economy, businesses, education, and public administration, and is redefining production and service processes. For a successful digital transformation, comprehensive strategies, increasing digital maturity levels, digital leadership, and integrating the human factor are of critical importance. Businesses, government agencies, and educational institutions can gain a competitive advantage, encourage innovation, and support sustainable development by correctly understanding and implementing digital transformation. (Bozkurt vd., 2021, s.35; Klein, 2020a, s.24; Aksoy, 2024, s.1; Türkel & Yeşilkuş, 2020, s.332; Göçoğlu, 2020, s.615; Tamer & Övgün, 2020, s.775).

Overall, digital transformation should be understood as a systemic shift that combines technology adoption, process redesign, and capability development, rather than as the isolated introduction of new tools. Its managerial significance lies in the fact that it changes how organizations generate value, coordinate work, and make decisions, while also redefining the competencies required from leaders. In relation to women's leadership, digital transformation opens additional pathways to influence through visibility, network building, flexible work design, and data-informed decision-making, especially when social media and ICT platforms reduce dependence on traditional gatekeepers. At the same time, the same transformation can reproduce inequality if access to skills, finance, and

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enabling ecosystems remains uneven, or if organizational cultures and promotion practices remain biased. Therefore, the leadership outcomes of digital transformation depend on governance choices, including inclusive policies, targeted leadership development, and investments in digital infrastructure and literacy. This subsection supports the argument that digital transformation becomes an inclusion driver only when it is implemented with clear strategy, accountable leadership, and measurable actions that expand participation and opportunity.

2. Women's Leadership. It is well known that women's representation in leadership positions has historically been limited. Although studies conducted in the modern and postmodern periods show that there is no significant difference between female and male leadership styles, it has been found that the number of female leaders and their leadership tenure remain limited compared to men (Cem & Üste, 2023 From ancient times to the modern era, the concept of leadership has been shaped by male dominance, with women largely overlooked. However, the postmodern understanding of leadership, influenced by technological developments and globalization, has increased the visibility of women in leadership roles and diversified their opportunities (Cem & Üste, 2023).

Women's perception of leadership is influenced by social, cultural, and religious factors. A study conducted at Faculties of Theology in Turkey shows that Islamic approaches are compatible with contemporary management models in terms of women's perception of leadership (Çifçi, Aslan & Karabacak, 2015). Similarly, in countries such as Saudi Arabia and Jordan, women are demanding trust and responsibility by invoking religious and cultural norms; however, patriarchal social structures pose significant barriers that limit women's advancement to leadership positions (Alghofaily, 2019; Koburtay et al., 2023). Although women are underrepresented in social and local governance, they can demonstrate leadership potential by contributing to community safety and development (Hassan & Silong, 2008). However, African American women leaders' perceptions of leadership and empowerment vary due to ethnic and career differences, and their dual minority status can hinder their progress (Sales et al., 2020).

The obstacles women face in leadership roles are explained through concepts such as the glass ceiling and the glass cliff. While the glass ceiling is defined as an invisible barrier that limits the highest management level that women can reach, the glass cliff refers to the implicit discrimination that

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occurs when women are assigned to risky and crisis situations (Akbaş & Korkmaz, 2017; Sivrikaya & Wolff, 2021). Saudi women face challenges in reaching leadership positions due to gender-based discrimination and societal prejudices, but education, skill development, and cultural change are reducing these barriers and increasing the likelihood of success(Kattan, 2015). In Lebanon, women's leadership is constrained by patriarchal social norms and women's roles within the family rather than by organizational structures (Sidani, Konrad & Karam, 2015).

Research on women's leadership characteristics and styles shows that while women are mostly person and relationship oriented, men exhibit task-oriented leadership behaviors (Bayhan & Arslan, 2005).

Democratic and participatory leadership styles are approaches that women more often adopt, and women leaders also use conciliatory strategies and emphasize cooperation to improve group performance (Chapman, 1975; Uğurlu & Hovardaoğlu, 2011). However, it has been shown that organizations led by female CEOs tend to adopt more innovative and environmentally friendly practices, and female leadership contributes to corporate innovation and economic growth (Khushk,et al., 2023).

To make the subsection more structured, Table 1.10 summarizes the main explanatory lenses used in the literature on women's leadership, linking typical barriers, enabling conditions, and expected organizational outcomes.

Table 1.10 shows that women's leadership is best explained through interacting layers of context, barriers, and enabling mechanisms, rather than through simplified assumptions about gendered leadership styles.

Studies performed in Turkey reveal that female managers exhibit different leadership characteristics, most notably team spirit, communication skills, and individual competencies (Şencan et al., 2015). The team leadership roles of female school principals fall slightly below the expectations of assistant principals and teachers; there is a moderate, positive, and meaningful relationship between the level of display and the degree of importance (Selçuk et al., 2013). Furthermore, women's increasing participation in the workforce, its impact on leadership roles, and the challenges they face have been extensively researched, particularly through examples of academic leadership in higher education (Kütükcü, 2017; Onay & Heptazeler, 2014; Şencan et al., 2015).

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Table 1.10. Key lenses for analyzing women's leadership: barriers, enablers, and outcomes

Analytical lens	What it explains	Typical barriers highlighted	Enablers emphasized	Expected outcomes for organizations
Historical and institutional context	Why leadership roles were male-dominated over time	Normative exclusion; path dependence in elite selection	Policy reforms; representation targets; institutional accountability	More diverse leadership pipelines; legitimacy of inclusion
Socio-cultural and religious environment	How social norms shape leadership legitimacy	Patriarchal expectations; role conflict; stigma	Cultural reinterpretation; community support; education	Higher acceptance of women leaders; social trust gains
Glass ceiling mechanisms	Why women are blocked from senior roles	Invisible promotion barriers; biased evaluation	Transparent criteria; mentorship; sponsorship	Fairer promotion rates; stronger retention
Glass cliff dynamics	Why women are appointed in high-risk contexts	Crisis appointments; heightened scrutiny; short tenure	Risk-sharing governance; board support; role clarity	Reduced failure attribution bias; more stable tenures
Leadership style and behavior patterns	How leadership practices differ by context	Stereotyping of "fit"; penalization of assertiveness	Inclusive leadership norms; skill recognition	Better collaboration; stronger team performance
Innovation and sustainability links	Why female leadership may correlate with specific outcomes	Limited access to strategic resources	Resource access; executive development; decision authority	Higher innovation capacity; sustainability-oriented change

Sources: compiled by the author based on the subsection's cited literature.

As a result, women female leadership studies constitutes an important research issue both global and in our country. The barriers women face in leadership roles stem from cultural, social, and structural factors, nevertheless these barriers can be overcome through education, skill development, and social awareness. The innovative, communication-focused, and conciliatory approaches provided by women leaders increase the performance and innovation capacity of organizations; therefore, achieving gender equality is critical to the success of both women and institutions (De Nmark, 1993; Offermann & Foley, 2020; Eagly & Carli, 2003; Maheshwari, Nayak & Ngyyen, 2021; Baselga-Pascual & Vähämaa, 2021).

In summary, women's leadership should be interpreted as a socio-institutional phenomenon shaped by historically unequal access to authority,

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persistent cultural expectations, and structural constraints within organizations and societies. The reviewed arguments indicate that differences in leadership effectiveness are not determined by gender as such, but by opportunity structures that influence who is selected, promoted, supported, and evaluated as a leader. Cross-cultural evidence shows that social, religious, and community contexts can both legitimize women's leadership and simultaneously reproduce patriarchal restrictions that limit career progression. The concepts of the glass ceiling and the glass cliff remain useful for explaining why women are often prevented from reaching senior positions or are appointed under conditions of heightened risk and scrutiny. At the behavioral level, women's leadership is frequently associated with relational, participatory, and communication-centered practices, which can strengthen collaboration and organizational learning, while research also links female executive leadership with innovation and sustainability-oriented outcomes. However, the persistence of underrepresentation suggests that individual competence is insufficient without institutional reforms that address bias, role expectations, and unequal access to professional development. Therefore, gender equality in leadership should be treated as a strategic condition for organizational performance and social progress, requiring coordinated interventions in education, workplace policies, and cultural narratives that define leadership legitimacy.

3. The Impact of Digital Transformation in Businesses on Women's Leadership. Digital transformation, artificial intelligence, social media and information and communication technologies (ICT) tools strengthen women's leadership, reduce institutional barriers and contribute to gender equality through inclusive organizational culture and policies(Areiqat, 2024, s.1087; Wulandari & Ahmad, 2025, s.124). Developing women's technical knowledge, strategic thinking, and inclusive leadership competencies is critical for overcoming barriers in the sector and fostering innovation (McCall, 2024, p.1). Especially in regional and rural areas, digital transformation is a fundamental tool in the development of women entrepreneurs and SMEs, and social networks, workplace culture and perception of information technologies create a difference in the digital transformation of women-led SMEs compared to men (Alam vd., 2022, s.535; Hazudin vd., 2025, s.1). Rural women entrepreneurs can successfully implement their digital strategies thanks to digital leadership and entrepreneurial resilience (Hazudin et al., 2025, p.1). Furthermore, digital

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tools and social media offer significant opportunities for women entrepreneurs to overcome traditional gender barriers and digital pressures (Hazudin et al., 2021, p.1). Similarly, digital transformation enhances economic empowerment in micro, small, and medium-sized enterprises managed by women affiliated with Islamic organizations, thereby improving business performance and strengthening the impact of a resource-based approach through access, participation, control, and benefit (Azizah et al., 2024, p.71). While in Turkey, the empowerment of women in rural areas through digital entrepreneurship reduces the effects of male-dominated working life and regional inequalities, while in India, digital transformation plays a decisive role in the development of technology-focused business strategies by women entrepreneurs (Sak et al., 2023, p.91; Saranya & Chandrasekar, 2023, p.1).

While women leaders are still underrepresented in senior management and technology fields at the European and global levels, inclusive leadership programs and policy implementations are increasing female representation and organizational effectiveness (Górska & Burlakova, 2025, p.116; Mendoza et al., 2024, p.963). In the case of Japan, when the proportion of female executives is high, digital technology integration and ICT skills increase, and the presence of women in leadership positions positively impacts digital economy performance (Onozaka & Nemoto, 2023, p.155). Similarly, in New Zealand and Australia, digital tools, flexible working, and continuous learning are reducing women's representation at lower levels in the ICT sector (Skakun, 2024, p.1). Gender imbalance, structural biases, and inadequate support ecosystems in digital transformation projects affect both exclusion and innovation quality; diversity-focused leadership and inclusive practices are critical to reducing these barriers (Syahputra & Shabira, 2025, p.1; Weber-Lewerenz & Vasiliu-Feltes, 2022, p.117).

To clarify the logic of the subsection, Table 1.11 systematizes the main digital mechanisms influencing women’s leadership, the barriers that weaken these mechanisms, and the governance responses that convert digital opportunities into measurable inclusion outcomes.

Table 1.11 demonstrates that digital transformation strengthens women’s leadership through identifiable mechanisms, but the realized outcomes depend on whether organizations and policy systems remove skill, finance, and bias-related constraints through measurable and enforced inclusion practices.

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Table 1.11. Digital transformation mechanisms shaping women's leadership in business: pathways, constraints, and responses

Digital pathway	How it strengthens women's leadership	Typical constraints and risks	Governance and management responses
AI and data-driven tools	Improves decision quality, forecasting, and operational efficiency; supports strategic positioning	Algorithmic bias; unequal access to advanced tools; weak data literacy	Bias-aware AI governance; training in data and AI literacy; transparent accountability
Social media and digital platforms	Expands visibility, professional networks, customer reach, and branding	Online harassment; reputational vulnerability; platform dependency	Digital safety protocols; brand protection policies; platform diversification strategies
ICT-enabled flexible work	Reduces time and mobility constraints; supports continuity of work and leadership engagement	"Flexibility stigma"; blurred boundaries; uneven access to remote work roles	Fair workload design; performance metrics based on results; inclusive remote leadership norms
Digital entrepreneurship and e-commerce	Enables market entry and scaling for women-owned SMEs, including rural settings	Digital divide; limited logistics and payment infrastructure; skill gaps	Digital infrastructure investment; targeted SME support; mentoring and incubators
Inclusive digital culture and programs	Increases representation and effectiveness through structured inclusion	Tokenism; uneven implementation; resistance in male-dominated sectors	Formal inclusion KPIs; leadership development programs; promotion and pay transparency
Finance and digital capital	Supports growth, resilience, and investment capacity	Gender gaps in credit and investment; weaker networks for fundraising	Gender-responsive finance instruments; fintech inclusion; access-to-capital programs

Sources: compiled by the author based on the subsection's cited studies.

While digital transformation reshapes leadership and human behavior, the examination of women's leadership competencies has remained limited; therefore, strategic planning is required based on the economy, education, and sectoral policies (Al-Aali, Masmoudi & AlSaffar, 2024, p.18; Krchová & Höesová, 2021, p.524). Digital transformation and technology integration can increase the effects of female leadership on business resilience in a balanced way (Nikey, 2024, p.1). Equipping female students with digital transformation skills, developing their leadership and entrepreneurship competencies, and supporting economic performance and inclusive growth in the future business world (Zagar et al., 2023, p.1). While women entrepreneurs' intentions are influenced more by education and adaptability than by digitalization and financial constraints, gender inequality positively increases entrepreneurial intentions (Salman et al., 2025, p.199).

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Although women are represented in all roles and levels within the technology sector, their distribution varies depending on the type of organization and hierarchical level; this situation more realistically reveals women's role in technology management (Breßler et al., 2023, p. 1). Although women leaders are often positioned on the periphery in smart cities and e-government applications, their e-leadership in local government increases transparency, accountability, and participation; despite information and technology gaps, they demonstrate innovation and resilience (Asmorowati et al., 2025, p.1). Financial access and digital literacy are critical factors affecting the business growth of women entrepreneurs in the United Kingdom; women entrepreneurs are significantly disadvantaged compared to men in terms of access to investment and credit, and inclusive policies are required (Busari et al., 2025, p.1). Digital capital and digital skills development support women's advancement into leadership roles within organizations; bridging the digital divide strengthens women's leadership through individual and organizational factors (Thomas et al., 2024, p.513).

The reviewed evidence indicates that digital transformation functions as both an accelerator and a selective filter for women's leadership in business. On the one hand, the diffusion of artificial intelligence, social media, and ICT expands women's access to networks, market information, and scalable tools for visibility and value creation, which is especially consequential for women-owned SMEs and rural entrepreneurship where digital channels can compensate for infrastructural and geographic constraints. On the other hand, the same transformation reproduces inequality when digital capital, financial access, and skills development remain uneven, and when organizational cultures continue to embed structural bias into recruitment, promotion, and innovation governance. The findings therefore suggest that digitalization does not automatically translate into gender equality, but rather amplifies the outcomes of existing institutional conditions. When inclusive leadership programs, policy instruments, and organizational practices reduce entry barriers, strengthen capability building, and improve access to finance and infrastructure, women's leadership becomes more visible and influential, with positive spillovers for innovation quality, resilience, and sustainable growth. Conversely, where support ecosystems are weak, women may remain concentrated in lower hierarchical levels despite high participation in digital work. Accordingly, the strategic implication is that gender-responsive digital transformation requires coordinated interventions across the firm, sector, and

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policy levels, linking technology adoption with inclusion metrics, competency development, and resource accessibility.

Conclusions. The research demonstrates that digital transformation and women's leadership should be interpreted as interdependent phenomena that unfold across technological, organizational, and socio-institutional layers. Digital transformation is not limited to the adoption of artificial intelligence, platforms, or ICT tools, because it also reorganizes processes, decision rules, performance measurement, and the capability profiles expected from leaders. Within this reconfigured environment, women's leadership gains additional channels of influence through data-informed decision-making, network building, digital visibility, flexible work models, and entrepreneurial entry points, including in regional and rural contexts where digital access can compensate for structural market limitations. At the same time, the persistence of gender gaps confirms that technology alone does not dismantle institutional barriers, since biased evaluation practices, unequal access to finance and skills, and uneven support ecosystems can reproduce inequality within digitally transforming sectors. The analytical logic of the tables highlights that outcomes depend on whether organizations translate technological change into fair workflows, transparent promotion criteria, accountable governance, and inclusive capability development, rather than relying on informal gatekeeping or symbolic inclusion. Consequently, women's leadership should be treated as a strategic resource for innovation, sustainability, and resilience, but this potential becomes fully operational only under conditions of measurable inclusion and equal access to digital capital. The evidence also indicates that inclusive programs and policy instruments can shift representation and effectiveness when they are integrated with infrastructure investments, education pipelines, and organizational accountability mechanisms. Therefore, gender-responsive digital transformation requires coordinated interventions at the firm, ecosystem, and public governance levels, aligning technology adoption with concrete inclusion metrics, leadership development, and access-to-capital solutions. Under these conditions, digital transformation can function not merely as a productivity agenda, but as a practical pathway for reducing gender inequality while strengthening business competitiveness and long-term economic growth.

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References:

1. Akbaş, G., & Korkmaz, L. (2017). Women managers: The struggle to rise in the shadow of invisible barriers. *Journal of Business and Human Resources,* 4(2), 73-86. https://doi.org/10.18394/iid.292957
2. Aksoy, C. (2024). The digital transformation of businesses and the digital leadership approach. *Journal of Quality and Strategy Management*, 4(1), 1-29
3. Al-Aali, E. A., Masmoudi, M., & AlSaffar, G. J. (2024). Women Leadership in the Digital Era: The Competency Perspective. In *Transformative Roles of Women in Public and Private Sectors* (pp. 18-30). IGI Global Scientific Publishing.
4. Alam, K., Ali, M. A., Erdiaw-Kwasie, M. O., Murray, P. A., & Wiesner, R. (2022). Digital transformation among SMEs: Does gender matter? Sustainability, 14(1), 535.
5. Alghofaily, L. (2019). Women leadership in higher education in Saudi Arabia. *International Journal of Social Sciences,* 8(2), 14-32.
6. Altuntaş, E. Y. (2018). The effect of digital transformation applications on the brand value of institutions. *Ege University Faculty of Communication Media and Communication Studies Peer-Reviewed E-Journal,* (2), 1-18.
7. Areiqat, A. Y. (2024). Empowering women through digital transformation: Case studies in enhancing gender equality in business leadership. In *Business Development via AI and Digitalization: Volume 2* (pp. 1087 - 1092). Cham: Springer Nature Switzerland.
8. Asiltürk, A. (2021). The ultimate goal in digital transformation management in businesses: Digital maturity. *Alanya Academic Perspective*, 5(2), 647-669.
9. Azizah, S. N., Suradi, Koeswinarno, Fakhruddin, M., & Yuliani, I. (2024). The influence of digital transformation in speeding up the empowerment of the Muslim women's economy to improve the performance of micro, small, and medium enterprises (MSMEs) in Ponorogo. In *Strategic Islamic Business and Management: Solutions for Sustainability* (pp. 71-107). Cham: Springer Nature Switzerland.
10. Bakan, İ., Büyükbeşe, T., Erşahan, B., & Kefe, İ. (2013). Perceptions of female employees towards managers: A field study. *Çankırı Karatekin University Journal of Economics and Administrative Sciences,* 3(2), 71-84.
11. Onay, M., & Heptazeler, O. (2014). Differences between the leadership behaviors of female and male managers. *Journal of Organization and Management Sciences,* 6(2),

https://doi.org/10.36690/CIDI-EME ISBN 978-9916-9320-3-2 (pdf)
© Scientific Center of Innovative Research, 2025

73-85.
12. Baselga-Pascual, L., & Vähämaa, E. (2021). Female leadership and bank performance in Latin America. *Emerging Markets Review*, 48, 100807.
13. Bayhan, P., & Arslan, M. (2005). Examining the leadership styles of women managers in terms of social roles. *Hacettepe University Journal of Faculty of Economics and Administrative Sciences*, 23(2), 99-119.
14. Bozkurt, A., Hamutoğlu, N. B., Kaban, A. L., Taşçı, G., & Aykul, M. (2021). Digital information age: Digital society, digital transformation, digital education and digital competencies. *Journal of Open Education Applications and Research,* 7(2), 35-63.
15. Busari, R., Cannon, S., & Balogun, Y. (2025). Empowering women in the UK: Exploring the role of financial access and digital literacy in driving business growth. *SSRN*. https://doi.org/10.2139/ssrn.5345058
16. Asmorowati, S., Schubert, V., Nasution, P. I., & Hariani, N. J. (2025). Smart women, smart leadership, and smart cities: A case study of two Indonesian mayors' approach to e-leadership. *Journal of Public Affairs, 25*(2), e70023.
17. Breßler, J., Hegemann, L., & Huesig, S. (2023, July). Analyzing the Role of "Women in Technology" for Digitally Transformed Organizations. In *2023 Portland International Conference on Management of Engineering and Technology (PICMET)* (pp. 1 - 12). IEEE.
18. Chapman, J. B. (1975). Comparison of male and female leadership styles. *Academy of Management Journal,* 18(3), 645-650.
19. Çiftçi, O. Z., Aslan, Ş., & Karabacak, M. (2015). Islam's view of women leadership: An interdisciplinary qualitative research. *Iğdır University Journal of Social Sciences*, (8), 71-107.
20. De Nmark, F. L. (1993). Women, leadership, and empowerment. Psychology of Women Quarterly, 17(3), 343-356.
21. Eagly, A. H., & Carli, L. L. (2003). The female leadership advantage: An evaluation of the evidence. *The Leadership Quarterly*, 14(6), 807-834.
22. Ebert, C., & Duarte, C. H. C. (2018). Digital transformation. *IEEE Software, 35*(4), 16 - 21.
23. Eyel, C. Ş., & Sağlam, H. (2021). Digital transformation and change in entrepreneurship: Digital entrepreneurship. *Atlas Social Sciences Journal*, 1(6), 7-20.
24. Fidan, M. (2020). Historical evolution of leadership and women's leadership in the context of leader-follower relations. *Istanbul University Journal of Women's Studies*, (19), 53-70. https://doi.org/10.26650/iukad.2019.19.004
25. Górska, M., & Burlakova, I. (2025). The role of women's leadership in business: Challenges and prospects. *Economics, Finance and Management Review, 1*(21), 116-129.
26. . Göçoğlu, V. (2020). Digital transformation in the provision of public services: An examination of the Internet of Things. *MANAS Journal of Social Research,* 9(1), 615-628.
27. Gray, J., & Rumpe, B. (2017). Models for the digital transformation. *Software & Systems Modeling, 16*(2), 307-308.

https://doi.org/10.36690/CIDI-EME
ISBN 978-9916-9320-3-2 (pdf)
© Scientific Center of Innovative Research, 2025

28. Gülseren, A., & Sağbaş, A. (2019). Evaluation of digital transformation and digital maturity level in industry within the perspective of Industry 4.0. *European Journal of Engineering and Applied Sciences,* 2(2), 1-5.
29. Hassan, Z., & Silong, A. D. (2008). Women leadership and community development. *European Journal of Scientific Research*, 23(3), 361-372.
30. Hazudin, S. F., Ahmad Hisni, N. I., Awang Kader, M. A. R., Sabri, M. F., & Abd Aziz, N. N. (2025). Linking digital leadership and entrepreneurial success for development of women-owned businesses in rural Malaysia: Entrepreneurial resilience as a mediator. *Journal of Enterprising Communities: People and Places in the Global Economy*.
31. Hazudin, S. F., Sabri, M. F., Kader, M. A. R. A., & Ishak, M. (2021). Empowering women-owned businesses in the era of digital transformation: A review of the opportunities and challenges. *International Journal of Academic Research in Business and Social Sciences, 11*(19), 1-13.
32. Henriette, Emily; Feki, Mondher; and Boughzala, Imed, "Digital Transformation Challenges" (2016). *MCIS 2016 Proceedings*. 33. https://aisel.aisnet.org/mcis2016/33
33. Kalaitzi, S., Czabanowska, K., Fowler-Davis, S., & Brand, H. (2017). Women leadership barriers in healthcare, academia and business. Equality, Diversity and Inclusion: *An International Journal,* 36(5), 457-474.
34. Kattan, M. (2015). Factors of successful women leadership in Saudi Arabia (Doctoral dissertation, Universidad Rey Juan Carlos de Madrid).
35. Khushk, A., Zengtian, Z., & Hui, Y. (2023). *Role of female leadership in corporate innovation: A systematic literature review*. Gender in Management: An International Journal, 38(3), 287-304.
36. Kırılmaz, S. K. (2020). Digital transformation in human resources management: Investigating digital HRM practices of enterprises. *Research Journal of Business and Management,* 7(3), 188-200.
37. Klein, M. (2020a). Digital transformation and its drivers in enterprises. *Journal of Business in The Digital Age,* 3(1), 24-35.
38. Klein, M. (2020b). Digital transformation scenarios of enterprises - a conceptual model proposal. Electronic Journal of Social Sciences, 19(74), 997-1019. https://doi.org/10.17755/esosder.676984
39. Kleinert, J. (2021). Digital transformation. *Empirica, 48*(1), 1-3.
40. Koburtay, T., Abuhussein, T., & Sidani, Y. M. (2023). Women leadership, culture, and Islam: Female voices from Jordan. *Journal of Business Ethics*, 183(2), 347-363.
41. Kocaman K., A., Bal, K., & Çimşir, E. (2020). Digital transformation in education in Turkey during the Society 5.0 process. *Journal of University Research*, 3(3), 147-158.
42. Koral Gümüşoğlu, E. (2017). Digital transformation in higher education. *Journal of Open Education Applications and Research,* 3(4), 30-42.
43. Köse, H. Ö., & Polat, N. (2022). Digital transformation and its impact on the future of auditing. *Court of Accounts Journal*, 32(123), 9-41.
44. Kütükcü, A. (2017). Examining postgraduate theses in the field of women leadership in *Turkey. Journal of Women's Studies*, (15), 26-47.

https://doi.org/10.36690/CIDI-EME
ISBN 978-9916-9320-3-2 (pdf)
© Scientific Center of Innovative Research, 2025

45. Krchová, H., & Höesová, K. Š. (2021). Selected determinants of digital transformation and their influence on the number of women in the ICT sector. *Entrepreneurship and Sustainability Issues, 8*(4), 524.
46. Lanzolla, G., & Anderson, J. (2008). Digital transformation. *Business Strategy Review, 19*(2), 72 - 76.
47. Lipman-Blumen, J. (1992). Connective leadership: *Female leadership styles in the 21st-century workplace*. Sociological Perspectives, 35(1), 183-203.
48. Maheshwari, G., Nayak, R., & Ngyyen, T. (2021). Review of research for two decades for women leadership in higher education around the world and in Vietnam: A comparative analysis. Gender in Management: *An International Journal,* 36(5), 640-658.
49. McCall, A. (2024). The intersection of digital skills and leadership development for women in the digital age.
50. Mendoza, N. F., Osorio, B. C., Merlano, F. B., & Yances, F. A. (2024). Women's leadership and gender inequality in business: Global and local trends amid uncertainties. *Russian Law Journal, 12*(1), 963-974.Nikey, R. (2024). *Digital landscape and women entrepreneurship development in Bangladesh* (Doctoral dissertation, Brac University).
52. Njiwa, M. K., Atif, M., Arshad, M., & Mirza, N. (2023). The impact of female dominance on business resilience: A technology adoption perspective. *Journal of Business Research,* 161, 113846.
53. Offermann, L. R., & Foley, K. (2020). Is there a female leadership advantage? In *Oxford Research Encyclopedia of Business and Management*.
54. Onozaka, Y., & Nemoto, K. (2023). Digital transformation, leadership, and gender equality: Are they related? In *Adopting and adapting innovation in Japan's digital transformation* (pp. 155-173). Singapore: Springer Nature Singapore.
55. Pakdemirli, B. (2019). Digital transformation and economic growth. *Adıyaman University Journal of Social Sciences Institute,*(32), 665-694.
56. Sağlam, M. (2021). Realization of digital transformation as a vision of the future in businesses and Turkish adaptation of the digital transformation scale. *Istanbul Commerce University Journal of Social Sciences,* 20(40), 395-420.
57. Sak, M., Alnoor, A., Valeri, M., & Bayram, G. E. (2023). The role of digital transformation on women empowerment for rural areas: The case of Turkey. In *Tourism Innovation in the Digital Era* (pp. 91-105). Emerald Publishing Limited.
58. Sales, S., Galloway Burke, M., & Cannonier, C. (2020). African American women leadership across contexts: Examining the internal traits and external factors on women leaders' perceptions of empowerment. *Journal of Management History,* 26(3), 353-376.
59. Salman, D., Fawzy, N., & Zaazou, Z. (2025). The role of digitalization and education in empowering Egyptian women entrepreneurs. *Future Business Journal, 11*(1), 199.
60. Saranya, M. S., & Chandrasekar, K. (2023). Digital transformation in businesses owned by women. *International Journal of Research and Analytical Reviews* (IJRAR), 10(2), 1-13.

https://doi.org/10.36690/CIDI-EME
ISBN 978-9916-9320-3-2 (pdf)
© Scientific Center of Innovative Research, 2025

61. Schwertner, K. (2017). Digital transformation of business. *Trakia Journal of Sciences, 15*(1), 388-393.
62. Selçuk, Ö. G. G., Yalçınkaya, P. D. M., & Uslu, A. C. (2013). Examining the level of team leadership roles displayed by female school principals and the degree of importance given to these roles. *Manisa Celal Bayar University Journal of Social Sciences,* 11(1), 106-125.
63. Sezen, H. K., & Eren Şenaras, A. (2022). An evaluation of the concepts of digitization, digitalization, and digital transformation. *Pamukkale University Journal of Social Sciences Institute*,(51).
64. Sidani, Y. M., Konrad, A., & Karam, C. M. (2015). From female leadership advantage to female leadership deficit: A developing country perspective. *Career Development International,* 20(3), 273-292.
65. Sivrikaya, N., & Wolff, R. A. (2021). Evaluation of women's leadership characteristics. *Ondokuz Mayıs University Journal of Women and Family Studies*, 1(2), 59-78.
66. Skakun, A. (2024). Leveraging digital transformation to address women's challenges in the technology industry (Unpublished master's thesis). Auckland International Campus, Otago Polytechnic | Te Pūkenga, New Zealand. https://doi.org/10.34074/thes.6510
67. Syahputra, M. F. D., & Shabira, R. F. (2025). Factors and impacts of gender imbalance in digital transformation projects: *A systematic literature*.
68. Şencan, M. N., İbicioğlu, P., & Karabekir, Y. (2015). Examining the leadership characteristics of women administrators: A content analysis on women rectors in Turkey. *Süleyman Demirel University Journal of Economics and Administrative Sciences,* 20(1), 241-259.
69. Tamer, H. Y., & Övgün, B. (2020). Yapay zeka bağlamında Dijital Dönüşüm Ofisi. *Ankara Üniversitesi SBF Dergisi, 75*(2), 775-803.
70. Tang, D. (2021). What is digital transformation? *Edpacs, 64*(1), 9 - 13.
71. Thomas, J. V., Mallika Sankar, M., Varghese, J. P., & Kumar, A. (2024). The women leadership: A catalytic role of digital divide through digital ecosystem. In Information and Communication Technology in Technical and Vocational Education and Training for Sustainable and Equal Opportunity: *Business Governance and Digitalization of Business Education* (pp. 513-524). Singapore: Springer Nature Singapore.
72. Turkel, S., & Yesilkus, F. (2020). The digital transformation paradigm: Industry 4.0. *Eurasian Journal of Social and Economic Research*, 7(5), 332-346.
73. Ugurlu, O., & Hovardaoglu, S. (2011). The relationship between the gender of the leader, the gender of the evaluator, and leadership style in the evaluation of leadership behavior. *Turkish Journal of Psychology*, 26(68), 14-27.
74. Verina, N., & Titko, J. (2019). Digital transformation: conceptual framework. *International Scientific Conference Contemporary Issues in Business, Management and Economics Engineering'2019*.
75. Vial, G. (2021). *Understanding digital transformation: A review and a research agenda*. Managing digital transformation, 13 - 66.

https://doi.org/10.36690/CIDI-EME
ISBN 978-9916-9320-3-2 (pdf)
© Scientific Center of Innovative Research, 2025

76. Weber-Lewerenz, B., & Vasiliu-Feltes, I. (2022). Empowering digital innovation by diverse leadership in ICT - A roadmap to a better value system in computer algorithms. *Humanistic Management Journal*, 7(1), 117-134.
77. Wulandari, W. R., & Ahmad, N. (2025). The influence of women's leadership policy on challenges and opportunities in the digital age. Journal of Human Rights, Culture and Legal System, 5(1), 124-157.
78. Yankın, F. B. (2019). Working life in the digital transformation process. *Trakya University Faculty of Economics and Administrative Sciences E-Journal*, 7(2), 1-38.
79. Yıldırım, A. (2021). Digital transformation applications in local governments. *Yüzüncü Yıl University Social Sciences Institute Journal,*(54), 61-82.
80. Zagar, M., Samardzija, J., Vidovic, M., & Mihaljevic, B. (2023). Work in progress: Enhancing digital transformation awareness of female international business freshmen students. *2023 IEEE Global Engineering Education Conference (EDUCON)*, 1 - 3. https://doi.org/10.1109/EDUCON54358.2023.10125168
81. Zaoui, F., & Souissi, N. (2020). Roadmap for digital transformation: A literature review. *Procedia Computer Science, 175*, 621 - 628.
82. Ziyadin, S., Suieubayeva, S., & Utegenova, A. (2019, April). Digital transformation in business. In *International Scientific Conference "Digital Transformation of the Economy: Challenges, Trends, New Opportunities"* (pp. 408 - 415). Cham: Springer International Publishing.

https://doi.org/10.36690/CIDI-EME
ISBN 978-9916-9320-3-2 (pdf)
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