

The Human Factor in Digital Value Realization: Modeling Behavioral Barriers to Transformation

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Abstract

This paper examines the role of human and behavioral factors in digital value realization within organizational digital transformation initiatives. Drawing on a comprehensive review of extant literature, the study synthesizes insights on behavioral barriers spanning individual resistance to change, organizational culture, leadership dynamics, and cognitive biases affecting technology perception. The analysis highlights how human behaviors mediate the translation of digital capabilities into realized organizational value and shape value co-creation processes in digital contexts. The findings underscore that digital transformation success depends not only on technological deployment but on human readiness, engagement, and cultural alignment. The paper concludes by outlining practical implications for organizations seeking to adopt more human-centric approaches to digital transformation and identifies directions for future research.

1 Introduction

1.1 Background and Context of Digital Transformation

Digital transformation (DT) has become a central strategic imperative for organizations across various sectors, driven by the pervasive influence of digital technologies (DTs) on business processes, structures, and value propositions [1][2]. This transformative process extends beyond mere technological adoption; it encompasses a comprehensive reshaping of operational models, customer interactions, and internal organizational dynamics [3]. Organizations leverage DTs such as artificial intelligence (AI), cloud computing, and the Internet of Things (IoT) to gain competitive advantages, optimize processes, and enhance customer engagement [4]. The scope of DT impacts the entire organization, influencing strategies, entrepreneurial processes, innovation, and governance mechanisms, thereby redefining the modalities of value co-generation and delivery, often within complex digital ecosystems [2]. Despite the considerable investment and strategic focus on DT, a substantial number of these initiatives do not achieve their anticipated outcomes [5]. This often results from an incomplete understanding of DT's value creation mechanisms and a disproportionate emphasis on technological aspects over the human elements integral to successful implementation [5].

1.2 Significance of the Human Factor in Digital Value Realization

While DT is inherently technological, its success is deeply intertwined with human actions, perceptions, and behaviors within the organizational context [3]. The deployment of new digital tools or platforms alone does not guarantee value realization; rather, it is the effective integration of these technologies by employees, managers, and leaders that unlocks their full potential [6]. Employees' beliefs about technological change, termed "digital mindsets," significantly influence their engagement with or withdrawal from DT initiatives [7]. These mindsets, shaped by beliefs regarding personal ability and situational resource availability, determine whether new technologies are perceived as opportunities for growth or as threats to existing competencies [7]. Organizational culture, leadership styles, and individual attitudes toward change are fundamental in shaping the receptiveness to and adoption of digital innovations [8][9]. Neglecting these human aspects can lead to resistance, disengagement, and ultimately, the failure of DT endeavors to deliver expected value [10]. The emphasis on human factors shifts the focus from merely implementing technology to cultivating an environment where people can effectively leverage digital tools to achieve strategic objectives [11].

1.3 Research Objectives and Scope

This research endeavors to systematically analyze the human factor in digital value realization, specifically by modeling the behavioral barriers that impede successful digital transformation. The primary objectives include:

1. To identify and categorize the key behavioral barriers encountered during digital transformation initiatives.
2. To investigate the influence of organizational culture, leadership, and individual employee mindsets on the acceptance and successful implementation of digital technologies.
3. To explore how human factors contribute to and shape value co-creation mechanisms in digital contexts.
4. To synthesize theoretical frameworks for understanding these behavioral barriers and propose actionable strategies for their mitigation.
5. To provide practical recommendations for organizations aiming to foster a human-centric approach to digital transformation, thereby maximizing value realization.

The scope of this study encompasses a comprehensive review of extant literature on digital transformation, organizational behavior, human resource management, and value co-creation. It considers both individual-level psychological factors and broader organizational and social dynamics. While acknowledging the technical and strategic dimensions of DT, the analysis maintains a concentrated focus on the human and behavioral aspects, recognizing them as critical, yet often underemphasized, determinants of success [12][10].

This study is positioned as a qualitative, integrative research paper that consolidates fragmented insights from the digital transformation, organizational behavior, and value realization literatures. Rather than proposing a new theory, the paper aims to synthesize existing empirical and conceptual findings into a coherent analytical perspective that

clarifies how behavioral barriers influence the realization of value from digital transformation initiatives.

2 Methodology

2.1 Research Design and Approach

A qualitative, descriptive research design was employed for this study, utilizing a comprehensive literature review approach. This method allows for a systematic synthesis of existing knowledge from diverse academic and industry sources, providing a holistic understanding of the human factor in digital value realization. The descriptive nature of the design facilitates the identification, categorization, and detailed explanation of behavioral barriers and their underlying mechanisms. By drawing upon a broad spectrum of empirical evidence and theoretical perspectives, this approach enabled the construction of a model that integrates various human elements influencing digital transformation outcomes. The synthesis focused on identifying recurring themes, causal relationships, and proposed solutions within the existing body of literature [13]. This approach is particularly suitable for exploring complex, multifaceted phenomena like digital transformation, where a single empirical study might offer a limited perspective [5]. The objective was not to generate new primary data but to integrate and interpret previously published findings to develop a coherent conceptual framework [14].

2.2 Data Collection and Analysis Methods

The data collection involved a systematic search of academic databases, including IEEE, Scopus, and Web of Science, to identify relevant research papers, articles, and reviews. Keywords used for the search included "digital transformation," "human factor," "behavioral barriers," "resistance to change," "organizational culture," "digital leadership," "value realization," and "value co-creation." The initial search yielded a large volume of literature, which was then filtered based on relevance to the study's objectives, publication date (prioritizing recent works to capture contemporary insights), and methodological rigor. Papers focusing explicitly on the human or behavioral aspects of digital transformation and value realization were given precedence. Content analysis was the primary method for analyzing the collected literature [15]. This involved several iterative steps:

1. Initial coding: Relevant sections of the selected papers were read and open-coded to identify emergent themes related to behavioral barriers, human factors, and value realization.
2. Categorization: Codes were grouped into higher-level categories, such as "individual resistance," "organizational acceptance," "leadership influence," and "mindsets."
3. Thematic synthesis: These categories were further refined and integrated to form the thematic structure presented in the literature review. This process involved identifying commonalities, contradictions, and gaps across different studies. Taken together, the reviewed studies indicate that behavioral barriers to digital

transformation are systemic rather than episodic, reinforcing the need for integrated organizational responses rather than isolated interventions.

4. Model construction: Based on the synthesized themes, a conceptual model was developed to illustrate the interdependencies between human factors, behavioral barriers, and digital value realization.

This systematic approach ensured a comprehensive and structured analysis of the literature [13].

The content analysis followed a systematic interpretive synthesis approach, emphasizing recurring themes, conceptual linkages, and patterns across studies rather than isolated findings, thereby enhancing analytical coherence and minimizing subjective bias.

2.3 Limitations and Delimitations

This study's primary limitation stems from its reliance on secondary data derived from a literature review. While comprehensive, this approach is inherently constrained by the available published research, potentially excluding insights from unpublished studies or ongoing industry practices. The interpretative nature of content analysis means that the synthesis of findings is subject to researcher bias in selecting, interpreting, and categorizing information, despite efforts to maintain objectivity. Furthermore, the diverse contexts and methodologies of the reviewed studies may introduce heterogeneity, making direct comparisons or challenging generalizations. The study is delimited to focus specifically on behavioral barriers and human factors, consciously narrowing its scope from the broader technical, financial, and strategic aspects of digital transformation [16]. It does not undertake empirical data collection or statistical analysis but rather provides a conceptual framework built upon existing knowledge. Geographical and industry-specific nuances, while acknowledged in some cited works, are not the central focus, as the aim is to derive general behavioral principles. Finally, the analysis does not delve into specific technological implementations but rather the human response to digital technologies at a general level [10].

3 Literature Review / Thematic Analysis

3.1 The Role of Human Behavior in Digital Transformation

Digital transformation, while often viewed through a technological lens, fundamentally reshapes organizational processes, structures, and human interactions [2]. The success of these initiatives hinges significantly on how individuals and collectives within an organization adapt to, adopt, and integrate new digital tools and mindsets [3]. Human behavior is not merely a passive recipient of technological change; it actively mediates the realization of value from digital investments. Employees' beliefs about technology, their willingness to engage with new processes, and their capacity for continuous learning are all critical determinants of success [7][11]. The transition demands a re-evaluation of established practices and the cultivation of new competencies, which in turn influences organizational performance [17]. Organizations that overlook the human element often encounter significant resistance, diminishing the potential benefits of their digital

endeavors [10]. This necessitates a deep understanding of behavioral dynamics to effectively navigate the complexities of digital change. The impact extends beyond individual performance, influencing collective engagement and the overall organizational trajectory [1].

The literature review focused primarily on peer-reviewed journal articles published between 2019 and 2024 to capture contemporary perspectives on digital transformation and human-centric value realization. The final corpus comprised approximately 50 academic studies spanning information systems, organizational behavior, leadership, and service-dominant logic.

While individual resistance, organizational culture, and leadership are discussed as distinct themes in literature, prior studies consistently demonstrate that these factors are deeply interrelated. Behavioral resistance rarely emerges in isolation; instead, it reflects the interaction between individual mindsets, collective norms, and leadership practices. Recognizing these interdependencies allows for a more holistic understanding of how human factors influence digital transformation outcomes.

3.1.1 Organizational Culture and Employee Mindsets

Organizational culture exerts a profound influence on the success of digital transformation initiatives. A culture that fosters innovation, adaptability, and continuous learning significantly eases the integration of new technologies [8]. Conversely, rigid or change-averse cultures can act as substantial impediments. Studies indicate that employee empowerment within an organizational culture positively affects digital transformation outcomes, while traditional practices and insufficient support for change can hinder progress [8]. Employee mindsets, particularly their "digital mindsets," are crucial. These beliefs encompass perceptions of personal ability malleability (fixed versus growth mindsets) and the availability of situational resources (zero-sum versus expandable-sum mindsets) [7]. Employees with growth mindsets, who view challenges as opportunities for development, are more likely to embrace new technologies and see them as avenues for professional advancement. In contrast, those with fixed mindsets may perceive new technologies as threats to their competence or job security, leading to withdrawal [7]. Cultivating an organizational culture that promotes psychological safety, encourages experimentation, and rewards digital literacy can nurture positive mindsets, thereby increase engagement and reduce resistance to change [17].

Figure 1. Interplay Between Organizational Culture, Leadership, and Employee Mindsets



Note: Relationships are reciprocal; leadership shapes culture and mindsets, which in turn influence behavioral response to digital change.

Figure 1 depicts the dynamic and reciprocal relationships among organizational culture, leadership practices, and employee digital mindsets. The figure highlights how leadership behavior influences cultural norms and employee perceptions, while organizational culture reinforces or constrains leadership effectiveness and individual willingness to engage with digital change. This interactional view underscores that behavioral readiness for digital transformation emerges from the combined influence of leadership direction, cultural context, and individual beliefs rather than from isolated factors.

3.1.2 Leadership and Digital Readiness

Effective leadership is indispensable for navigating the complexities of digital transformation and fostering organizational digital readiness [18]. Digital leaders inspire confidence in disruptive initiatives and possess a unique set of skills tailored to the digital age [9][19]. They are not merely technology enthusiasts but strategists who can articulate a compelling vision for digital change, communicate its benefits, and manage the associated risks [9]. The concept of "digital leadership" extends beyond traditional leadership paradigms, requiring leaders to adapt their management context and styles to the application and expansion of digital technologies [20]. These leaders need to foster an environment where employees feel supported in acquiring new digital competencies and are encouraged to experiment with new tools without fear of failure [11]. Organizational digital readiness, therefore, is not solely about technological infrastructure but equally about the human capacity and willingness to engage with digital change, heavily influenced by leadership guidance. Leaders must also understand the interplay between various factors: strategy, structure, culture, people, process, project, and technology to ensure comprehensive success in process digitalization projects [21].

3.2 Behavioral Barriers to Digital Value Realization

Despite the recognized benefits of digital transformation, organizations frequently encounter significant behavioral barriers that hinder the realization of intended value.

These barriers stem from individual psychological responses, as well as collective social and organizational dynamics. They manifest resistance to new technologies, reluctance to adopt new processes, and skepticism regarding the perceived benefits of digital initiatives [10]. Understanding these impediments is crucial for designing effective strategies to promote successful digital integration and ensure that technological investments yield their full potential. Without addressing these human-centric obstacles, even the most advanced digital solutions may fail to deliver the expected transformative outcomes [22].

Table 1. Key Behavioral Barriers to Digital Value Realization Identified in Literature

Behavioral Barrier	Level of Analysis	Description	Impact on Digital Value Realization	Representative Sources
Resistance to Change	Individual	Fear of uncertainty, skill obsolescence, disruption of routines	Delayed adoption; underutilization of digital tools	Uzule & Verina (2023); Solberg et al. (2020)
Fixed Digital Mindset	Individual	Belief that abilities are static; perception of technology as a threat	Reduced engagement and learning behavior	Solberg et al. (2020)
Cultural Rigidity	Organizational	Norms discouraging experimentation and learning	Limits innovation and process transformation	Alshammari et al. (2023)
Leadership Capability Gaps	Organizational	Lack of digital vision and change leadership	Fragmented implementation and weak value capture	Abbu et al. (2022)
Cognitive Biases	Individual/Social	Status quo bias, confirmation bias, risk aversion	Distorted technology perception and resistance	Talwar et al. (2023)

Table 1 synthesizes the primary behavioral barriers to digital value realization identified across the reviewed literature. The table categorizes barriers according to their level of analysis individual, organizational, or combined and provides concise descriptions of each barrier along with their documented impact on digital transformation outcomes. By consolidating findings from diverse empirical and conceptual studies, the table highlights

how behavioral factors such as resistance to change, fixed digital mindsets, cultural rigidity, leadership capability gaps, and cognitive biases systematically impede the effective translation of digital initiatives into realized organizational value. Representative sources are included to demonstrate the breadth and consistency of evidence supporting each barrier.

3.2.1 Individual Resistance to Change

Individual resistance to change represents a primary behavioral barrier in digital transformation. Employees often exhibit reluctance to adopt new digital tools or processes due to a variety of factors, including fear of the unknown, loss of established routines, or perceived threats to job security [10]. This resistance can be rooted in a "fixed mindset," where individuals believe their abilities are static and view new technologies as potential threats to their competence rather than opportunities for growth [7]. The effort required to learn new systems and adapt to altered workflows can also deter individuals, particularly if the perceived benefits do not outweigh the immediate costs of adaptation. Furthermore, past negative experiences with organizational change or poorly executed technology implementations can foster skepticism and a default stance of resistance. Research indicates that individual-level barriers, such as a lack of digital competencies or psychological aversion, are significant obstacles [10]. Overcoming this requires clear communication, targeted training, and demonstrating the direct value proposition for individual employees. For instance, in the context of digital innovations in retail finance, consumer resistance can arise from perceived image barriers, usage complexities, or risk aversion [23].

3.2.2 Social and Organizational Acceptance Challenges

Beyond individual resistance, digital transformation initiatives face significant challenges related to social and organizational acceptance. Even if individuals are willing to adapt, collective norms, power structures, and group dynamics can impede widespread adoption [24]. Organizations, as social systems, develop specific cultures that can either facilitate or obstruct change. A culture that lacks support for innovation, teamwork, or empowerment can nullify the positive impact of new technologies [8]. The absence of a shared understanding or collective buy-in regarding the necessity and direction of digital change can lead to fragmented efforts and inconsistent implementation across departments [13]. Issues such as poor internal information exchange, concerns about business structure, and general management shortcomings are classified as organizational barriers to digital transition [10]. Moreover, the perceived disruption to established social hierarchies or collaborative patterns can generate collective reluctance. The acceptance of digital changes in organizations is not automatically determined, even given the disruptive nature of these changes, emphasizing the importance of researching social attitudes within organizations [24]. Therefore, fostering an environment of psychological safety and promoting a collective sense of purpose around the digital journey are essential for overcoming these systemic barriers [25].

3.2.3 Cognitive Biases and Perception of Technology

Cognitive biases profoundly influence how individuals perceive and interact with new digital technologies, contributing to another layer of behavioral barriers. These biases often

lead to irrational decision-making or entrenched views that hinder objective evaluation of digital solutions. For example, confirmation bias might cause employees to seek out information that validates their existing skepticism about a new system, while neglecting evidence of its potential benefits. Status quo bias can lead to a preference for current, familiar systems, even if new digital alternatives offer clear improvements. The "not invented here" syndrome can also emerge, where internally developed or traditional solutions are favored over external digital innovations, regardless of their superior functionality [7]. Furthermore, the complexity of some advanced digital tools, like artificial intelligence, can trigger a lack of understanding or misperceptions about their capabilities and limitations, contributing to distrust or misuse [26]. Poor usability of digital tools, a technical barrier, can also reinforce negative perceptions and increase resistance [10]. Addressing these cognitive biases requires more than just technical training; it necessitates strategies that challenge preconceived notions, provide experiential learning opportunities, and highlight the tangible advantages of digital adoption in a relatable manner. Transparent communication about the purpose and benefits of new technologies can help mitigate these perceptual distortions [27][28].

3.3 Value Creation Mechanisms in the Digital Context

Digital transformation fundamentally alters how value is created, delivered, and captured within organizations. It shifts the focus from linear, internal processes to dynamic, ecosystem-driven interactions where value is increasingly co-created with various stakeholders [2]. Understanding these new value creation mechanisms is essential for effective digital value realization. Digital technologies enable unprecedented levels of data collection, processing, and analysis, which, in turn, facilitate the optimization of business processes, enhancement of customer experiences, and development of new business models [6][5]. Value creation in the digital era is characterized by agility, interconnectedness, and a continuous feedback loop between providers and consumers. This necessitates a re-evaluation of traditional value chain concepts and an embrace of models that emphasize collaboration and dynamic resource integration [2].

Figure 2. Human-Centric Digital Value Co-Creation Framework

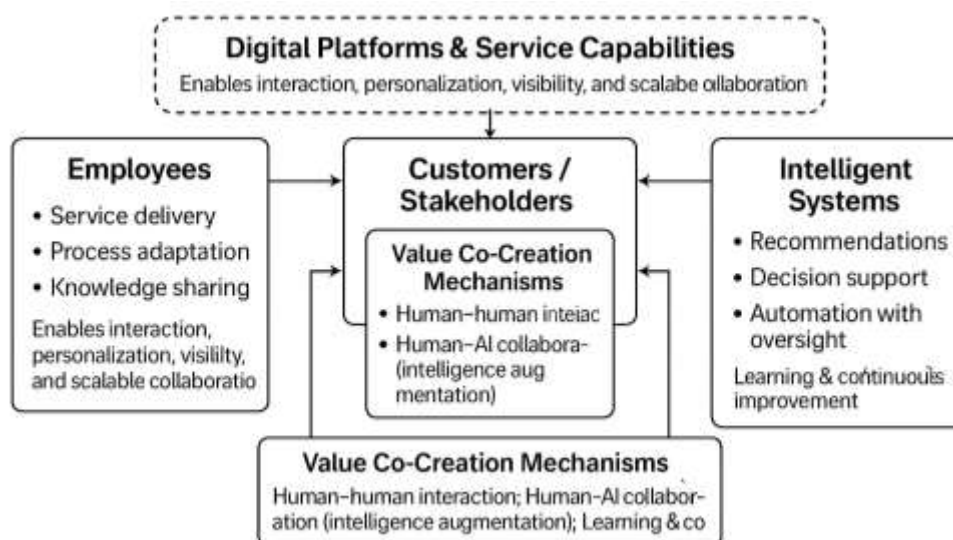


Figure 2 presents a human-centric framework for understanding value co-creation in digital environments. The figure illustrates how digital platforms enable interactions between employees, customers, and intelligent systems, while human-human and human-AI collaboration drives the co-creation of value. Emphasis is placed on intelligence augmentation, learning, and engagement as mechanisms through which digital service capabilities translate into enhanced organizational and stakeholder outcomes. The framework reinforces the view that value creation in digital contexts is inherently relational and human-dependent.

3.3.1 Human Factors in Value Co-Creation

Value co-creation, a central tenet of modern service-dominant logic, assumes heightened significance in digital contexts, with human factors playing a pivotal role. The deployment of digital service capabilities necessitates human involvement to facilitate interaction and personalization, enabling a richer co-creation experience [11]. For instance, customer-seller interaction significantly impacts value co-creation intention and consumer brand engagement in the context of urology medical devices. Human factors, particularly employees' customer orientation, are emphasized when co-creating value through digital service capabilities [11]. This highlights that while digital platforms provide the infrastructure for interaction, the quality of human engagement, responsiveness, and problem-solving determines the depth of co-created value. Digital technologies can augment human capabilities, fostering "Intelligence Augmentation (IA)" which enhances decision-making in complex environments and ultimately empowers value co-creation [26]. This implies a shift from viewing AI purely to increase system smartness to focusing on its potential to enhance human contribution and wisdom [26]. Therefore, successful digital value co-creation requires careful consideration of how human roles evolve and how employees are supported in developing new skills to leverage digital properties effectively [11].

Table 2. Human Factors Influencing Value Co-Creation in Digital Contexts

Human Factor	Role in Value Co-Creation	Digital Context	Implications
Employee Engagement	Enables active participation	Digital services	Enhanced service quality
Human-AI Collaboration	Augments decision-making	Analytics and AI systems	Better outcomes
Customer Orientation	Facilitates interaction	Digital platforms	Stronger co-creation
Digital Literacy	Enables effective use	Enterprise systems	Higher realized value

Table 2 synthesizes findings from the literature on how human factors shape value co-creation in digitally enabled environments. The table highlights the roles of employee engagement, human–AI collaboration, customer orientation, and digital literacy in facilitating interactive value creation processes. By situating these human factors within specific digital contexts, the table illustrates how value co-creation extends beyond technological capability to depend heavily on human interaction, learning, and adaptive behavior.

3.3.2 Digital Humanism and Service Capabilities

The concept of Digital Humanism frames the integration of digital technologies in a manner that prioritizes human well-being, agency, and ethical considerations, influencing the development and deployment of service capabilities [29]. This perspective argues for a balanced approach where technological advancement serves human flourishing rather than merely optimizing processes for efficiency. In the context of service capabilities, Digital Humanism suggests that digital tools should augment, not replace, human creativity, empathy, and judgment [26]. Developing digital service capabilities is positively associated with value co-creation, but this requires new skills and mechanisms for supporting continuous learning about the properties of digital technologies [11]. The human role in the value creation process is being redefined, necessitating that organizations rethink and reorganize processes and operations to integrate human factors effectively [3]. This includes fostering a customer-oriented mindset among employees who deliver digital services. The emphasis on Digital Humanism guides the development of service capabilities that are intuitive, accessible, and align with human needs and values, ensuring that the benefits of digitalization are broadly distributed and ethically sound. It also underpins the transformation of business models to support an enhanced service experience, emphasizing that technology should serve people, not the other way around [6].

Figure 3. Conceptual Overview of Behavioral Barriers in Digital Value Realization

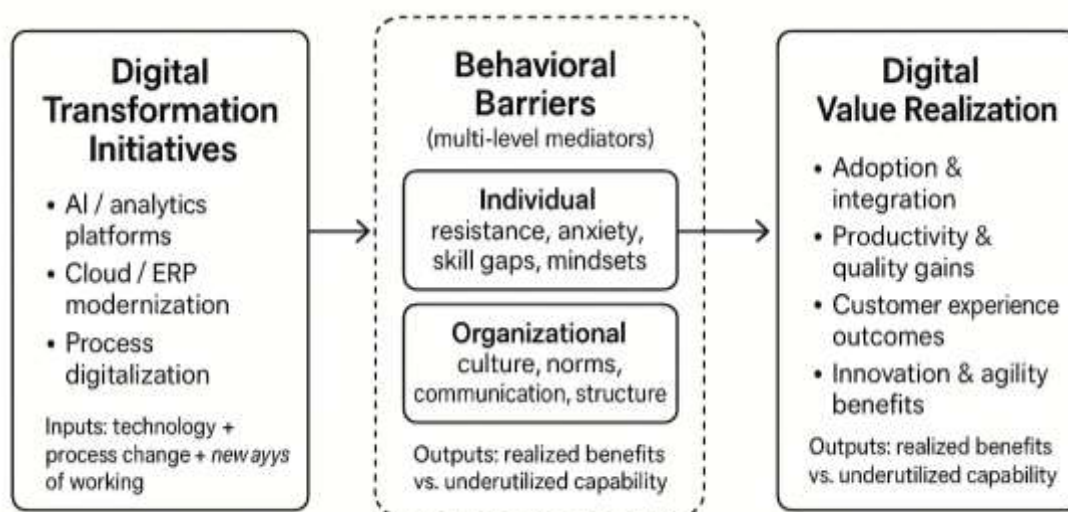


Figure 3 illustrates a high-level conceptual overview of how behavioral barriers mediate the relationship between digital transformation initiatives and realized organizational value. The figure depicts digital transformation efforts as inputs that are filtered through individual, organizational, and leadership-level behavioral factors. These behavioral barriers influence the extent to which digital capabilities are adopted, integrated, and leveraged, ultimately shaping value realization outcomes. The visualization emphasizes that technological investment alone is insufficient without corresponding human readiness and behavioral alignment.

3.4 Modeling and Addressing Behavioral Barriers

Effectively addressing the behavioral barriers to digital value realization requires a structured approach grounded in theoretical understanding and practical strategies. This involves not only identifying the specific human impediments but also understanding their underlying psychological and organizational roots [30]. Various theoretical frameworks can illuminate these dynamics, offering models for analysis and prediction. Based on these insights, targeted interventions and strategies can be developed to mitigate resistance, foster acceptance, and cultivate a more digitally ready workforce. The integration of theoretical perspectives with actionable strategies provides a robust framework for organizations to navigate the human challenges of digital transformation successfully [10].

3.4.1 Theoretical Frameworks for Behavioral Analysis

Several theoretical frameworks offer valuable lenses through which to analyze behavioral barriers in digital transformation. The Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) are widely used to understand factors influencing technology adoption, such as perceived usefulness and ease of use. These models help identify individual-level determinants of acceptance or resistance. Another relevant framework is Innovation Resistance Theory (IRT), which explains consumer resistance to innovations by categorizing barriers such as image, usage, tradition, risk, and value [23]. This theory helps dissect the psychological and practical reasons why individuals might reject new digital solutions. Organizational change theories, such as Lewin's Change Management Model or Kotter's 8-Step Change Model, provide frameworks for understanding the process of organizational adaptation and the critical role of leadership in overcoming resistance. Furthermore, paradox theory and organizational change literature shed light on employee acceptance of digital transformation strategies, particularly how a "paradox mindset" can influence receptivity to change [12]. These frameworks collectively inform a comprehensive behavioral analysis, enabling organizations to diagnose the specific nature of resistance and tailor interventions accordingly. The concept of digital mindsets, encompassing fixed/growth and zero-sum/expandable-sum beliefs, offers another framework for understanding employee engagement with technology [7].

Table 3. Theoretical Frameworks Applied to Human Factors in Digital Transformation

Framework	Analytical Focus	Level	Key Insight for Digital Transformation	Limitations
TAM	Perceived usefulness and ease of use	Individual	Explains initial acceptance	Limited cultural scope
UTAUT	Adoption behavior	Individual/Social	Explains intention to use	Static view
Innovation Resistance Theory	Resistance drivers	Individual	Explains rejection behavior	Consumer-centric
Change Management Models	Organizational change	Organizational	Highlights leadership role	Limited digital focus
Service-Dominant Logic	Value co-creation	Ecosystem	Emphasizes human interaction	Abstract application

Table 3 summarizes the principal theoretical frameworks used in existing research to analyze human and behavioral aspects of digital transformation. The table outlines each framework's analytical focus, level of application, and core insights, while also identifying key limitations noted in the literature. This comparative overview demonstrates that no single theory fully captures the complexity of behavioral barriers to digital value realization, thereby underscoring the need for integrative perspectives when examining human responses to digital transformation initiatives.

3.4.2 Strategies for Overcoming Behavioral Barriers

Overcoming behavioral barriers in digital transformation requires a multi-faceted approach that addresses individual, social, and organizational dynamics.

1. **Enhanced Communication and Transparency:** Clearly articulating the vision, purpose, and benefits of digital initiatives helps to alleviate fear of the unknown and build trust. Leaders should communicate how digital changes align with organizational goals and individual career development [13].
2. **Targeted Training and Skill Development:** Providing comprehensive training programs that address skill gaps and build digital competencies can reduce anxiety and increase perceived self-efficacy [10]. Continuous learning support helps employees adapt to evolving digital properties.

3. **Cultivating a Growth Mindset:** Encouraging employees to view new technologies as opportunities for growth and skill expansion, rather than threats, can be achieved through leadership messaging and supportive organizational culture [7].
4. **Promoting Employee Empowerment and Participation:** Involving employees in the design and implementation of digital solutions fosters ownership and reduces resistance. Employee empowerment significantly impacts digital transformation success [8].
5. **Strong Digital Leadership:** Leaders with specific digital leadership skills can inspire confidence, manage risks, and effectively drive change [9][19]. They must model desired behaviors and champion the digital vision.
6. **Fostering an Adaptive Organizational Culture:** Shifting towards a culture that embraces change, encourages experimentation, and supports collaboration is crucial. This includes addressing cultural issues identified as barriers in non-profit digital transformation [31][32].
7. **Demonstrating Tangible Value and Quick Wins:** Showcasing early successes and demonstrating clear value propositions for both individuals and the organization can build momentum and overcome skepticism [6][33].

These strategies, when applied systematically, can help mitigate behavioral barriers and facilitate a smoother digital transformation journey.

Table 4. Organizational Enablers and Mitigation Strategies for Behavioral Barriers

Barrier Category	Mitigation Strategy	Organizational Mechanism	Expected Outcome	Supporting Literature
Individual Resistance	Targeted training and reskilling	Continuous learning programs	Increased self-efficacy	Uzule & Verina (2023)
Negative Mindsets	Growth-mindset reinforcement	Leadership communication	Higher engagement	Solberg et al. (2020)
Cultural Barriers	Empowerment and participation	Cross-functional collaboration	Improved adoption	Alshammari et al. (2023)
Leadership Gaps	Digital leadership development	Leadership capability building	Stronger alignment	Abbu et al. (2022)

Table 4 presents a structured overview of organizational strategies reported in the literature for mitigating behavioral barriers to digital value realization. Each mitigation approach is

mapped to specific barrier categories and associated organizational mechanisms, such as leadership communication, training programs, and employee empowerment initiatives. The table illustrates how targeted interventions can reduce resistance, enhance engagement, and improve adoption of digital technologies. By linking behavioral challenges to practical responses, this table provides a clear synthesis of actionable insights derived from prior research while maintaining an evidence-based academic focus.

4 Analysis / Discussion

4.1 Synthesis of Key Behavioral Challenges in Digital Transformation

The synthesis of findings across the reviewed literature reveals consistent patterns regarding the centrality of human behavior in digital value realization. Across diverse organizational contexts, failures in digital transformation are frequently attributed not to technological inadequacy but to misalignment between human readiness, organizational culture, and leadership capabilities.

The preceding literature review identifies a confluence of behavioral challenges that significantly impede digital value realization. These challenges coalesce around three core areas: individual psychological factors, collective organizational dynamics, and the specific role of leadership. At the individual level, resistance to change stems from a combination of fear, uncertainty, and the perceived effort associated with learning new technologies [10][7]. Employees' "digital mindsets"—their beliefs about personal ability and resource availability—directly influence their engagement, with fixed or zero-sum mindsets correlating with withdrawal [7]. Cognitive biases, such as status quo bias and confirmation bias, further entrench resistance by shaping perceptions of new technologies negatively [23].

Organizationally, the existing culture frequently emerges as a pivotal barrier. Cultures lacking support for empowerment, teamwork, or continuous learning actively undermine digital efforts, even when technological solutions are robust [8]. Social acceptance challenges, including poor internal communication and rigid business structures, prevent the widespread adoption necessary for systemic change [24][10]. The absence of a shared vision or collective buy-in also fragments efforts, diminishing the overall impact. Crucially, leadership, while a potential enabler, can also constitute a barrier if executives lack specific digital leadership competencies or fail to articulate a compelling digital vision [18][9]. The synthesis reveals that these behavioral challenges are not isolated; they interact dynamically. Individual resistance can be exacerbated by an unsupportive culture, and ineffective leadership can amplify both. Therefore, successful digital transformation necessitates a holistic strategy that addresses these interconnected human elements rather than focusing solely on technological implementation [34].

Figure 4. Integrative View of Behavioral Barriers and Mitigation Strategies

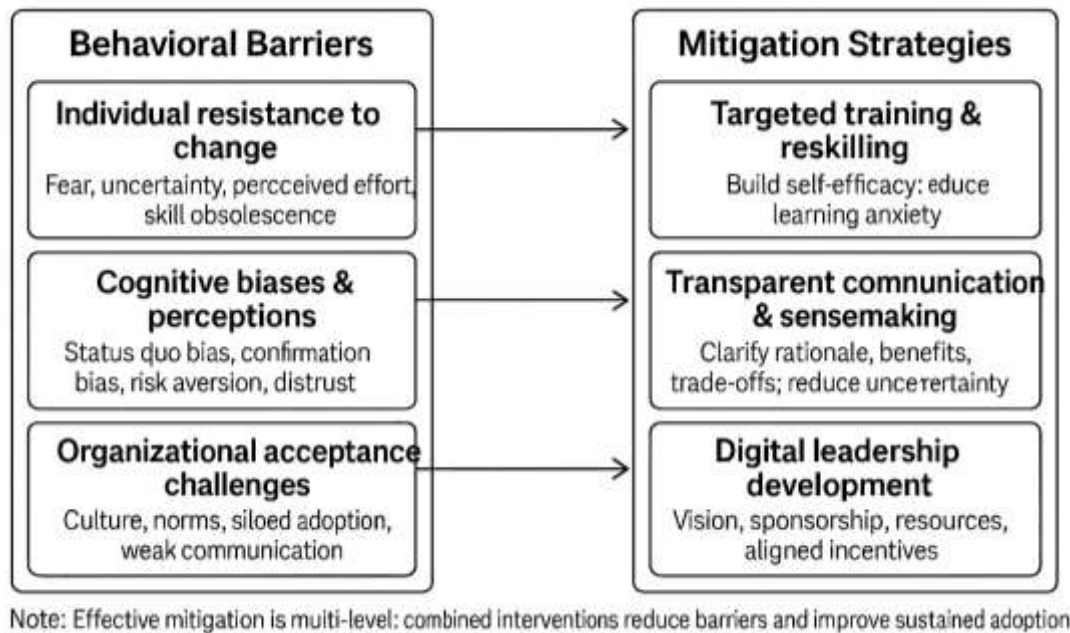


Figure 4 provides an integrative summary of the literature by juxtaposing key behavioral barriers to digital value realization with corresponding organizational mitigation strategies. The figure visually links individual-level barriers, organizational challenges, and leadership limitations with interventions such as training, empowerment, transparent communication, and digital leadership development. This integrative view highlights that successful digital transformation requires coordinated, multi-level responses to behavioral challenges rather than isolated technological or managerial solutions.

4.2 Implications for Organizations Undertaking Digitalization Projects

For organizations embarking on digitalization projects, the prevalence of behavioral barriers carries significant implications. A primary implication is that technological readiness alone is insufficient for successful digital transformation; human readiness is equally, if not more, critical [3]. Organizations must shift their focus from deploying digital tools to actively cultivating an environment that nurtures human adaptation and engagement. This necessitates substantial investment in human capital development, including training programs designed not only for technical skills but also for fostering adaptability, critical thinking, and collaborative capabilities in a digital context.

Furthermore, the findings suggest that a top-down mandate for digital change will likely encounter significant friction if not accompanied by strategies for bottom-up acceptance. Employee participation and empowerment in the design and implementation phases of digitalization projects can transform potential resistors into advocates [8]. Organizations must also recognize that digital transformation is an ongoing journey, not a one-time project. This implies a continuous need to monitor and address evolving behavioral barriers, adjusting strategies as employees and the organization mature digitally. For instance, the factors influencing process digitalization project success include a broad range of sociotechnical topics, highlighting the need for a holistic approach [21].

Organizations must critically evaluate their existing cultural norms and leadership styles, as these represent foundational determinants of how digital initiatives will be received and integrated. Failing to address these human factors risks project abandonment, loss of stakeholder trust, and significant financial waste.

To enhance clarity, the discussion distinguishes between academic implications relating to theory integration and research directions and practical implications relating to managerial actions and organizational design choices. This separation ensures analytical rigor while maintaining practical relevance.

4.3 The Impact of Leadership and Organizational Culture on Value Realization

Leadership and organizational culture are demonstrably intertwined, exerting a profound and reciprocal influence on an organization's capacity for digital value realization. Effective digital leadership, characterized by the ability to inspire confidence in disruptive initiatives and guide through uncertainty, is a critical enabler [9][19]. Leaders who embody a growth mindset and champion digital literacy can effectively counter employee resistance and foster a collective willingness to embrace change [7]. Conversely, a lack of visionary digital leadership or an inability to communicate the strategic imperative of transformation can leave employees disoriented and resistant, thereby impeding value realization [18].

Organizational culture provides the contextual framework within which leadership operates and employees react. A culture that prioritizes employee empowerment, collaboration, and continuous learning significantly correlates with successful digital transformation outcomes [8]. Such a culture can transform potential behavioral barriers into opportunities for collective growth and innovation. In contrast, rigid, hierarchical, or risk-averse cultures can stifle experimentation and hinder the necessary adaptation to digital processes, irrespective of technological investment. The interplay between these factors determines the extent to which digital technologies are integrated into core business processes and how effectively they contribute to strategic objectives. Value realization is not merely about implementing technology; it is about cultivating a human ecosystem, guided by informed leadership and a supportive culture, capable of leveraging digital capabilities for sustained competitive advantage [21].

4.4 Integrative Models for Predicting and Managing Behavioral Barriers

To predict and manage behavioral barriers effectively, organizations can benefit from integrative models that synthesize insights from various theoretical frameworks. Such models move beyond singular perspectives like technology acceptance to encompass the broader sociotechnical context of digital transformation. One approach involves combining elements of the Technology Acceptance Model (TAM) or UTAUT with insights from Innovation Resistance Theory (IRT) [23]. This allows for a dual assessment of factors driving acceptance (e.g., perceived usefulness) and factors driving resistance (e.g., image barriers, usage barriers). Integrating organizational change theories, such as Lewin's force field analysis, can help map out the driving and restraining forces at play within a specific organizational context, providing a clearer picture of where behavioral resistance originates.

Furthermore, incorporating concepts like "digital mindsets" [7] and "paradox mindsets" into these models allows for a more nuanced understanding of individual psychological readiness. An integrative model could visualize the digital transformation journey as a series of interconnected stages, with specific behavioral barriers and corresponding mitigation strategies mapped to each stage. For instance, an initial "awareness" stage might focus on addressing cognitive biases and fears through transparent communication. A subsequent "adoption" stage would emphasize training and demonstrating practical utility, while a later "integration" stage would focus on cultural reinforcement and continuous learning. Such a model could employ a methodology like "CS: GT-DEMATEL-ISM" to identify and examine factors within complex systems, creating a framework that illustrates how digital technology enables the reconstruction of data, processes, organizations, and business models to improve enterprise capabilities and performance [5]. This comprehensive modeling approach enables organizations to proactively identify potential roadblocks and deploy targeted, evidence-based interventions to foster human acceptance and drive successful digital value realization.

4.5 Practical Recommendations for Digital Transformation Success

Based on the analysis of behavioral barriers and value creation mechanisms, several practical recommendations emerge for organizations seeking to achieve digital transformation success:

1. **Develop a Human-Centric Digital Strategy:** Place human factors at the core of digital strategy formulation, rather than as an afterthought. This means understanding employee needs, concerns, and capabilities from the outset [3].
2. **Invest in Digital Leadership Development:** Prioritize training and development for leaders to cultivate specific digital leadership skills, including vision articulation, change management, and fostering a growth mindset within their teams [18][9].
3. **Foster an Adaptive and Empowering Organizational Culture:** Actively cultivate a culture that values experimentation, psychological safety, and employee empowerment. Ensure that new organizational practices and support for change are genuinely integrated [8].
4. **Implement Comprehensive Training and Reskilling Programs:** Provide ongoing training that addresses both technical skills and soft skills (e.g., adaptability, collaboration) required for the digital workplace. Focus on fostering a "growth mindset" regarding new technologies [7].
5. **Promote Transparent Communication and Employee Involvement:** Engage employees early and continuously in the digital transformation process. Clearly communicate the rationale, benefits, and potential impacts of changes, allowing for feedback and co-creation opportunities [13].
6. **Pilot Projects and Demonstrate Quick Wins:** Start with smaller, impactful pilot projects to demonstrate tangible benefits and build momentum. Showcase early successes to overcome skepticism and encourage broader adoption [6].

7. **Leverage Human Factors in Value Co-Creation:** Design digital service capabilities that enhance human-human and human-AI interaction, focusing on augmenting human intelligence and wisdom rather than merely automating tasks [26] .
8. **Establish Metrics for Behavioral Adoption:** Beyond technical implementation, measure the rate of employee adoption, engagement, and proficiency with new digital tools. Use these metrics to identify and address persistent behavioral barriers.

These recommendations collectively emphasize that digital transformation is primarily a human endeavor, requiring strategic attention to behavioral dynamics for sustained success.

5 Conclusion

5.1 Summary of Findings

This research has explored the intricate role of the human factor in digital value realization, specifically modeling the behavioral barriers that frequently impede successful digital transformation. The synthesis of literature reveals that despite the technological imperative, human responses, perceptions, and organizational dynamics significantly determine the ultimate success of digitalization initiatives. Key behavioral barriers identified include individual resistance stemming from fear, perceived effort, and fixed mindsets, alongside broader social and organizational acceptance challenges rooted in cultural rigidity, poor communication, and inadequate support for change [10][7][8]. Cognitive biases further distort the perception of new technologies, reinforcing resistance [23]. Crucially, organizational culture and the quality of digital leadership emerged as foundational determinants, shaping employee mindsets and the overall readiness for change [9]. Furthermore, the study underscored how human factors are central to new value co-creation mechanisms in digital environments, particularly through effective human-human and human-AI interactions that prioritize "Intelligence Augmentation" [26] . A comprehensive set of strategies, ranging from transparent communication and targeted training to fostering adaptive cultures and strong digital leadership, are necessary to overcome these pervasive behavioral barriers.

In summary, this research reinforces the view that digital transformation is fundamentally a human-centered organizational change process. Behavioral barriers, including resistance to change, cultural rigidity, leadership gaps, and cognitive biases, play a decisive role in shaping whether digital initiatives translate into realized value. Addressing these barriers requires sustained attention to human readiness, learning, and engagement alongside technological investment.

5.2 Implications for Future Research and Practice

The findings carry significant implications for both future academic inquiry and organizational practice. For researchers, this study highlights the ongoing need for empirical investigations into the nuanced interplay between specific behavioral barriers

and digital transformation outcomes across diverse industries and geographical contexts. Future studies could quantitatively validate the proposed integrative models, perhaps utilizing longitudinal designs to track the evolution of behavioral barriers and the effectiveness of mitigation strategies over time. The development of standardized assessment tools for "digital mindsets" and "digital leadership" could provide valuable instruments for both research and practice [7][9]. For practitioners, the central message is clear: digital transformation is not merely an IT project, but a profound organizational change initiative driven by human behavior. Organizations must proactively integrate human-centric design principles into their digital strategies, investing equally in technological infrastructure and human capital development. This includes nurturing digital leadership capabilities, fostering an empowering organizational culture, and implementing continuous learning programs to equip employees with the necessary skills and mindsets for a digitally evolving world [8].

Future research could extend this work in three primary directions. First, empirical studies may quantitatively examine the relationships between behavioral barriers and digital value realization across industries. Second, longitudinal research could explore how human readiness evolves throughout different stages of digital transformation. Third, further investigation into human–AI collaboration and digital humanism may deepen understanding of value co-creation in increasingly automated organizational environments.

5.3 Final Reflections on the Human Factor in Digital Value Realization

The journey of digital transformation is inherently complex, characterized by both immense potential and significant challenges. This research firmly establishes that the human factor is not merely a component but the ultimate determinant of digital value realization. Organizations that solely focus on technology adoption without addressing the underlying behavioral barriers and fostering human readiness are likely to see their investments yield suboptimal results. Realizing digital value extends beyond efficiency gains or new revenue streams; it involves cultivating an adaptive, innovative, and human-empowered workforce capable of thriving in a perpetually evolving digital landscape. The integration of digital humanism, where technology serves to augment human capabilities and wisdom, offers a guiding philosophy for future transformations [26]. Ultimately, the success of digital transformation will be measured not by the technologies deployed, but by the extent to which people within the organization embrace, leverage, and co-create value with these new digital capabilities, ensuring that the transformative power of digitalization genuinely serves human and organizational flourishing.

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