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Does Digitization Lead to Sustainable Economic Behavior? Investigating the Roles of Employee Well-Being and Learning Orientation

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Abstract: As digital transformation accelerates across industries, understanding its role in shaping sustainable employee behavior is essential, particularly in mission-driven sectors like healthcare. This study investigates how digitization influences sustainable economic behavior among healthcare professionals, emphasizing the mediating role of employee well-being and the moderating influence of learning orientation. Rooted in the Job Demands–Resources (JD–R) model, the study adopts a quantitative approach with data collected from 503 healthcare employees, including physicians, nurses, and administrative staff, across hospitals in Istanbul and Ankara, Turkey. Structural equation modeling and moderated mediation analysis reveal that digitization significantly enhances employee well-being, which subsequently fosters sustainable economic behavior. Additionally, learning orientation strengthens both the direct relationship between digitization and sustainability, as well as its indirect effect through well-being. These findings advance the digital sustainability literature by integrating psychological and organizational dynamics and offer actionable insights for healthcare leaders. Specifically, the study highlights the importance of aligning digital initiatives with human-centered values to drive resilience, improve employee well-being, and achieve long-term sustainability outcomes in healthcare organizations.



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Keywords: digitization; sustainable economic behavior; employee well-being; learning orientation; JD–R model; healthcare sector; digital sustainability

1. Introduction

The integration of digital technologies in healthcare is revolutionizing how services are delivered, replacing traditional, paper-based systems with more efficient, accessible, and data-driven approaches to care. Emerging technologies such as artificial intelligence (AI) and digital health platforms offer enhanced clinical decision-making, streamlined workflows, and improved patient outcomes [1–4]. In addition to operational efficiency, digitalization holds potential for improving employee psychological well-being and fostering sustainable economic behavior by facilitating flexible work environments, providing mental health resources, and embedding sustainability practices into daily operations [5].

In the healthcare sector—an environment marked by high demands, complexity, and interdisciplinary collaboration—employee behaviors that align with sustainability are shaped not only by personal values but also by shared organizational norms and perceptions [6,7]. Sustainable economic behavior encompasses organizational efforts to act in environmentally and socially responsible ways, and in healthcare settings, it involves optimizing resource use, reducing waste, and promoting ethical care practices [8–11].

Mental health, a foundational component of employee well-being, plays a critical role in these dynamics [12]. Defined by the World Health Organization (WHO) as a state of mental well-being that enables individuals to cope with life stresses [13], mental health also serves as a driver of productive and engaged behavior [14–16].

Learning orientation, which reflects an organization's commitment to continuous improvement and adaptive learning, is particularly important in the context of digital transformation. It enables healthcare professionals to better navigate changing demands, integrate new technologies, and engage in reflective practice [17,18]. At the individual level, learning orientation fosters a proactive mindset and enhances the ability to extract meaning from new experiences, while at the organizational level, it cultivates a supportive climate for innovation and psychological safety [19].

Despite growing recognition of the value of digital tools in enhancing employee outcomes, healthcare organizations often underutilize them in supporting workforce well-being [20]. Addressing this gap, this study applies the Job Demands–Resources (JD–R) model [21] to investigate how digitalization shapes sustainable economic behavior within the healthcare sector, focusing particularly on the psychological well-being of employees [18,22,23]. It examines employee mental health as a key mediating mechanism and introduces learning orientation as a contextual moderator that may influence these dynamics. In doing so, the study offers a novel empirical exploration of how technology-driven transformation intersects with individual and organizational factors to foster environmentally and economically sustainable workplace behaviors.

The study contributes to the literature in several important ways. Firstly, it extends the application of the JD–R model by integrating digitalization—a contemporary organizational resource—as a central construct in explaining sustainable economic behavior, a relatively underexplored outcome in healthcare research. Secondly, by examining mental health as a mediator, the study underscores the psychological processes through which digital tools impact sustainability outcomes, thereby highlighting the human-centered dimensions of digital transformation. Thirdly, the moderating role of learning orientation adds a cultural and behavioral lens to the analysis, revealing how an organization's emphasis on growth and development can amplify or buffer these effects. This multidimensional approach helps bridge the gap between digital innovation, employee well-being, and sustainability in complex healthcare environments. Based on these objectives, the study is guided by the following research questions:

1. In what ways does digitalization influence both employee well-being and sustainable economic behavior?
2. Does employee well-being mediate the relationship between digitalization and sustainable economic behavior?
3. To what extent does learning orientation moderate the effects of digitalization on employee well-being and sustainable economic behavior?
4. Does learning orientation enhance the mediating influence of employee well-being in the relationship between digitalization and sustainable economic behavior?

Together, these questions aim to provide a comprehensive understanding of how digital transformation, employee well-being, and organizational learning culture interact to foster sustainability in healthcare settings. The remainder of this paper is organized as follows: Section 2 reviews the relevant literature and develops the hypotheses. Section 3 outlines the methodological approach. Section 4 presents the data analysis and results. Section 5 discusses the findings and their theoretical and practical implications. Finally, Section 6 concludes with a summary of contributions and recommendations for future research and practice.

2. Theoretical Framework and Hypotheses Development

2.1. JD–R Model

The Job Demands–Resources (JD–R) model explains how job demands and job resources interact to influence employee well-being and organizational outcomes [21,24,25]. The model comprises two interrelated mechanisms: the health impairment process, which explains how job demands can lead to strain and burnout, and the motivational process, which outlines how job resources promote engagement and performance [21,26]. Job strain emerges when employees face high demands such as a heavy workload, tight deadlines, emotional labor, and limited decision-making autonomy—conditions that result in negative physical and psychological health effects [27,28]. Chronic exposure to such stressors may lead to self-undermining behaviors that reinforce job strain and burnout [29].

The JD–R model has evolved over time and is widely regarded as a comprehensive framework for understanding the interplay between individual and contextual factors in the workplace [30]. While job demands refer to physical, psychological, social, or organizational aspects of the job requiring sustained effort and associated with physiological or psychological costs, job resources refer to physical, psychological, social, or organizational aspects that are functional in achieving work goals, reducing job demands, or stimulating growth and development [31,32]. Empirical studies have supported the JD–R model's robustness across various contexts and outcomes [33,34].

Importantly, the JD–R framework has been adapted to accommodate contemporary workplace phenomena such as digitization [18,22,23,35]. This study extends the JD–R model by incorporating digitization—conceptualized as IT infrastructure and IT proactive stance—as core components of digital job demands (DJD) and digital job resources (DJR). Previous research has increasingly acknowledged the relevance of the JD–R model in digital work environments. For instance, Bakker et al. [36] classified computer problems as job demands, while Day et al. [37] proposed a model that integrates information and communication technology (ICT) with employee stress and well-being. More recently, Carlson et al. [38] expanded the JD–R model to include digital autonomy and monitoring, and Wang et al. [23] explored technostress through the JD–R lens. Scholze and Hecker [35] further refined the model by explicitly incorporating digitization as a structural element affecting white-collar workers' experiences.

In line with these advancements, our study adopts an extended JD–R model and distinguishes between DJD and DJR to explore the dual impact of digitization. Specifically, IT infrastructure—the organization's technological foundation—and IT proactive stance—the strategic readiness to deploy digital innovations—are examined as job resources that can reduce strain and enhance motivation [39,40]. The model also integrates employee well-being (e.g., mental health) as a mediator and learning orientation as a moderator, thereby offering a more nuanced understanding of how digitization shapes employee experiences and behaviors.

Moreover, this study responds to recent calls for more sustainable approaches in organizational research by linking digitization to sustainable economic behavior, which is conceptualized as employee attitudes and tendencies toward long-term value creation [9]. The JD–R model's emphasis on well-being and engagement provides a relevant theoretical foundation for examining how digital resources and demands can influence such sustainable behaviors. As visualized in Figure 1, the adapted JD–R model in this study integrates the independent variable (digitization), dependent variable (sustainable economic behavior), mediator (employee mental health), and moderator (learning orientation), thus presenting a holistic framework for theorizing the interplay between technology and sustainability in the workplace.

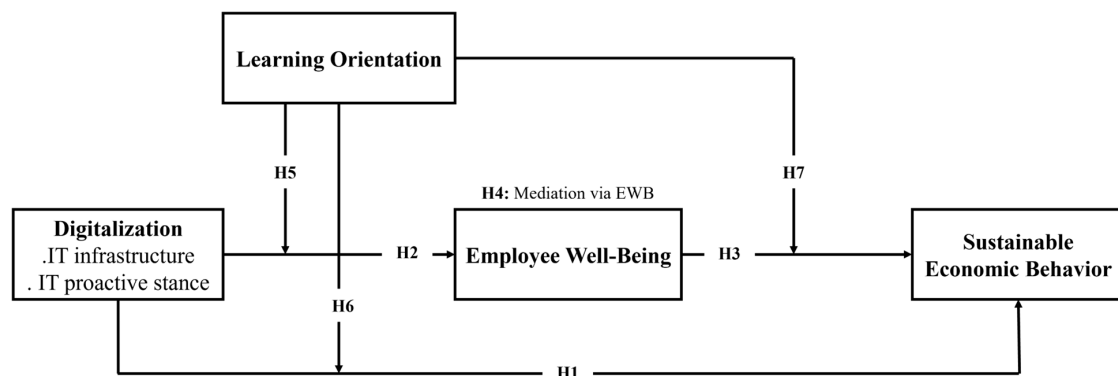


Figure 1. Conceptual model.

2.2. Digitalization

Digitalization is increasingly viewed as a transformative mechanism for reshaping not only organizational systems but also employee experiences within complex sectors like healthcare. With rapid technological advancement, digitalization enables healthcare institutions to integrate real-time data systems, automation tools, and AI-driven platforms that enhance operational efficiency and decision-making [39]. These digital capabilities, when strategically deployed, offer more than administrative utility—they also serve as enablers of supportive work environments by reducing manual burden, facilitating workflow, and empowering staff to manage complex responsibilities more effectively [41,42]. In this context, digitalization is conceptualized through two dimensions: IT infrastructure (ITI)—which includes the foundational digital tools, applications, and systems necessary for data-driven processes [40,43–45]—and IT proactive stance (ITS)—which reflects the strategic, forward-looking deployment of technology to achieve organizational goals [44,46].

In healthcare, where employees are routinely exposed to emotionally and cognitively demanding tasks, digitalization has the potential to serve as a critical buffer against psychological distress. Research suggests that when hospitals invest in integrated IT infrastructure, they not only streamline services but also improve the quality of work–life balance for healthcare workers [47,48]. For instance, secure access to patient records, automated task management, and real-time communication platforms reduce administrative overload and free up cognitive resources, allowing healthcare workers to focus more effectively on patient care [49,50]. These improvements can directly impact employee mental health by lowering job-related stress and enhancing perceptions of organizational support.

Beyond the technical infrastructure, an organization’s IT proactive stance (ITS) signals its long-term vision for using technology to support both performance and people. Institutions that adopt a proactive approach to digital strategy often develop interventions aimed at promoting employee wellness, including digital platforms for mental health monitoring, AI-assisted workload management, and flexible digital communication tools [51,52]. Such initiatives can enhance psychological safety, foster autonomy, and reduce burnout—critical outcomes in high-pressure healthcare environments. ITS, therefore, not only enables the implementation of digital tools but also reflects a values-driven orientation toward employee well-being and sustainable workforce engagement [53].

Despite the potential advantages, digital transformation efforts often encounter employee resistance and psychological inertia [54]. Concerns about data privacy, digital fatigue, and fear of job displacement remain prevalent among healthcare professionals [55,56]. These barriers underscore the importance of aligning digitalization efforts with employee needs and fostering participatory implementation processes. When frontline staff are actively engaged in the design and deployment of IT systems, their acceptance and trust increase, which in turn enhances the systems’ effectiveness and promotes mental well-

being [39]. Therefore, digitalization must be approached as both a technological and human-centered strategy to maximize its potential for organizational resilience.

Building on this foundation, the current study conceptualizes digitalization—via ITI and ITS—as the central driver of sustainable economic behavior, operationalized through employees’ work-related attitudes and behavioral tendencies. By incorporating employee mental health as a mediating mechanism, the study extends existing frameworks that link IT capabilities to performance outcomes by emphasizing the psychological processes that bridge digitalization and sustainable behavior. Furthermore, learning orientation is introduced as a moderator that can enhance or diminish the effect of digitalization, depending on the extent to which an organization promotes continuous learning, adaptability, and open-mindedness among its workforce. This approach offers a holistic perspective on how digital strategies can be purposefully designed to not only improve operational performance but also cultivate a psychologically resilient and behaviorally sustainable healthcare workforce.

2.3. Sustainable Economic Behavior

Sustainable economic behavior refers to individual-level actions that consciously align with long-term economic, environmental, and social objectives [9]. It represents a behavioral orientation that balances personal or organizational economic interests with ecological integrity and social well-being [57,58]. Within the context of healthcare organizations, such behavior is embodied in how hospital employees make daily decisions—minimizing waste, conserving resources, reducing unnecessary costs, and improving efficiency—while maintaining high-quality patient care [59]. This definition aligns with the growing recognition that sustainability in healthcare is not only a systemic goal but also a behavioral challenge that depends on individual employee engagement and values.

In this study, sustainable economic behavior is conceptualized specifically at the individual level, capturing how healthcare employees actively contribute to organizational sustainability through their actions and decision-making [9]. Employees’ tendencies to conserve resources, adopt eco-friendly practices, and act in a financially responsible manner directly influence their organization’s economic sustainability [60]. As Qiu et al. [9] highlight, such behaviors are shaped by personal attitudes, training, and workplace learning opportunities that foster awareness of the interconnectedness between social, environmental, and financial outcomes. These behaviors collectively contribute to the broader performance of healthcare institutions by enhancing operational efficiency and supporting long-term sustainability goals.

Social and cultural influences also play a pivotal role in shaping sustainable behavior. Factors such as peer expectations, cultural values, and community norms serve as social regulators that either reinforce or inhibit individuals’ inclination toward sustainable economic practices [61]. These social dynamics are particularly influential in healthcare settings, where collective commitment to service quality and resource optimization is essential. Through proactive engagement in sustainability-driven actions, employees extend the impact of their behavior beyond the organizational level, contributing to systemic goals such as environmental protection and public health efficiency, which resonate with the broader agenda of sustainable development [9,62,63].

In sum, sustainable economic behavior in this study reflects the proactive role of healthcare employees in supporting their institution’s sustainability initiatives. It is driven by internal motivations, reinforced by social influences, and manifested in deliberate actions aimed at reducing environmental harm, enhancing cost-effectiveness, and promoting social accountability [9,57]. This individual-level construct is a key component in advancing organizational sustainability and, ultimately, improving systemic health and economic outcomes.

2.4. Digitalization and Sustainable Economic Behavior

Digitalization represents a transformative force that reshapes industries, particularly in healthcare, by enabling the creation and adoption of new technologies that integrate seamlessly with existing systems. It serves as a core foundation for fostering innovation and driving sustainability efforts by optimizing resource use and improving operational efficiency [64]. As healthcare systems continue to embrace digitalization, it becomes a critical enabler of sustainable economic behavior. This encompasses the adoption of practices that contribute to long-term economic, environmental, and social sustainability, with an emphasis on efficiency, cost-effectiveness, and enhanced well-being [65]. Digitalization's role in healthcare extends beyond technological innovation; it plays a pivotal role in enhancing the quality of care, streamlining administrative tasks, and ultimately improving the overall sustainability of healthcare delivery.

The relationship between digitalization and sustainable economic behavior is multi-dimensional. Digital tools and technologies are increasingly utilized to foster environmentally conscious practices while enhancing patient care and decision-making. The integration of digital technologies, such as electronic health records (EHRs), telemedicine platforms, and data-driven decision support systems, enables healthcare professionals to make more informed, efficient, and sustainable choices [66]. These tools promote better health outcomes while simultaneously reducing resource waste, supporting the transition to more sustainable healthcare practices [67]. As a result, digitalization has the potential to significantly reduce the environmental footprint of healthcare organizations by improving resource management and waste reduction, thereby contributing to broader sustainability goals.

In addition to environmental sustainability, digitalization influences economic behavior by optimizing healthcare processes, improving productivity, and facilitating cost-saving practices. Emerging technologies like personalized medicine, gene therapy, and advanced diagnostic tools are reshaping healthcare delivery by providing more targeted and effective treatments that utilize fewer resources than traditional approaches [68]. These innovations improve patient outcomes while lowering the overall cost burden on healthcare systems. Furthermore, digitalization empowers healthcare professionals to monitor and evaluate performance continuously, allowing for the identification of inefficiencies and areas for improvement. This fosters a culture of continuous learning and adaptation, further driving sustainability in both operational and economic terms [69].

Beyond patient care and operational improvements, digitalization also plays a significant role in fostering a sustainable organizational culture within healthcare systems. By enhancing communication and collaboration across teams, digital tools contribute to the development of a more resilient and adaptable healthcare workforce. According to the JD–R model, digitalization serves as an organizational resource that reduces job demands, enhances employee engagement, and improves both organizational and individual well-being [22]. These technological advancements help healthcare organizations foster an environment where both employees and patients can thrive, supporting long-term economic sustainability and the achievement of health sector sustainability goals.

Therefore, the impact of digitalization on sustainable economic behavior in healthcare is undeniable. By improving the efficiency and effectiveness of healthcare delivery, enhancing employee and patient engagement, and reducing environmental and economic waste, digitalization aligns operational processes with sustainability goals. Based on these theoretical insights and empirical findings, the following hypothesis is proposed:

H1. *Digitalization has a positive impact on sustainable economic behavior.*

2.5. Digitalization and Employee Mental Health

Digitalization plays an increasingly critical role in contemporary work environments, as it enables the collection, analysis, and visualization of spatial and operational data to support essential societal and institutional functions [39]. These include maintaining public order, providing key services, securing national interests, managing economic systems, and facilitating evidence-based policy-making [70]. Within organizations, digitalization extends beyond operational efficiency, shaping employee experiences and influencing their psychological and emotional states in profound ways [71].

Employee mental health is central to sustaining high performance and long-term organizational effectiveness. Organizations are increasingly expected to embed mental well-being into their core strategies, focusing on the early identification of stressors, provision of support services, and the creation of policies that nurture a healthy work–life balance [14]. In this context, digitalization emerges as a double-edged sword. On one hand, it can contribute to mental strain, as constant connectivity, blurred boundaries between work and personal life, and the erosion of face-to-face social interactions may foster stress, fatigue, and emotional isolation [72]. These challenges underscore the potential adverse psychological effects of unregulated or poorly managed digital work environments.

On the other hand, when digitalization is implemented in a structured and supportive manner, it can significantly enhance employee well-being [39]. Digital technologies provide platforms for remote work, access to digital mental health resources, and tools for time management, all of which can support employees' mental health and overall well-being [73]. Furthermore, digital tools can enable organizations to monitor work patterns and proactively address stress-related indicators before they escalate into more serious mental health issues.

The JD–R model offers a valuable framework for understanding the dual impact of digitalization on employee well-being [18,23]. While digitalization can serve as a job resource by improving workflow efficiency and reducing administrative burdens, it can also act as a job demand if it increases workload through constant accessibility and insufficient digital literacy or support systems [74]. Thus, the overall impact of digitalization on mental health is contingent on how digital technologies are integrated and managed within the workplace [39]. When applied strategically, digitalization holds promise as a supportive force for employee mental well-being. Based on this rationale, the following hypothesis is posited:

H2. *Digitalization has a positive impact on employee well-being.*

2.6. Employee Mental Health and Sustainable Economic Behavior

Employee mental health refers to the psychological well-being of individuals working in the healthcare industry [75]. The inherently demanding nature of healthcare roles—marked by high stress, extended working hours, emotional exhaustion, and exposure to traumatic events—places considerable strain on workers' mental health [76]. Sustainable economic behavior in the healthcare sector encompasses efforts to improve operational performance while minimizing the ecological impact and ensuring long-term system viability [77].

There is a growing consensus that employee mental health is a fundamental driver of sustainable economic behavior, particularly in high-pressure environments like healthcare. Workers with sound mental health are more likely to remain motivated, manage job-related stress, and engage in practices that support organizational sustainability goals [9,78]. A mentally resilient workforce contributes not only to better clinical outcomes and patient

satisfaction but also to economic efficiency through reduced absenteeism, lower turnover, and enhanced productivity.

Moreover, the JD–R model offers a useful theoretical lens to understand this relationship [21]. According to this model, when healthcare employees are overwhelmed by job demands—such as excessive workload, emotional labor, or staff shortages—their psychological resources are depleted, leading to stress, disengagement, and burnout [12]. Conversely, when mental health is supported, employees are better positioned to deploy personal resources like attention, creativity, and problem-solving—traits essential for navigating sustainability challenges [9].

Workplace aggression and violence, which are prevalent in many healthcare settings, further undermine mental health. Exposure to such hostile environments is associated with higher rates of depression, anxiety, and emotional fatigue [79,80]. These negative psychological states, if left unaddressed, can erode employees' willingness or ability to act in sustainable and ethical ways [12]. Thus, fostering a psychologically safe and supportive workplace is essential not only for protecting employee well-being but also for advancing sustainability agendas in healthcare systems.

From a cognitive standpoint, employee mental health significantly influences key psychological functions, including decision-making, ethical judgment, and the ability to process complex information [81]. Employees with high levels of mental well-being tend to demonstrate stronger critical thinking, greater situational awareness, and more effective problem-solving—capabilities that are instrumental for implementing sustainable policies and behaviors [82]. In this sense, employee well-being becomes a catalyst for long-term sustainability, enabling individuals to identify inefficiencies, propose eco-friendly alternatives, and adopt resource-conserving practices in daily operations [9].

Furthermore, mental health equips employees with resilience to navigate socio-economic uncertainties and organizational transitions, which are becoming increasingly common in the evolving healthcare landscape [83]. Employees who experience psychological well-being are more likely to remain engaged, environmentally responsible, and ethically committed in their roles—thereby contributing to both social and economic dimensions of sustainability [9,84]. Therefore, building upon both theoretical and empirical foundations, this study proposes the following hypothesis:

H3. *Employee well-being has a positive impact on sustainable economic behavior.*

2.7. The Mediating Role of Employee Mental Health

Employee mental health plays a pivotal role in determining their contribution to organizational effectiveness, particularly within the healthcare sector. Positive mental health has been consistently linked to improved job performance, while poor mental health—manifesting as stress, anxiety, or burnout—often results in diminished productivity and job dissatisfaction [14,85]. Mental health, in this regard, is not merely a personal outcome but a critical organizational resource that shapes how effectively employees adapt to work demands and engage in sustainable behaviors [9]. When employees feel valued and supported, their ability to cope with challenges improves, which in turn enhances their psychological well-being and job satisfaction. Conversely, unmet expectations or overwhelming demands can impair mental functioning and reduce organizational effectiveness [86].

Importantly, mental health can be conceptualized as a reflection of workplace well-being—shaped by organizational culture, resource accessibility, and supportive practices [87,88]. In this context, organizations are encouraged to embed wellness activities and psychological support into daily routines to nurture mindfulness, boost morale, and build emotional resilience among staff. Initiatives such as mindfulness workshops, mental health

training, and flexible scheduling have become vital tools in fostering healthier and more sustainable work environments [9].

The rapid digitalization of healthcare systems has further amplified this connection by transforming work environments in ways that enhance employee well-being [39]. Digital tools and platforms make critical information more accessible, streamline operations, and reduce cognitive overload, ultimately contributing to psychological relief and mental clarity [66]. Moreover, digital environments that prioritize usability and support can contribute to a culture of wellness, where mental health is protected through reduced stressors and enhanced autonomy [89].

Digitalization in hospitals refers to the process of making knowledge readily accessible through digital platforms, facilitating easier access to medical records, treatment protocols, and other critical information [39]. This transition improves patient care, enhances operational efficiency, and supports informed decision-making [66]. The JD–R model further underscores the importance of employee fulfillment in healthcare settings, emphasizing the balance between work demands and available resources to ensure long-term workforce sustainability [35].

The COVID-19 pandemic starkly exposed the vulnerabilities of healthcare workers, especially nurses, who faced overwhelming workloads, time pressures, and emotional fatigue—conditions that exacerbate mental health challenges [12,90,91]. These stressors not only undermine psychological well-being but also elevate the risk of performance decline and workplace errors [92]. As such, employee mental health becomes a linchpin in maintaining service quality and workplace sustainability. When the demands placed on healthcare employees exceed available resources, performance capacity deteriorates, highlighting the need for systemic support [86].

The theoretical underpinning for this argument aligns with the JD–R model, which posits that employee well-being hinges on the balance between job pressures and available supports [18,22,23,38]. When job resources—such as mental health services and technological tools—are available and effectively leveraged, employee energy, resilience, and innovation thrive [35]. In this light, employee mental health is not simply an outcome, but a mediating mechanism through which digital transformation impacts organizational outcomes [9,39].

Furthermore, alternative psychological explanations such as emotional reciprocity offer additional nuance to this relationship [93]. It is plausible that when healthcare institutions invest in digital well-being initiatives, employees respond with greater engagement, reduced counterproductive behaviors, and a stronger sense of duty—driven by gratitude or moral obligation [93–96]. These dynamics suggest that mental health does not operate in isolation but interacts with broader motivational processes that support sustainable economic behavior.

Taken together, the integration of digitalization into healthcare settings not only streamlines service delivery but also enhances employee well-being—a resource central to fostering sustainable behavior. The present study proposes that employee mental health acts as a mediating variable that explains how digitalization can lead to improved sustainable economic behavior. Therefore, building upon both theoretical and empirical foundations, this study proposes the following hypothesis:

H4. *The relationship between digitalization and sustainable economic behavior is mediated by employee well-being.*

2.8. The Moderating Role of Learning Orientation

Learning orientation is a mindset that prioritizes continuous knowledge acquisition and professional growth, fostering adaptability and innovation [97]. Within the healthcare sector, where change is constant and complexity is high, a strong learning orientation is critical for sustaining workforce agility and institutional resilience [18]. Digitalization, on the other hand, refers to the integration of advanced technologies into various aspects of life, transforming how individuals and organizations interact with information [98]. In this context, learning orientation reflects a proactive disposition toward embracing digital tools and acquiring new digital skills in response to evolving demands [99].

According to the JD–R model, job resources—including opportunities for skill development and learning—can buffer the impact of job demands and foster motivation and engagement [21,100]. In this framework, learning orientation functions as a key personal resource that shapes how employees interpret and respond to technological advancements like digitalization [18]. Employees with strong learning orientation are more likely to perceive digitalization not as a source of strain or threat, but as an opportunity to grow, innovate, and enhance their contributions [101,102]. This orientation enhances their cognitive flexibility, emotional receptiveness, and behavioral engagement in learning [103], which in turn drives sustainable behavioral change.

Building on this theoretical insight, learning orientation in healthcare settings becomes a critical moderator that amplifies the effectiveness of digitalization on desired outcomes [18]. Specifically, employees who exhibit high levels of learning orientation are more inclined to translate digital tools into meaningful learning experiences, enhancing their well-being and performance [104]. Prior studies emphasize that digital learning fosters core competencies such as communication, problem-solving, adaptability, and leadership—skills essential for navigating healthcare’s fast-evolving landscape [99]. These competencies are not only instrumental for individual success but are also foundational to achieving broader sustainability goals within healthcare institutions.

Sustainability in healthcare, defined through renewable energy usage, efficient infrastructure, and health equity, also relies on workforce readiness to embrace preventive and innovative care models [105]. A strong learning orientation reinforces this readiness by enabling healthcare workers to adapt to eco-friendly technologies and social determinants of health, ultimately improving outcomes for underserved populations [18,59]. Furthermore, a learning-oriented workforce is more likely to internalize the long-term value of sustainability practices, making them active agents in transforming institutional culture.

Within this conceptual frame, digitalization becomes a transformative resource whose impact is significantly conditioned by the level of learning orientation. Employees with high learning orientation are more likely to view digital transformation as a source of professional enrichment and sustainable innovation, whereas those with lower learning orientation may resist change and fail to derive its full benefits [18,104]. Thus, aligning digital initiatives with a strong learning culture is imperative to fully leverage the positive outcomes of technological integration in healthcare [106]. Drawing from established theories and recent empirical studies, the following hypotheses are put forward for rigorous validation:

H5. *Learning orientation moderates the relationship between digitalization and employee well-being, such that the positive impact of digitalization on employee well-being is stronger when learning orientation is high compared to when it is low.*

H6. *Learning orientation moderates the relationship between digitalization and sustainable economic behavior, such that the positive effect of digitalization on sustainable economic behavior is more pronounced at higher levels of learning orientation.*

H7. *Learning orientation moderates the indirect relationship between digitalization and sustainable economic behavior through employee well-being, such that the relationship is strengthened when learning orientation is high.*

3. Methodology

3.1. Sample and Data Collection

This study employed a quantitative survey-based design to collect data from healthcare professionals working in hospital settings. The sample comprised nurses, physicians (i.e., doctors), and hospital administrators employed in various hospitals across Istanbul and Ankara, Turkey. To ensure relevance and reliability, three criteria guided respondent selection: (1) participants had to be currently employed in a hospital either as a nurse, doctor, or administrator; (2) they were required to have at least two years of professional experience in their current role; and (3) they must have direct or indirect involvement with hospital operations. A purposive sampling method, a non-probabilistic approach, was used to identify and include individuals possessing contextual and operational expertise, as commonly practiced in healthcare-related social science research.

Prior to distributing the survey, authorization was secured from hospital HR departments. During this phase, the research team explained the study's aims and confirmed that all responses would remain confidential and be used exclusively for academic purposes [107]. Upon receiving approval, participants were invited to complete the survey on a voluntary basis [108]. Recognizing the potential threat of common method bias (CMB), this study implemented procedural remedies consistent with Podsakoff et al. [109]. Specifically, a time-lagged survey design was employed across three distinct waves to mitigate consistency artifacts and reduce respondents' cognitive connection between predictor and outcome variables. This separation of measurement temporally "separated" the constructs and contributed to alleviating common rater effects.

In the first wave, 692 paper-based questionnaires were administered with questions focused on demographics and digitalization. Participants were assigned anonymous ID codes to be reused across subsequent waves. Two weeks later, a second wave was conducted involving items related to employee well-being and learning orientation, with responses collected from the initial 569 participants. A final wave followed two weeks later, targeting constructs associated with sustainable economic behavior. Ultimately, after eliminating 66 incomplete or invalid responses, a final sample of 503 valid questionnaires was retained, reflecting a response rate of 72.68%. This approach not only ensured temporal separation but also enabled reliable matching of responses while preserving participant anonymity.

Table 1 presents the demographic profile of respondents. Of the 503 valid responses, 306 (60.83%) were male and 197 (39.17%) were female. Educational background revealed that 9 (1.79%) had less than an undergraduate degree, 382 (75.94%) held graduate-level degrees, and 112 (22.27%) had postgraduate qualifications. Marital status showed that 207 (41.15%) were single, 266 (52.88%) were married, and 30 (5.97%) preferred not to disclose this information. These figures indicate that the sample was well qualified to understand and respond to the questionnaire content.

Table 1. Demographic characteristics.

Information (<i>n</i> = 503)	Category	Number	(%) Proportion
Gender			
	Male	306	60.83
	Female	197	39.17
Education			
	Below graduate degree	9	1.79
	Graduate degree	382	75.94
	Postgraduate and above	112	22.27
Marital status			
	Single	207	41.15
	Married	266	52.88
	Prefer not to say	30	5.97

3.2. Measures

In this study, validated scales from prior research were used to measure the key constructs. All responses were collected using a five-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”), ensuring consistency in measurement across all constructs and aligning with best practices in survey-based healthcare research.

Digitalization was assessed using eight items adapted from Nwankpa and Roumani [40], comprising two dimensions: IT infrastructure (four items) and IT proactive stance (four items). This measurement approach aligns with recent applications in digital transformation research within organizational settings [39,110]. Respondents were asked to indicate the extent to which their hospital’s IT systems support the acquisition, assimilation, transformation, and exploitation of digital knowledge. A representative item was “The hospital has a climate that is supportive of trying out new ways of using IT”.

Mental health was measured using nine items adopted from Demo and Paschoal [111]. The scale captured healthcare employees’ psychological experiences over the past six months. A sample item included “My work made me feel distressed”. This construct is particularly important in healthcare settings, where the work environment can significantly impact the mental well-being of professionals [39].

Learning orientation was assessed using four items adapted from VandeWalle [112]. The items reflect the extent to which individuals pursue personal growth through learning, an essential capability in dynamic and high-pressure work environments. This scale has been widely validated in organizational behavior research [18,104]. An example item is “I often look for opportunities to develop new skills and knowledge”.

Sustainable economic behavior was measured using four items adopted from Tommasetti et al. [60]. These items assess the extent to which hospital employees engage in behaviors that promote long-term sustainability and resource efficiency. Previous studies have supported the validity of this scale in organizational contexts [9,11]. One item reads, “Hospitals that pursue sustainability adopt appropriate behavior”.

3.3. Analytical Methods

Data analysis was carried out using SPSS 25 and AMOS 20.0. To begin, several preliminary checks were conducted, including assessments for outliers and data normality. This was followed by descriptive statistics, reliability analysis using Cronbach’s alpha, and bivariate correlations to understand the relationships between variables [113]. A confirma-

tory factor analysis (CFA) was then performed to assess the validity and reliability of the measurement model. Convergent validity, discriminant validity, and construct reliability were examined based on recommended thresholds, and model fit was evaluated using indices such as the comparative fit index (CFI), Tucker–Lewis index (TLI), incremental fit index (IFI), normed fit index (NFI), and chi-square to degrees of freedom ratio (χ^2/df) [114].

To test the proposed hypotheses, the Hayes PROCESS macro was utilized [115]. Model 4 was used to examine the direct and mediating relationships (H1, H2, H3, and H4), while Model 59 was applied to assess the conditional direct and indirect effects (H5, H6, and H7). In addition, a bootstrapping procedure with 5000 resamples was employed, as it provides a robust non-parametric approach for testing indirect effects and interactions. This method is particularly appropriate for evaluating mediation and moderation effects in behavioral and organizational research [116,117]. Finally, a post hoc simple slope analysis, recommended by Aiken and West [118], was conducted to further interpret the nature of the moderation effects, thereby strengthening the understanding of the interaction dynamics within the healthcare context.

3.4. Common Method Bias

To mitigate potential concerns related to common method bias (CMB), this study employed multiple procedural and statistical remedies consistent with best practices in survey-based research [109]. Procedurally, constructs were deliberately separated in the questionnaire design to reduce the likelihood of participants forming cognitive connections between variables [119]. This separation was operationalized by varying item formats, randomizing item order, and distributing related constructs across different survey sections [120]. In addition, a multi-wave, time-lagged data collection approach was adopted, introducing temporal and psychological separation between measurements, thereby minimizing consistency artifacts and common rater effects [109]. The use of anonymous ID codes further ensured participant confidentiality while allowing for reliable matching of responses across waves.

Statistical approaches were also employed to detect and address CMB. The marker variable technique, recommended by Lindell and Whitney [121], was applied by including a theoretically unrelated variable in the survey. The low correlations between this marker variable and the core constructs (highest $r = 0.03$) indicate minimal bias. Harman’s single-factor test revealed that the largest factor explained only 17.73% of the total variance, suggesting that no single factor dominated the data [109]. Additionally, a *t*-test comparing early and late respondents showed no significant differences, supporting the absence of nonresponse bias [122].

4. Analysis and Results

4.1. Construct Reliability and Validity

To ensure the reliability and validity of the constructs, a confirmatory factor analysis was conducted. The results, as presented in Table 2, show that the Cronbach’s alpha values and composite reliability (CR) scores for all constructs exceeded the 0.70 threshold (Cronbach’s alpha ranging from 0.869 to 0.948; CR from 0.868 to 0.945), indicating strong internal consistency [123]. The standardized factor loadings were all above 0.60, which demonstrates adequate item reliability (Figure 2). These findings confirm that the latent variables are measured with precision, reflecting stable and consistent construct representation across items [114]. Convergent validity was further assessed through average variance extracted (AVE), with values ranging from 0.624 to 0.687—above the recommended 0.50 threshold—supporting the constructs’ ability to explain a significant portion of variance in their indicators [124].

Table 2. Reliability and convergent validity.

Constructs	Items	α	λ	CR	AVE
Digitalization					
IT Infrastructure	ITI1	0.894	0.747	0.895	0.681
	ITI2		0.835		
	ITI3		0.873		
	ITI4		0.842		
IT Proactive Stance	ITP1	0.895	0.823	0.897	0.687
	ITP2		0.890		
	ITP3		0.849		
	ITP4		0.747		
Mental Health	MH1	0.948	0.747	0.945	0.658
	MH2		0.777		
	MH3		0.747		
	MH4		0.793		
	MH5		0.859		
	MH6		0.844		
	MH7		0.835		
	MH8		0.851		
	MH9		0.837		
Learning Orientation	LO1	0.879	0.871	0.872	0.633
	LO2		0.905		
	LO3		0.688		
	LO4		0.695		
Sustainable Economic Behavior	SEB1	0.869	0.790	0.868	0.624
	SEB2		0.651		
	SEB3		0.865		
	SEB4		0.836		

Note: α = Cronbach's alpha, λ = standardized factor loadings, AVE = average variance extracted, CR = composite reliability, ITI = It infrastructure, ITP = IT proactive stance, MH = mental health, LO = learning orientation, SEB = sustainable economic behavior.

Discriminant validity was evaluated by comparing the square roots of AVE for each construct with their intercorrelations [125]. As shown in Table 3, each construct's square root of AVE was greater than its correlation with other constructs, confirming satisfactory discriminant validity [124]. Table 3 also includes intercorrelations, standard deviations, and means for all constructs. The model fit indices reported in Table 4 support the adequacy of the four-factor model ($\chi^2/\text{df} = 2.700$, CFI = 0.940, TLI = 0.931, IFI = 0.940, NFI = 0.908, RMSEA = 0.070). These indices fall within acceptable ranges, indicating a good fit between the data and the hypothesized model [126]. The use of a second-order factor structure is theoretically justified and statistically robust, consistent with prior studies [127–129]. This approach not only enhances model interpretability but also reflects the conceptual complexity inherent in the examined constructs.

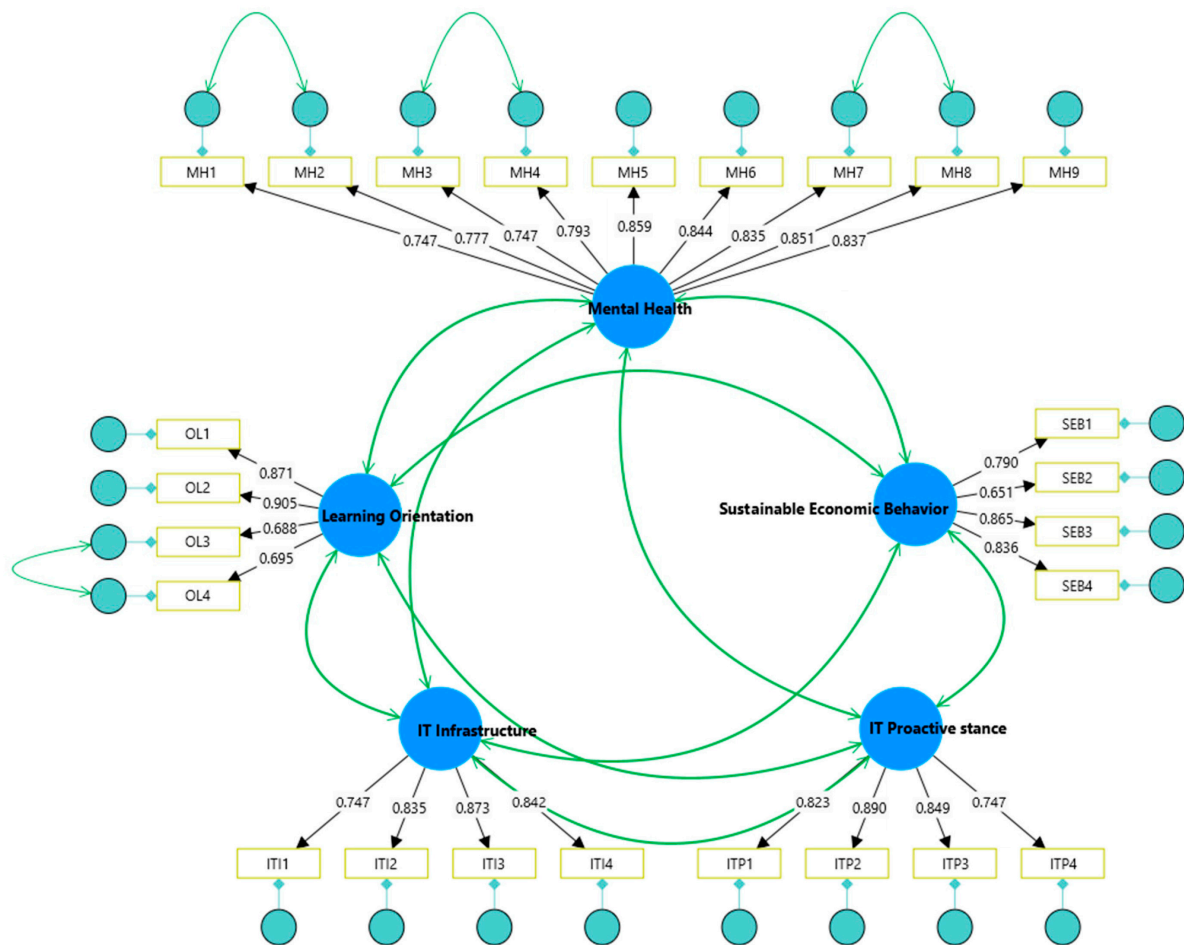


Figure 2. Factor loadings results.

Table 3. Descriptive statistics, intercorrelation, and discriminant validity.

Variables	Mean	STD	ITI	ITP	MH	LO	SEB	Gen	Edu
ITI	6.153	0.742	(0.825)						
ITP	6.130	0.732	0.719 **	(0.829)					
MH	6.120	0.692	0.697 **	0.730 **	(0.811)				
LO	6.149	0.709	0.602 **	0.652 **	0.713 **	(0.796)			
SEB	6.343	0.623	0.656 **	0.662 **	0.698 **	0.682 **	(0.790)		
Gen	-	-	0.023	0.033	0.032	0.054	0.001	-	
Edu	-	-	0.015	0.018	0.024	0.010	0.023	0.011	-

Note: STD = standard deviation, figures in bold are the square root of AVEs depicting discriminant validity, Gen = gender, Edu = education, ** = $p < 0.01$.

Table 4. Confirmatory factor analysis.

Model	χ^2/df	CFI	TLI	IFI	NFI	RMSEA
Criterion	<3	>0.9	>0.9	>0.9	>0.9	<0.08
One-factor model	11.876	0.412	0.399	0.409	0.378	0.254
Four-factor model (research model)	2.700	0.940	0.931	0.940	0.908	0.070
Five-factor model	3.964	0.701	0.690	0.700	0.657	0.183

4.2. Hypotheses Testing

4.2.1. Direct Effect

The hypotheses were examined using Hayes' PROCESS macro (Model 4), a widely accepted tool in social sciences for testing mediation models through ordinary least squares regression and bootstrapping [115]. As shown in Table 5, Model I tested the direct relationship between digitalization and mental health, revealing a significant positive effect ($\beta = 0.450$, $t = 9.151$, $p < 0.001$). In Model II, both the direct effect of digitalization on sustainable economic behavior ($\beta = 0.342$, $t = 7.223$, $p < 0.001$) and the effect of mental health on sustainable economic behavior ($\beta = 0.500$, $t = 10.747$, $p < 0.001$) were found to be significant. These findings provide empirical support for H1, H2, and H3.

Table 5. Results of hypotheses testing: mediation.

Response Variable	Independent Variable	β	S.E	T-Values	p-Values	95% CI
Model I: EMH	Constant	3.429	0.304	11.278	0.001	[2.831, 4.028]
H1	Digitalization	0.450	0.049	9.151	0.001	[0.353, 0.547]
$R^2 = 0.195$						
Model II: SEB	Constant	0.969	0.308	3.154	0.002	[0.365, 1.574]
H2	Digitalization	0.342	0.047	7.223	0.001	[0.249, 0.436]
H3	EMH	0.500	0.046	10.747	0.001	[0.409, 0.591]
$R^2 = 0.460$						
The indirect effect of digitalization on SEB through EMH						
	Direct effect of X on Y	0.342	0.047	7.223	0.001	[0.249, 0.436]
	Total effect of X on Y	0.568	0.049	11.565	0.001	[0.471, 0.664]
H4: Bootstrap indirect effects			Bootse		BootLLCI	BootULCI
Digitalization $\rightarrow$ EMH $\rightarrow$ SEB		0.226	0.049	-	0.135	0.330

Note: EMH = employee mental health, SEB = sustainable economic behavior, CI = confidence interval.

4.2.2. Indirect Effect

To assess the mediation effect, a bootstrapping technique with 5000 resamples was employed. The total effect of digitalization on sustainable economic behavior was statistically significant ($\beta = 0.568$), and the corresponding confidence interval excluded zero. The direct effect (Model II) remained significant ($\beta = 0.342$), while the indirect effect through mental health ($\beta = 0.226$) accounted for 30.79% of the total effect. The confidence interval for the indirect effect did not include zero, confirming that mental health partially mediates the relationship between digitalization and sustainable economic behavior, thereby supporting H4.

4.2.3. Moderation and Moderated Mediation Analyses

To examine the moderation and moderated mediation effects outlined in the research framework, Model 59 of Hayes' PROCESS macro was utilized [115]. This analytical model supports the simultaneous testing of both conditional direct and indirect pathways, allowing a robust assessment of interaction effects. All continuous variables were mean-centered, and demographic covariates including gender and education were controlled to account for confounding factors [118]. Furthermore, a bias-corrected bootstrap approach with 5000

resamples was employed to determine the statistical significance of the conditional effects, consistent with recommended practices in social science methodology [130].

In Model I, digitalization significantly influenced mental health ($\beta = 0.186$, $t = 2.912$, $p < 0.010$), and this relationship was moderated by learning orientation, as evidenced by the interaction term ($\beta = 0.151$, $t = 2.881$, $p < 0.010$, CI [0.048, 0.253]). The moderation is further illustrated in Figure 3, where simple slope analysis indicates that at a high level of learning orientation, digitalization has a strong and significant effect on mental health ($\beta = 0.295$, $t = 4.558$, $p < 0.001$, CI [0.168, 0.422]). Conversely, at a low level of learning orientation, the effect is weak and insignificant ($\beta = 0.078$, $t = 0.946$, CI [−0.085, 0.241]).

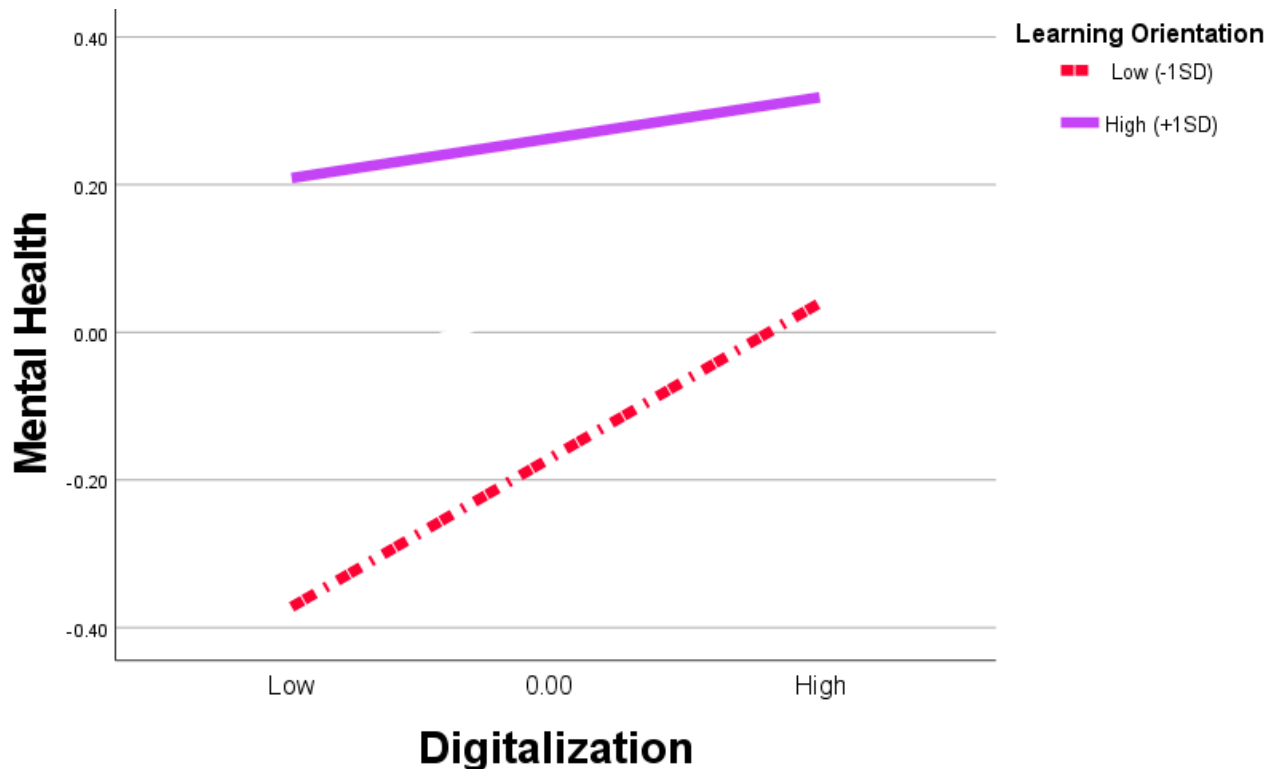


Figure 3. Illustration of the moderation role of learning orientation on the relationship between digitalization and mental health.

In Model II, digitalization also significantly predicted sustainable economic behavior ($\beta = 0.293$, $t = 5.009$, $p < 0.001$), with learning orientation moderating this relationship ($\beta = 0.122$, $t = 2.262$, $p < 0.01$, CI [0.016, 0.228]). As visualized in Figure 4, the relationship is stronger for individuals with high learning orientation ($\beta = 0.380$, $t = 6.164$, $p < 0.001$, CI [0.259, 0.501]), compared to those with low learning orientation ($\beta = 0.205$, $t = 2.640$, CI [0.052, 0.357]).

Finally, Figure 5 presents the moderated mediation effect, showing that the indirect influence of digitalization on sustainable economic behavior via mental health is significant for employees with high learning orientation ($\beta = 0.113$, CI [0.036, 0.248]) but insignificant for those with low learning orientation ($\beta = 0.046$, CI [−0.069, 0.164]). These findings lend empirical support to hypotheses H5, H6, and H7 (Table 6).

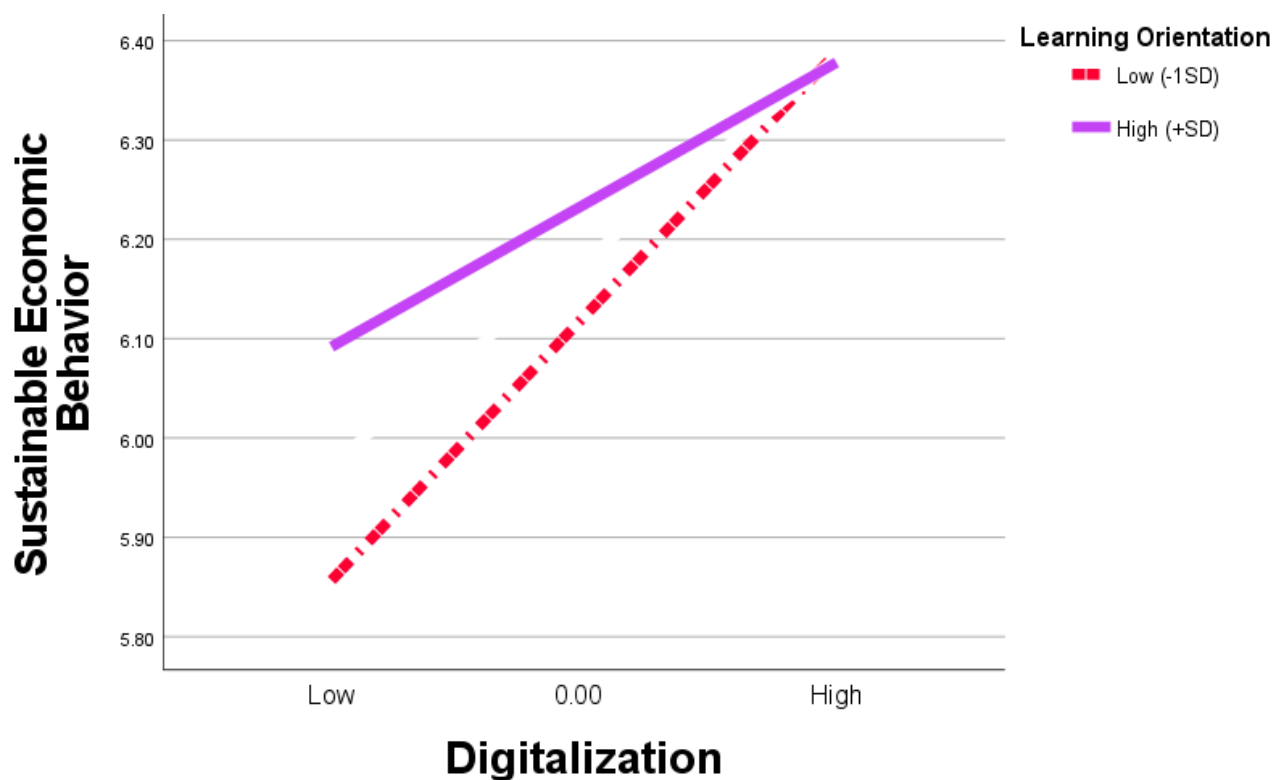


Figure 4. Illustration of the moderation role of learning orientation on the relationship between digitalization and sustainable economic behavior.

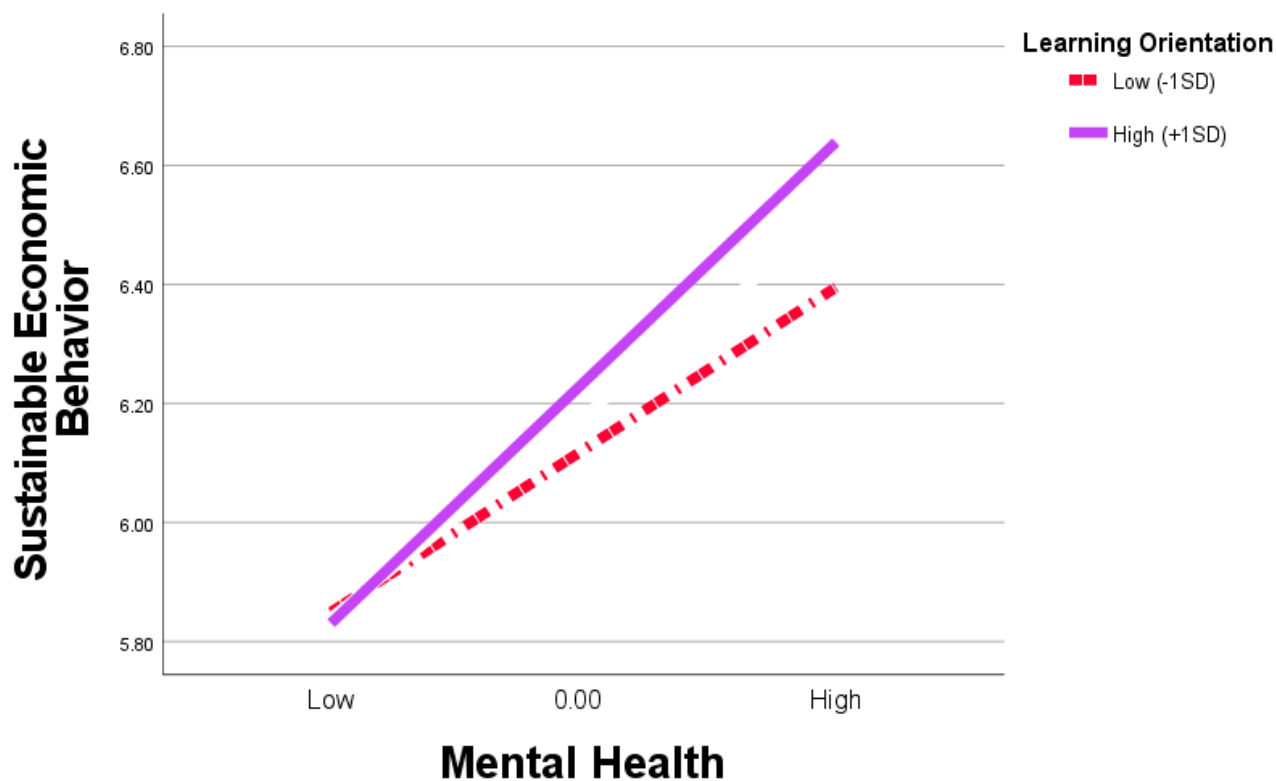


Figure 5. Illustration of the mediated effect of mental health on the relationship between digitalization and sustainable economic behavior under different levels of learning orientation.

Table 6. Results of hypotheses testing: moderation and moderated mediation.

Relationship	β	S.E	T-Values	p-Values	95% CI
Model I: Mediator construct model for predicting EMH					
Constant	0.049	0.037	1.326	0.186	[−0.023, 0.121]
Gender	0.025	0.071	0.608	0.729	[−0.202, 0.049]
Education	0.023	0.070	0.602	0.704	[−0.198, 0.038]
Digitalization	0.186	0.064	2.912	0.004	[0.061, 0.313]
LO	0.299	0.060	4.967	0.001	[0.181, 0.417]
H5: Digitalization $\times$ LO	0.151	0.052	2.881	0.004	[0.048, 0.253]
$R^2 = 0.273$					
The conditional direct effect of digitalization on EMH at different levels of LO					
LO (−1SD)	0.078	0.083	0.946	0.345	[−0.085, 0.241]
LO (+1SD)	0.295	0.065	4.558	0.000	[0.168, 0.422]
Model II: Dependent variable model for predicting SEB					
Intercept	5.245	0.033	185.358	0.001	[6.113, 6.244]
Gender	0.044	0.048	1.227	0.202	[−0.019, 0.053]
Education	0.040	0.053	1.199	0.218	[−0.20, 0.055]
Digitalization	0.293	0.058	5.009	0.001	[0.177, 0.407]
EMH	0.476	0.049	9.798	0.001	[0.380, 0.571]
LO	0.078	0.058	1.356	0.175	[−0.035, 0.192]
H6: Digitalization $\times$ LO	0.122	0.054	2.262	0.024	[0.016, 0.228]
Interaction: EMH $\times$ LO	0.128	0.047	2.713	0.007	[0.035, 0.221]
$R^2 = 0.730$					
The conditional direct effect of digitalization on SEB at different levels of LO					
LO (−1SD)	0.205	0.078	2.640	0.009	[0.052, 0.357]
LO (+1SD)	0.380	0.062	6.164	0.001	[0.259, 0.501]
H7: The conditional indirect effect of digitalization on SEB via EMH at different levels of LO					
LO (−1SD)	0.046	0.057	-	-	[−0.069, 0.164]
LO (+1SD)	0.113	0.055	-	-	[0.036, 0.248]

Note: EMH = employee mental health, SEB = sustainable economic behavior, LO = learning orientation, CI = confidence interval.

5. Discussion

This study employed the JD–R model [21,25] to examine how digitization shapes sustainable economic behavior in healthcare organizations through the mediating role of employee well-being and the moderating role of learning orientation. The JD–R model provides a robust theoretical framework for understanding how organizational changes, such as digital transformation [18,22,23,38], can generate both demands and resources that ultimately influence employee outcomes and work-related behaviors [35].

Drawing on this model, the findings indicate that digitization, conceptualized as a structural job resource, has a direct and positive impact on sustainable economic behavior. Digital technologies offer healthcare institutions enhanced capabilities for resource optimization, environmental monitoring, and data-driven decision-making [3,131]. From the JD–R perspective, these digital affordances act as organizational resources that reduce

unnecessary job demands and foster meaningful engagement, which, in turn, encourage employees to participate in sustainability-focused practices [18,22,94].

Furthermore, the results demonstrate that employee well-being serves as a critical psychological mechanism linking digitization to sustainable economic behavior. According to the JD–R model, when job resources such as flexible work arrangements, streamlined communication systems, and digital health tools are made available, employees are more likely to experience higher levels of motivation and well-being [12,25,39,96]. This aligns with prior research showing that digital technologies in healthcare can enhance mental health by reducing stress, improving work–life balance, and fostering autonomy [1,51,66,132,133]. Mentally healthy employees are more engaged and proactive, making them more inclined to engage in behaviors that promote environmental and economic sustainability [5,9].

By incorporating employee well-being as a mediator, the study strengthens the theoretical application of the JD–R model, which posits that psychological well-being is a vital outcome of resource-rich work environments and a precursor to sustained job performance [21,104,134]. This mediating pathway also supports findings in the broader literature suggesting that employee well-being not only benefits individual performance but also contributes to broader organizational outcomes, such as sustainability [9,65].

Moreover, the study identified learning orientation as a key moderating resource that enhances the positive effects of digitization on well-being and, subsequently, sustainable economic behavior. In line with the JD–R model, learning orientation can be interpreted as a personal and organizational resource that facilitates adaptive coping, skill development, and resilience in the face of change [18,104]. Employees embedded in learning-oriented environments are better equipped to manage digital transitions, perceive them as opportunities rather than threats, and derive greater psychological benefit from them [135,136]. This, in turn, encourages behaviors aligned with long-term economic and environmental sustainability.

These findings contribute to a more integrated understanding of how digitization influences organizational sustainability through human-centered processes. By grounding the discussion in the JD–R model, the study reveals that digitalization initiatives are most effective when they enhance both structural and psychological job resources. Furthermore, the healthcare context—characterized by high job demands and a strong social mission—amplifies the relevance of this model. The psychological resilience of healthcare workers is especially vital, and digitally enabled environments that also support learning can buffer stress and promote purpose-driven, sustainable behaviors [20,39,51,133].

Importantly, the study also highlights sectoral nuances in applying the JD–R model. While the benefits of digitization are evident in healthcare, where social responsibility is central, organizations in more commercially driven sectors may require different resource configurations to achieve similar outcomes [1,64,137]. Nonetheless, the core tenet of the JD–R framework—balancing demands with adequate resources—remains universally applicable and offers a compelling lens for advancing workplace sustainability initiatives [23,35,38,134].

In conclusion, this study enriches the theoretical and practical understanding of digitization's impact on sustainability by demonstrating that digital transformation is not merely a technological shift but a catalyst for organizational well-being and behavioral change. Through the lens of the JD–R model, it becomes clear that fostering digital environments enriched with psychological and learning resources is essential for nurturing employee well-being and achieving sustainable economic behavior.

6. Conclusions

6.1. Theoretical Contribution

This study makes an important theoretical contribution by employing the JD–R model [21,22,25] as the sole theoretical framework to investigate the effects of digitalization on sustainable economic behavior through the roles of employee well-being and learning orientation in healthcare settings. The JD–R model is a well-established framework in organizational behavior and work psychology, known for its capacity to explain how job demands and job resources interact to influence employee well-being, motivation, and performance [29,31]. By integrating digitalization as both a potential job demand and a job resource within this model, this study offers a nuanced understanding of how technology-driven changes affect healthcare workers' behaviors and psychological outcomes.

One of the core theoretical contributions lies in contextualizing digital transformation within the JD–R framework [23,35,38]. In healthcare, digitalization through automation, telemedicine, and electronic health records [66] can serve as job resources that streamline work processes and reduce administrative overload [18]. However, these same technologies may also impose new demands, such as technostress, increased performance expectations, and digital fatigue [16,138–140]. The JD–R model allows for this dual interpretation of digitalization, explaining how the interplay between digital job demands and digital resources shapes employee experiences and ultimately influences their engagement in sustainable economic behavior.

Moreover, this study extends the JD–R framework by emphasizing employee well-being as a central psychological mechanism through which digitalization affects sustainability outcomes. According to the JD–R model, excessive job demands can lead to strain and burnout, while adequate job resources can buffer these negative effects and enhance psychological well-being [21,25,134]. In line with this premise, the findings underscore how healthcare workers' mental health—impacted by the demands and supports within a digitally transforming work environment—plays a critical role in determining their motivation to adopt economically and environmentally sustainable practices [23,29]. This reinforces the model's relevance for explaining not only individual outcomes like stress and engagement but also broader organizational goals such as sustainability.

Learning orientation is also reconceptualized as an individual-level resource that strengthens the positive effects of digitalization on well-being and sustainable behavior. Within the JD–R model, personal resources can enhance coping strategies and resilience in the face of job demands [100]. This study demonstrates how a learning-oriented climate, facilitated by digital training tools and AI-driven knowledge-sharing systems, supports employees in adapting to technological changes and maintaining psychological balance [18]. In turn, this capacity for continuous learning fosters a proactive stance toward workplace challenges and encourages participation in sustainability initiatives.

In addition, the study contributes to the JD–R literature by linking digital sustainability innovations to job characteristics that affect motivational outcomes. Sustainable technologies such as green IT systems, energy-efficient infrastructures, and data-driven operational strategies [9,65] represent emerging forms of job resources that can increase work meaningfulness and engagement. By situating these innovations within the JD–R framework, the study offers a broader perspective on how resource-rich digital environments can foster sustainable economic behavior, particularly when combined with strong employee well-being and learning support systems [39].

In summary, this study deepens theoretical understanding by extending the JD–R model to a digital and sustainability-focused context. It explains how digital transformation in healthcare can produce both demands and resources that influence well-being and behavior, and how learning orientation enhances this dynamic. By aligning all core

constructs within the JD–R framework, this study offers a coherent and theory-driven explanation of how digitization contributes to sustainable economic outcomes through human-centered processes.

6.2. Practical and Managerial Implications

This study provides valuable practical and managerial insights for hospital administrators, healthcare policymakers, and decision-makers seeking to foster sustainable economic behavior through digitalization. Drawing on the JD–R model, our findings suggest that digital technologies can serve as key organizational resources that reduce employee strain and enhance psychological well-being. Strategic investments in digital infrastructure—such as electronic health records (EHRs), AI-based analytics, and telemedicine systems—can streamline operations and alleviate administrative burdens, thereby improving employee outcomes [66]. However, for these tools to be effective, healthcare institutions must complement them with supportive structures, such as training programs, IT assistance, and ethical implementation practices. These measures can enhance digital literacy, reduce uncertainty, and improve employee engagement and satisfaction.

Moreover, digitalization offers tangible benefits for employee mental health by enabling flexible work arrangements, task automation, and AI-assisted decision-making, all of which help mitigate job demands and psychological strain [18]. For example, hybrid work models and automated scheduling systems can improve work–life balance, while digital platforms for mental health support can reduce stress and promote resilience. In addition, the use of digital systems to track sustainability indicators—such as energy use and carbon footprints—can promote eco-conscious behavior among healthcare workers, further aligning daily practices with broader organizational sustainability goals [67,105].

From a managerial perspective, cultivating a workplace culture that embraces change is essential for successful digital transformation. Resistance to digital technologies often stems from fear of job displacement, lack of familiarity, or poor implementation strategies. Therefore, healthcare leaders should prioritize inclusive and transparent communication throughout the digitization process. Providing employees with opportunities to co-create digital solutions, participate in pilot programs, and receive constructive feedback can reduce resistance and build trust. Ensuring responsible use of digital tools is equally important to avoid negative consequences such as information overload, digital fatigue, and ethical concerns related to data privacy and surveillance [39].

A particularly important implication of our findings concerns the role of learning orientation as a psychological resource. In line with the JD–R framework, fostering a strong learning orientation can buffer the impact of technological demands and contribute to employee thriving. When employees perceive their organization as a learning environment—where curiosity, adaptability, and personal growth are encouraged—they are more likely to embrace innovation and engage in proactive behaviors [141]. Managers can cultivate such an orientation by modeling continuous learning behaviors, promoting access to knowledge-sharing platforms, and recognizing employees who take the initiative to upskill. Leadership styles that emphasize empowerment and participation—such as transformational or servant leadership—can further reinforce a culture of learning and trust [11,18].

Additionally, job design plays a central role in supporting learning orientation. Flexible role structures that allow employees to redefine tasks in response to technological change can enhance autonomy and reduce anxiety. Redesigning performance metrics to reflect learning, creativity, and collaboration rather than output alone will also help align individual goals with broader innovation objectives. This people-centered approach not only improves employee well-being but also strengthens organizational adaptability,

innovation capacity, and sustainability outcomes—ensuring that digital transformation benefits both the workforce and the healthcare system as a whole.

In sum, digitalization should be understood not merely as a technical upgrade but as a catalyst for organizational learning, employee empowerment, and sustainable development. A strategic and holistic approach—grounded in the principles of the JD–R model—can enable healthcare institutions to navigate digital transformation effectively while enhancing workforce resilience, well-being, and performance.

6.3. Limitations and Future Studies

Despite offering valuable insights, this study has several limitations that future research should address. Firstly, the use of self-reported, cross-sectional data introduces potential for common method bias and limits causal inference. Constructs like mental health and sustainability may be particularly prone to social desirability and cultural framing, especially in collectivist cultures such as Turkey, where individuals may report socially approved behaviors rather than their true experiences [142]. To mitigate these concerns, future studies should consider longitudinal designs and incorporate multiple data sources, such as physiological indicators for mental health or peer/supervisor assessments of sustainability behaviors. Where feasible, archival data on organizational sustainability practices could enhance construct validity [109]. Although this study applied robust control variables and measurement techniques, future research should also include third-party assessments or objective measures to better account for normative pressures.

Secondly, the contextual boundaries of this study warrant further exploration. Conducted in the Turkish healthcare sector—a highly purpose-driven context—this research may reflect sector-specific dynamics, particularly the intrinsic meaning healthcare professionals derive from their work. Such environments may amplify the positive effects of digitalization and employee mental health on sustainable behavior. Future studies should examine whether these findings generalize to more transactional, commercially oriented sectors. Additionally, alternative mechanisms such as emotional reciprocity and gratitude may explain observed behaviors: employees may respond to organizational investment in their well-being by engaging in organizational citizenship behaviors [93]. Although this study was grounded in the JD–R model, future research could integrate constructs such as perceived organizational support or felt obligation to test competing explanations and refine theoretical boundaries.

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Informed Consent Statement: All participants in this study provided their informed consent.

Data Availability Statement: The data from this study can be requested from the corresponding author, Ibrahim Alkish.

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