



Digital Employee Experience Constructs and Measurement Framework: A Review and Synthesis

Sharmila Rani Moganadas^{1*}, Gerald Guan Gan Goh¹

¹*Faculty of Business, Multimedia University, Jalan Ayer Keroh Lama, 75450 Bukit Beruang, Melaka, Malaysia*

Abstract. The concept of digital employee experience (DEX) has attracted a great deal of interest from both academics and practitioners. Past literature shows that DEX has the potential to improve employee engagement, motivation, productivity, learning, and behavior. Yet, the discussion on the disposition of the constructs of DEX that influence organizational outcomes and measurement mechanism remains meager and heterogeneous. This article offers a detailed and focused review of the literature on DEX. Regarding the methodology, a comprehensive literature review method was used. Under a documentary design, the research techniques involved content analysis of academic publications and professional reports. As a result, the construction of DEX constructs and measurement framework stands out. The authors concluded that DEX has positive implications for the establishment of the total employee experience (EX) management in workplaces.

Keywords: Digital culture; Digital employee experience; Digital workplace; Individual differences

1. Introduction

The resource-based theory (RBT) is a popular management framework that focuses on internal organizational resources to understand the accomplishment or failure of leveraging corporate activities (Kozlenkova et al., 2014). According to Barney and Clark (2007), RBT aims to explain the imperfectly imitable firm resources that could potentially become the source of sustained competitive advantage. These strategic resources are valuable, rare, difficult to imitate, and non-substitutable, that set off the foundation for developing firm capabilities to pursue long-term success. Among the strategic resources that can contribute to superior strong performance over time is human capital, which has gained recognition as a universally valuable and imperfectly imitable resource (Grant, 2003; Crook et al., 2011). Human capital resources encompass experience, intelligence, training, judgment, relationships, and insights from employees, such as managers and workers in a company (Utami & Alamanos, 2021).

Mollick (2012) findings indicated that variation among individuals matters far more in organizational performance than is generally assumed (Foss, 2005; Foss, 2011). Nevertheless, studies exploring the individual differences in explaining the variance in performance among firms are scant (Mollick, 2012). Because of this, some scholars emphasized the importance of applying the micro-foundations approach to examine individual actions and interactions. Micro-foundations research focuses on understanding

*Corresponding author's email: sharmila.rani@mmu.edu.my, Tel.: +60-16-6810400; Fax: +60-252-3625
doi: [10.14716/ijtech.v13i5.5830](https://doi.org/10.14716/ijtech.v13i5.5830)

the underlying idiosyncratic nature, choices, preferences, abilities, propensities, heterogeneity, expectations, motivations, and mental models of individual employees and their interactions with one another (Felin & Foss, 2005; Foss, 2011). Felin and Foss (2005) affirmed that such understanding is fundamental and should lead the way to explicating any strategic topic at the organizational level (e.g., knowledge, identity, and learning).

This said, much of the recent literature in the sphere of human capital coincides with that of interest in employee experience (termed as EX hereafter) (Plaskoff, 2017; Morgan, 2018; The Josh Bersin Company, 2021). Morgan (2017) analysis of over 250 global organizations found that companies that scored highest on EX benchmarks have four times higher average profits, two times higher average revenues, and 40 percent lower turnover compared to those that did not. At its core, EX is a company-wide initiative to help employees stay productive, healthy, engaged, and on track through easy-to-use platform of tools. These tools, however necessitate long-term redesign of and commitment from the organization (Morgan, 2017), and a cross-sectional strategy embraced by the C-suite (The Josh Bersin Company, 2021).

Morgan (2015) attested that an organization, which focuses on EX should be creating a place where people want to show up instead of assuming that people need to show up. The EX-equation formula developed by Morgan (2016a) comprises culture + technology + physical space = EX. The cultural environment refers to the “feeling” component, which includes the vibes an employee gets and the mood and tone that the workplace sets, such as leadership style and organizational structure. The physical environment is the one that employees can see, touch, taste, and smell, for example, the office and cafeteria. The technological environment refers to the tools employees use to get their jobs done, including devices, applications, software, user experience, design, and digital transformation (Morgan, 2015). The definition of EX varies across diverse literature (Ludike, 2018; Plaskoff, 2017; Raia, 2017), but a commonality exists in describing it as a big picture: holistic end-to-end employee journeys and their interactions with everything and everyone within an organization.

Drawing on ideas from EX, scholars developed the construct of digital employee experience (termed as DEX hereafter); a subset component of EX that precisely captures employees’ user experiences of their interactions with *company technology*, which dictates their daily work experience (Firstup, 2021). Indeed, the exploration of DEX has become even more crucial, ensuing the staggering changes in the workplace landscape triggered by the COVID-19 pandemic. People across the world encountered sudden job disruptions due to lockdowns and self-isolation, which disconnected them from their workspaces and colleagues. Numerous employers migrated to digital technology as their contingency plan to continue operating via teleworking and tools such as video conferencing, cloud services, and virtual private networks. Organizations with pre-existing teleworking and hybrid work model capabilities could adapt rapidly and maintain production levels because they have the necessary equipment to make a relatively seamless shift to working from home (OECD, 2021).

On the other hand, organizations that lack resources, experience, and digital fluency were not prepared to entirely switch to online working mode and expected employees to learn to cope with changes and job demands simultaneously and rapidly within a short time frame. For example, having to learn to use online materials in the shortest possible time with little training and preparation, set up “home office” with limited infrastructure and Internet facilities, etc. (Australian Bureau of Statistics, 2020; Dingel & Neiman, 2020; OECD,

2021). Apart from being exacerbated by the “fresh start effect” that affected employees to make significant changes during the pandemic, the ongoing operational and administrative tasks have left the employees feeling exhausted and frustrated. The situation worsened when their corporate networks and systems contain static content and lack helpful resources (Wilson, 2022).

The Josh Bersin Company (2021) interpreted the situation as “we’re not working from home but living at work,” leaving employees with feelings of burnout, mental health decline, and deteriorated work-life balance (Wilson, 2022). Inopportunistically, these factors have somewhat contributed to the impetus of the Great Resignation phenomenon that has taken a significant toll across industries worldwide in the current post-pandemic era, which urges employers to invest more time, effort, and cost on DEX to retain their employees (Srinivasan, 2022; Wilson, 2022). According to Zucker et al. (2020), when organizations adopt technology that results in an enabling, empowering, and frictionless experience, they are one-step closer to an overall positive workforce experience.

Nevertheless, the study by Crawford et al. (2020) demonstrated that academic staff, who had to undergo sudden transition from physical operations to teleworking, experienced mental stress, anxiety, vision syndrome, and depression. Meanwhile, a study within the hospitality industry in mainland China revealed home boredom during COVID-19 isolation had driven employees toward online leisure crafting, which resulted in employees’ thriving and career self-management (Chen, 2020). Given these disparities, Kilgour et al. (2019) put forward that adapting to digital technologies can be frightening for some, especially for those who are more conversant with the traditional approach, while others may have been progressing their technological skills and competencies in an instant to be able to deliver digitally. Hence, DEX may impose a different degree of implications on other individuals. Such circumstance calls organizations to rethink DEX and improve it by constantly assessing DEX among employees (Gheidar & ShamiZanjani, 2021) since digital workspace and hybrid work model are evolving as a way forward for most organizations, even after post pandemic. To do so, more profound understanding of the constructs that make up DEX and how it can be measured is vital. Yet, studies that explore DEX remain sparse.

This article, therefore, aims to (i) describe and conceptualize DEX, and (ii) identify and consolidate the critical constructs into a conceptual framework that can guide in measuring DEX. We do so by carrying out a literature review in the field of DEX research. The preceding literature highlights DEX as one of the big contributors to overall EX within an organization. As such, discounting the understanding of how different employees feel about interacting with their firm’s technologies may inflict risks of wasting resources and maintaining the shortcomings that may deteriorate employee productivity and satisfaction. Furthermore, this study fills in the significant lacuna in the existing DEX scholarship and sets forth agenda for future research works. It is structured as follows: the methods section discusses the procedures that founded the literature review. The results and discussion section presents the insights derived and combines relevant constructs that have been captured into a guiding framework, interprets the significant findings and explains any new discoveries that emerged from the review. The conclusions section presents the conclusive ideas in line with the objectives and the implications for future research.

2. Methods

We adapted the research methodology flowchart by [Driouach et al. \(2019\)](#) in this review (see Appendix 1). Next, we conducted a comprehensive desktop search, focusing on DEX. Scopus and Google Scholar databases were used to identify “DEX” or “digital employee experience” in their title, abstract, and keywords. The search generated 17 articles between 2016 and 2022. Due to the limited number of studies in the area of DEX, the authors relied on grey literature ([Paez, 2017](#)) and snowballing technique ([Wohlin et al., 2022](#)) to identify studies discussing a similar topic, such as digital transformation, digital workplace, and employee experience. Hence, we included journal articles, conference proceedings, books, book chapters, professional reports, essays from blogs, and white papers in this research. Scant DEX research signifies that it is at an inchoate stage ([Kraus et al., 2020](#)). Thus, the authors opted for a qualitative approach to summarize, synthesize and identify gaps in the existing literature to position research endeavors and support practices around DEX ([Petticrew & Roberts, 2008](#)). In pursuit of this, we employed a content analysis to present the findings in categories ([Bengtsson, 2016](#)). Subsequently, we interpreted and consolidated the findings into a guiding framework.

3. Results and Discussion

3.1. Defining DEX as a Subset of EX

According to [Morgan \(2015, 2016a\)](#), the technological environment is the central nervous system of an organization. In support of this claim, the research of [The Josh Bersin Company \(2021\)](#) affirmed that organizations should carefully design the technology and services component to make an excellent EX sustainable and scalable. Technology underpins and supports the other six pillars of an irresistible organization – meaningful work, strong management, a positive workplace, health and wellbeing, growth opportunity, and trust in the organization. We present the specific definitions of DEX provided by the reviewed publications in Table 1.

Table 1 Definitions of DEX

Definition of DEX	Source
DEX is the total of the digital interactions within the work environment.	Robertson (2018)
DEX is focused on combining platforms, tools, and processes to create compelling, consumer-grade personalized experiences that increase productivity, creativity, and foster collaboration with a digital mindset.	Zucker et al. (2020)
DEX results from a holistic employee’s perceptions in the digital workplace. DEX, therefore, results from the sum of employee’s direct and indirect interactions with their career, other employees, managers, customers, strategy, systems, culture, brand, and organization competitors that are influenced by their individual characteristics.	Gheidar and ShamiZanjani (2020)
DEX is the sum of digital interactions between employees and their organization.	ThoughtFarmer Intranet Blog (2022)
DEX is a reflection of how effectively people interact with their workplace digital tools, which allows them to be engaged, proficient, and productive.	Boatman (2021)

[Robertson \(2018\)](#) further postulated two primary lenses of DEX: time or career progression, and space, particularly, digital workspace. Time or career progression encompasses the recruitment, onboarding, and departure phases of an employee’s career.

Whereas the digital workspace comprises devices and systems, capabilities, activities, insights, and experiences. [Gheidar and ShamiZanjani \(2020\)](#) proposed eight components for DEX: career, individual characteristics, business strategy, technology, culture, physical environment, brand, and leadership. [Daud et al. \(2021\)](#) identified seven factors influencing DEX. These include flexible organizational structure, big data, enterprise platforms, digital infrastructure, learning, training, and digital literacy skills.

[Abhari et al. \(2021\)](#) emphasized on the importance of articulating the critical attributes of a digital culture that shape EX and employee engagement in digital governance for an effective digital transformation. The author defined EX as how employees perceive the experiential benefits of digitalization (i.e. positive experience gained through the use of firm's technologies). According to the [ThoughtFarmer Intranet Blog \(2022\)](#), DEX encompasses how employees work, what tools and technology they use, and the culture they exist within. Hence, organizations are responsible for examining the infrastructure (tools they have and whether they are necessary); employee interaction (people whom employees interact with and the processes they rely on to complete their jobs); and experiences (whether the technology the employees use is difficult and complex or intuitive and productive). [Boatman \(2021\)](#) addressed DEX, more specifically, as interfacing with technologies for workflow and productivity, communication and collaboration, learning, and HR systems with relevant examples.

The study by [Sudrajat et al. \(2021\)](#) demonstrated the moderating role of DEX between employee service orientation and ambidexterity that influences employee agility among dry port firms' employees. A similar finding by [Syahchari et al. \(2021\)](#) among Cikarang dry port employees in Indonesia showed that DEX significantly affects the firm effectiveness. In both studies, DEX was measured using different indicators and concepts, which signifies inconsistency and lack of one single framework for DEX. A similar concern was also raised in [Gheidar and ShamiZanjani \(2021\)](#). Among the reviewed articles, only one academic research by [Gheidar and ShamiZanjani \(2021\)](#) presented a holistic DEX framework comprising seven significant components and seventy sub-components, using systematic literature review (termed as SLR hereafter) and experts' interview methods. These major components include the physical environment, business strategy, leadership, technology, career, brand, personal, and culture. Even though the authors attempted to describe the sub-components in the context of DEX to some extent, we found that some sub-components lack linkage with DEX. For example, the sub-component, "The organization should have a long-term strategy (10-20 years)," lacks a description of how the authors incorporate the element of DEX to the long-term strategy.

While the past literature conveyed the components of DEX differently, they all have in joint discussion on DEX to some degree, in the context of experiences that employees encounter (or EX) when interacting with digital tools in their workplaces. Drawing from these insights, we conceptualize DEX as *how employees perceive and feel about their interactions with digital technologies that their organization designs, based on the purpose/need, credibility, ease of use, and organizational support that have immense effects on overall EX, employees' engagement, retention, learning, proficiency, and productivity.*

3.2. Constructs of DEX

A consensus exists among the reviewed articles in highlighting the digital technologies and environment, digital culture and work practices, and individual characteristics and demographics as precursors of DEX. It remains ironic, though, despite the fact that DEX is becoming a progressively integral part of overall EX, magnified by the expansion of hybrid working models and teleworking, past literature across the academic and professional milieus lacks a comprehensive DEX model or framework, which could serve as a reference

point for its implementation. In light of this, in the following section, we examine the classifications of constructs and potential measurement mechanism for DEX in detail from the past literature.

3.2.1. Digital Technologies and Environment

The deployment of digital workplaces and smart offices is gaining momentum across firms due to its capacity to reshape and decentralize the traditional office setting. Yet, [Attaran et al. \(2019\)](#) highlighted that there is widespread confusion about its implementation. The Dell and Intel Future Work Study Global report in 2016 revealed that more than 30 percent of employees mentioned that their significant time-wasters at their jobs were tech-related, which include slow, malfunction software or devices ([Attaran et al., 2019](#)). Another study by Haskins and Nilssen, as cited in [Attaran et al. \(2019\)](#), showed that the vast majority of organizations have little or no teleconferencing and collaboration technologies in place for their meeting rooms, and highlighted technical difficulty as one of the main reasons for prolonged meetings. Such situations show that creating digital workplaces constitutes more than merely merging technology into business operations and activities. Effective implementation of digital technologies and environment requires feedback and opinions from the employees as they use the technologies daily.

Likewise, [Abhari et al. \(2021\)](#) claimed that organizations that introduce new technology without direct input from end-users impose restrictive digital governance that can negatively affect the satisfaction and motivation of their employees. As such, a well-thought-out formation and implementation of digital technologies in workplaces should entail the participation of digital mindset employees who can explore, connect, socialize, and in turn, sculpt unique consumer experiences ([Ludike, 2018](#)). Additionally, [Attaran et al. \(2019\)](#) and [Morgan \(2018\)](#) averred that, to reap the most benefits from digital workplace solutions, organizations should provide employees with a consistent, consumer like user experience through consumer-grade technology that is modern, forward thinking, engaging, and entirely aligned with the way people work today.

Digital technologies and environment across firms are becoming increasingly essential and encompass a wide variety of elements ([Berawi et al., 2020](#)). [Morgan \(2016b\)](#) conveyed the need for organizations to adopt cloud-based technology to enable employees to work anytime, anywhere, and on any device. However, several scholars raised caveats against security and called organizations to make digital identity and safety a top priority due to the growing number and variety of devices that may lead to potential vulnerabilities ([Morgan, 2016b; Attaran et al., 2019](#)). Creating a positive user experience by deploying technology apps, systems, and devices that employees genuinely want to use seems pivotal for DEX ([Morgan, 2016b; Raia, 2017; Boatman, 2021](#)).

According to [Raia \(2017\)](#), organizations should align their intranet, customer relationship management (CRM), and other tools according to their employees' expectations by updating their digital systems with best practices gleaned from top-tech corporations, such as Amazon. Doing so makes processes more intuitive, allowing employees to complete tasks quickly and move forward with fewer roadblocks. [Attaran et al. \(2019\)](#) stated that digital technologies, such as enterprise collaboration, should be built on a consistent and flexible infrastructure that multiple devices and channels can securely access to facilitate knowledge sharing and collaboration.

[Zel and Kongar \(2020\)](#) highlighted the importance of applying artificial intelligence (termed as AI hereafter) tools to enhance EX. These include virtual HR assistants/chatbots, virtual coach bots for managers, personalized AI-based career development tools, engagement and collaboration AI tools, mental health chatbots, and AI-powered onboarding tools. However, the applications of AI and machine learning raise essential

issues around trust and ethics that companies should pay great attention to (The Josh Bersin Company, 2021). These technologies will undoubtedly have an impact on DEX if they do too much or do things unexpectedly or wrong (Wilson, 2022). Similarly, the adoption of big data allows organizations to acquire profuse data from more connected devices (Morgan, 2016b; Daud et al., 2021). However, inadequate planning and infrastructure of how employees are going to analyze and make sense of it may thwart its purpose, which in turn frustrate employees. Deloitte and Accenture offer a noteworthy example, wherein they focus on hotline support systems to help their employees who travel frequently for business trips access concierge service to remove roadblocks to getting to their clients on time (The Josh Bersin Company, 2021).

In terms of creating a digital work environment, organizations should stand up to specific criteria, such as quality, ease of intuitive accessibility, ease of portability, the ability to operate consistently across the organization, and the ability to enable working beyond corporate borders, as cited by Miller in Attaran et al. (2019). Equally, organizations should pay attention to developing a distributed workspace, which encompasses physical, virtual, social, and mental spaces. Physical space refers to the principal workplace, such as the office or home. Virtual space is an electronic working environment like instant messaging, email, and video conferencing. Social space refers to the whole social network of team members, managers, and customers; and the mental space is the thoughts, beliefs, ideas and mental states that employee share through communication and collaboration (Robertson 2018; Attaran et al., 2019).

3.2.2. Digital Culture and Work Practices

Previous research indicates that culture and work practices that effectively support digitalization are key determinants of organizational success (Bencsik, 2020). However, several scholars demonstrated that the digital culture and work practices of an organization should focus on enhancing better experience among employees. The qualitative study by Prajapati and Pandey (2020) demonstrated how the investment-banking sector in India proactively leveraged new technologies to embrace transition and disruptions during the COVID-19 pandemic and simultaneously created and enriched EX at various touchpoints of employee life cycle. The study identified five major themes that emerged as the crucial practices used by the selected investment banks to address EX gaps. These include recruitment and onboarding, work-from-home (termed as WFH hereafter), employee wellbeing, employee communication, and diversity and inclusion. Some notable practices include virtual interviews, provision of laptops, virtual ergonomics sessions for WFH, online yoga, and regular mailers from leaders (Prajapati & Pandey, 2020).

Furthermore, the business strategy and concept design should embed digital features consisting of a personal, team, and organizational tasks and performances that blend with each other based on tasks and situations (Attaran et al., 2019). Examples of preceding digital features may include personal dashboards, communities of practice, social networking, enterprise jams, communities of interest, prediction markets, etc. They serve as a depository that enables concurrent monitoring of the progress of all projects and activities. Abhari et al. (2021) clarified that “digital culture is a trait of organizational culture that is shaped while employees use digital tools or participate in digitally enabled or facilitated business processes.” Hence, it is about digital mind-set and digital habits shaped in an agile, dynamic, collaborative, and creative work environment.”

Adopting the five major cultural dimensions from Hofstede: collectivism, power distance, uncertainty tolerance, long-term orientation, and indulgence, the authors proposed a digital culture that coalesces to affect overall EX, which subsequently influences employee’s intention to participate in digital governance. For example, digital initiatives

that accentuate autonomy and willingness to learn (indulgence dimension) will, in turn, improve employee's cognitive experience, whereas initiatives that encourage collaboration and communication (collectivism dimension) will result in meaningful interaction and exchange among employees (Abhari et al., 2021).

Organizations should also focus on advanced learning and training tools that are organized around great learner experience (Robertson, 2018; Daud et al., 2021; The Josh Bersin Company, 2021; Boatman, 2021). For instance, companies like AstraZeneca, Visa, and Walmart create a learner-centered learning ecosystem that provides highly personalized recommendations and insights on learning according to different learning needs at the right time, with the right content, and in the suitable format for them (The Josh Bersin Company, 2021). Employees may learn through official training, professional development, mobile apps, virtual reality, web conferencing etc. (Attaran et al., 2019; Boatman, 2021).

3.2.3. Individual Characteristics and Demographics

Several scholars conveyed the need for organizations to examine their employees' demographic factors and individual characteristics when they aim to improve DEX (Ludike, 2018; Meret et al., 2018; Attaran et al., 2019; Gheidar & ShamiZanjani, 2020; Gheidar and ShamiZanjani, 2021). Generational differences, in particular, was highlighted as an important criterion. For example, ThoughtFarmer Intranet Blog (2022) illustrated that younger generations, generally have lesser patience compared to older generations in dealing with technological glitches at work, such as waiting for a dial-up modem to connect. In this regard, Wilson (2022) expressed a specific statement. According to the author,

“Generation X has worked with and witnessed an incredible technological evolution from MS Office 1.0 to today's apps such as Slack and Zoom, Generation Y and Z grew up with more advanced technology and are less patient with outdated User Experience (UX), speed, and functionality.”

Notably, the findings of Meret et al. (2018) revealed that generation Zers tend to give less importance to the time and space flexibility factors of intelligent working, regardless of their gender and country of origin. In terms of digital behavior, the use of technology and the typology of technological devices characterize the DEX of generation Z, such as technical attributes that allow a very high level of interconnectivity and fulfill “social” digital behavior. Gheidar and ShamiZanjani (2021) proposed seven features of individual component of DEX framework, which include gender, age (relate to which generation), work experience, previous experiences, personal habits and moods, unique vision, culture and values, and education, skills, and prior training.

Interestingly, all of the sub-components mentioned above in Gheidar and ShamiZanjani (2021) were contributed by the experts' (HR and digital information experts) interview method undertaken by the authors, but none came from the SLR method that they used. This indicates scant academic research investigating the personal factors of employees in DEX. Furthermore, Sudrajat et al. (2021) examined DEX as the moderating factor between employee's service orientation and employee agility, and between the relationship of employee agility and employee ambidexterity. Employee agility comprises individual abilities such as, intelligence, competency, collaboration, resiliency, and culture. Employee ambidexterity refers to the motivation of employees to continually explore new knowledge and competencies for themselves as well as trying to exploit the knowledge or skills they already have.

3.3. Measurement and Outcomes of DEX

To date, there is little research exploring indicators to measure the implementation of DEX organization-wide. Considering this, our review identifies and presents several measurement criteria that represent DEX. If the measures do not directly epitomize DEX, we believe including items that address EX and digitalization elements separately, but with the motive to converge them as one model. The industry and academic counterparts have proposed or employed these indicators. For instance, companies such as Unilever, Deutsche Telekom, and AstraZeneca use design-thinking approaches to understand what employees need and how they want to access information and bring these services to them in the flow of their work ([The Josh Bersin Company, 2021](#)). The report proposed a four-step design thinking assessment: understand the real problem; simplify and digitize the status quo; probe, fail fast, and learn; and scale and integrate. Some scholars stressed augmenting the design thinking approach with “visualizing” or “reifying” intangible concepts of employees about specific events, objects, relationships, or functions through employees’ personas and journey mappings ([Plaskoff, 2017](#); [The Josh Bersin Company, 2021](#)). In doing so, organizations can group employees by similar work types and design appropriate infrastructure according to their needs.

[Sudrajat et al. \(2021\)](#) measured DEX among dry port firms’ employees in Indonesia using five indicators: collaboration, technology enabler, mobility, infrastructure, and culture and work practices. These concepts were derived from the studies by Halid et al. as cited in [Sudrajat et al. \(2021\)](#) and ([Attaran et al., 2019](#)) and the authors measured using a five-point Likert scale from 1 = strongly disagree to 5 = strongly agree. Conversely, [Syahchari et al. \(2021\)](#) adopted the six main elements - virtual HR assistants/chatbots, virtual coach bots for managers, personalised AI-based career development tools, engagement and collaboration AI tools, mental health chatbots, and AI-powered onboarding tools. The authors adopted the elements from [Zel and Kongar \(2020\)](#) to measure DEX among employees in Cikarang port in Indonesia. However, sample measurement items or statements were not included in the studies to offer a better understanding of how the authors use the measures to gauge DEX and what were the outcomes.

Recent work by [Abhari et al. \(2021\)](#), examining whether EX can be gauged through experiential values as suggested by Dewey’s experience theory, in the context of digitalization, provides support for conceptualizing DEX as a psychological state. The proposed measurement of the study focuses on the relationship between a digital culture (adapted from Hofstede’s cultural dimensions) and EX (adapted from Dewey’s experience theory). The authors operationalized EX in terms of cognitive, social, emotional, and behavioral experiences (as observed by Dewey) that employees develop when interacting with their organization’s digital technologies and initiatives. Thus, based on the analysis of the study by [Abhari et al. \(2021\)](#), we depict some examples of the measurement items in Table 2 to provide a clearer picture of how to gauge specific cultural dimension in the context of digitalization and how it may affect a particular EX dimension.

Alternatively, [Morgan \(2018\)](#) proposed to create an ACE technological environment by encouraging organizations to measure their digital technologies, tools, and initiatives in the context of availability to everyone, consumer-grade technology, and employee need versus business requirements. The “availability to everyone” component focuses on assessing commitment to innovation, collaboration, and communication across the organization, enabling the organization and technological adeptness. “Consumer-grade technology” measures forward-thinking approach towards technology adoption, modern work experience, and allowing the employees to be most effective and engaged in their jobs.

Lastly, “employee needs versus business requirements” refers to an organization’s commitment to allowing employees to do their best work and listening to the voice of the employees.

Table 2 Examples of items to measure the relationship between digital culture and EX

Description of organization’s digital initiatives	Cultural dimension being measured	Impact on EX dimension
Digital technologies that accentuate collaboration and communication through participation across organization, and interactions that facilitate familiarity, transparency, and networking among employees.	Collectivism	<i>Social experience:</i> Employees can expand their network, have pleasant interactions, strengthen affiliation, have a sense of belongingness

Source: Adapted from [Abhari et al. \(2021\)](#)

Aiming to enhance employees’ work efficiency and positive feeling about their work environment, [Raia \(2017\)](#) suggested organizations to use best practices of user interface (UI) and user experience (UX) from the top tech companies. By consulting the UI and UX professionals, the author explained how organizations can improve DEX by observing and evaluating how their systems work, then incorporate UX best principles into the design to boost productivity, happiness, and output. For example, analyzing Amazon’s user-friendly design will help organizations to understand the digital experience from the user viewpoint and apply the key practices into their corporate processes and digital workflow. Therefore, UX elements, which comprises the following, should be given great importance in the context of DEX: usability (is the system easy to use?); adoptability (is it easy for new users to learn the system?); desirability (do users like the system?); and value (is the system inherently valuable [Raia, 2017](#)). Additionally, the author encouraged to conduct a formal usability test to provide the organizations with qualitative and quantitative data on system’s usability and UX. The test assesses page layout, design/visual appeal, credibility and quality of content, accuracy of forms, navigation, information architecture, and task orientation. The collation and analyses of such data can show organizations where problems occur or pinpoint why something is confusing to most users, thus allow working on improvements to make the system more straightforward, and more enjoyable, intuitive, and valuable for employees.

Our review revealed that digital technologies and environment, digital culture and work practices as well as individual characteristics and demographics of employees emerge as the primary constructs that make up DEX and its measurement composition within an organization. Nonetheless, we identified a significant gap and contradiction with regard to the measurement and outcomes of DEX, which presumes further deliberation in future studies. Thereafter, we consolidated the relevant concepts into a guiding framework for future works as depicted in Figure 1.

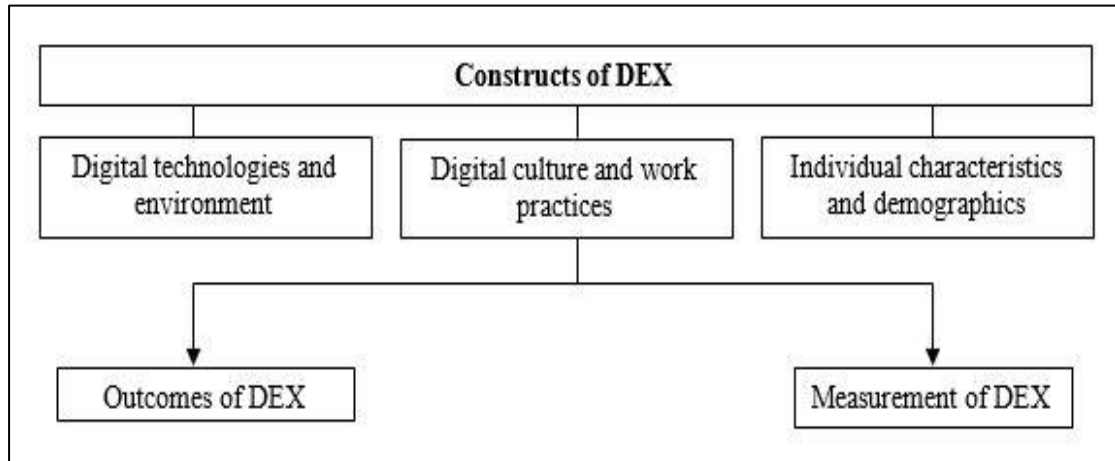


Figure 1 DEX constructs and measurement framework

4. Conclusions

Technology plays a salient role in creating a great EX within workplaces, particularly in contributing to better DEX through an evolutionary shift in how employees use and view technology. Having the right, efficient and effective technologies in place make daily tasks and moments for employees simple, yet meaningful. Using a comprehensive review method, this paper builds on the existing literature, assembling DEX constructs, which include *digital technologies and environment*, *digital culture and work practices*, and *individual characteristics and demographics*. The authors have identified these constructs as the fundamentals that underpin the impending measurement mechanism of DEX. Nevertheless, gaps occur in measuring DEX and defining its outcomes, which require prompt and close attention from scholars and practitioners. Drawing from the evidence from the review, we argue that a focus on converging perspectives from academia and industry is a promising way forward for DEX. The authors presented the insights generated by this review in two different aspects. These include (1) describing and conceptualizing DEX and (ii) identifying and consolidating the critical constructs into a guiding framework that can guide in measuring DEX. Besides representing the conceptual grounding for DEX literature, the findings also serve as a reference point for researchers and practitioners who aspire to implement and examine DEX further. The publications reviewed in this study come from diverse fields and approaches, yet, despite their divergences, they contribute to the integration of a DEX conceptual model to drive organizational success. The authors performed the collation, comparison, and amalgamation of relevant indicators into several themes meticulously. Given hybrid working models and Great Resignation are becoming major trendsetters in workplaces, we hope the study can support resetting the approach to the future work, concentrated on DEX and its contribution to EX.

References

- Abhari, K., Ostroff, C., Barcellos, B., Williams, D., 2021. Co-Governance in Digital Transformation Initiatives: The Roles of Digital Culture and Employee Experience. *In: Proceedings of the 54th Hawaii International Conference on System Sciences*
- Attaran, M., Attaran, S., Kirkland, D., 2019. The Need for Digital Workplace: Increasing Workforce Productivity in the Information Age. *International Journal of Enterprise Information Systems (IJEIS)*, Volume 15(1), pp. 1–23
- Australian Bureau of Statistics, 2020. Household Impacts of COVID-19 Survey, 29 April - 4 May. Available Online at <https://www.abs.gov.au/statistics/people/people-and->

- communities/household-impacts-covid-19-survey/29-apr-4-may-2020, Accessed on March 22, 2022
- Barney, J.B., Clark, D.N., 2007. *Resource-based Theory: Creating and Sustaining Competitive Advantage*. New York: OUP Oxford University Press
- Bencsik, A., 2020. Challenges of Management in the Digital Economy. *International Journal of Technology*, Volume 11(6), pp. 1275–1285
- Bengtsson, M., 2016. How to Plan and Perform a Qualitative Study Using Content Analysis. *NursingPlus open*, Volume 2, pp. 8–14
- Berawi, M.A., Suwartha, N., Asvial, M., Harwahu, R., Suryanegara, M., Setiawan, E.A., Surjandari, I., Zagloel, T.Y.M., Maknun, I.J., 2020. Digital Innovation: Creating Competitive Advantages. *International Journal of Technology*, Volume 11(6), pp. 1076–1080
- Boatman, A., 2021. Digital Employee Experience Explained: A Definitive Guide for HR. Academy to Innovative HR (AIHR). Available Online at <https://www.aihr.com/blog/digital-employee-experience/>, Accessed on March 30, 2022
- Chen, I.S., 2020. Turning Home Boredom During the Outbreak of COVID-19 into Thriving at Home and Career Self-Management: The Role of Online Leisure Crafting. *International Journal of Contemporary Hospitality Management*, Volume 32(11), pp. 3645–3663
- Crawford, J., Butler-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., Magni, P., Lam, S., 2020. COVID-19: 20 Countries' Higher Education Intra-Period Digital Pedagogy Responses. *Journal of Applied Learning & Teaching*, Volume 3(1), pp. 1–20
- Crook, T.R., Todd, S.Y., Combs, J.G., Woehr, D.J., Ketchen Jr, D.J., 2011. Does Human Capital Matter? A Meta-Analysis of the Relationship Between Human Capital and Firm Performance. *Journal of Applied Psychology*, Volume 96(3), p. 443
- Daud, S.R., Mukapit, M., Hussin, N., Yahya, W.K., Rahim, N.A., 2021. Digital Employee Experience (DEX). *Insight Journal*. Volume 8(3), pp. 151–168
- Dingel, J., Neiman, B., 2020. How Many Jobs Can Be Done at Home? Available Online at: <https://github.com/jdingel/DingelNeiman-workathome/blob/master/DingelNeiman-workathome.pdf>, Accessed on April 10, 2022
- Driouach, L., Zarbane, K., Beidouri, Z., 2019. Literature Review of Lean Manufacturing in Small and Medium-Sized Enterprises. *International Journal of Technology*, Volume 10(5), pp. 930–941
- Felin, T., Foss, N.J., 2005. Strategic Organization: A Field in Search of Micro-Foundations. *Strategic Organization*, Volume 3(4), pp. 441–455
- Firstup, 2021, April 28. Digital Employee Experience Explained. *Firstup Blog*. Available Online at: <https://firstup.io/blog/digital-employee-experience-explained/>, Accessed on March 30, 2022
- Foss, N.J., 2011. Invited Editorial: Why Micro-Foundations for Resource-Based Theory Are Needed and What They May Look Like. *Journal of Management*, Volume 37(5), pp. 1413–1428
- Gheidar, Y., ShamiZanjani, M., 2020. Conceptualizing the Digital Employee Experience. *Strategic HR Review*, Volume 19(3), pp. 131–135
- Gheidar, Y., ShamiZanjani, 2021. Designing a Conceptual Framework for Digital Employee Experience. *Iranian Journal of Management Studies*, Volume 14(4), pp. 669–680
- Grant, R.M., 2003. The Knowledge-Based View of The Firm. *The Oxford Handbook of Strategy*, Volume 1, pp. 197–221

- Kilgour, P., Reynaud, D., Northcote, M., McLoughlin, C., Gosselin, K.P., 2019. Threshold Concepts About Online Pedagogy for Novice Online Teachers in Higher Education. *Higher Education Research & Development*, Volume 38(7), pp. 1417–1431
- Kozlenkova, I.V., Samaha, S.A., Palmatier, R.W., 2014. Resource-Based Theory in Marketing. *Journal of the Academy of Marketing Science*, Volume 42(1), pp. 1–21
- Kraus, S., Breier, M., Dasí-Rodríguez, S., 2020. The Art of Crafting a Systematic Literature Review in Entrepreneurship Research. *International Entrepreneurship and Management Journal*, Volume 16(3), pp. 1023–1042
- Ludike, J., 2018. *Digital Employee Experience Engagement Paradox: Futureproofing Retention Practice*. In: Coetzee, M., Potgieter, I., Ferreira, N. (eds). *Psychology of retention*, Volume 2018, pp. 55–73
- Meret, C., Fioravanti, S., Iannotta, M., Gatti, M., 2018. The digital employee experience: Discovering generation Z. *Digital technology and organizational change*, Volume 23, pp. 241–256
- Mollick, E., 2012. People and Process, Suits and Innovators: The Role of Individuals in Firm Performance. *Strategic Management Journal*, Volume 33(9), pp.1001–1015
- Morgan, J., 2015. The Three Environments That Create Every Employee Experience. *Forbes*. Available Online at: <https://www.forbes.com/sites/jacobmorgan/2015/12/15/the-three-environments-that-create-every-employee-experience/?sh=45693f5866c6>, Accessed on March 30, 2022
- Morgan, J., 2016a. The Employee Experience Equation. *Forbes*. Available Online at: <https://www.forbes.com/sites/jacobmorgan/2016/02/25/the-employee-experience-equation/?sh=480a204498bf>, Accessed on April 07, 2022
- Morgan, J., 2016b. Humanizing the Workforce with Technology. Available Online at: https://www.citrix.com/content/dam/citrix/en_us/documents/white-paper/humanizing-the-workforce-with-technology.pdf, Accessed on April 07, 2022
- Morgan, J., 2017. *The Employee Experience Advantage: How to Win the War for Talent by Giving Employees the Workspaces They Want, the Tools They Need, and a Culture They Can Celebrate*. John Wiley & Sons
- Morgan, J., 2018. The Technological Environment in Employee Experience. *Leader to Leader*, Volume 87, pp. 28–35
- Organisation for Economic Co-operation and Development (OECD), 2021. Teleworking in the COVID-19 Pandemic: Trends and Prospects. Available Online at: <https://www.oecd.org/coronavirus/policy-responses/teleworking-in-the-covid-19-pandemic-trends-and-prospects-72a416b6/>, Accessed on March 30, 2022
- Paez, A. 2017. Gray Literature: An Important Resource in Systematic Reviews. *Journal of Evidence-Based Medicine*, Volume 10(3), pp. 233–240
- Petticrew, M., Roberts, H., 2008. *Systematic Reviews in the Social Sciences: A Practical Guide*. Blackwell Publishing Ltd, Hoboken, NJ: USA
- Plaskoff, J., 2017. Employee Experience: The New Human Resource Management Approach. *Strategic HR Review*, Volume 16(3), pp. 136–141
- Prajapati, G., Pandey, S., 2020. Enhancing Employee Experience During Covid-19: A Qualitative Study on Investment Banks. *International Journal of Modern Agriculture*, Volume 9(3), pp. 1711–1734. Available Online at: <http://www.modern-journals.com/index.php/ijma/article/view/354>, Accessed on March 30, 2022
- Raia, M., 2017. Providing a Better Digital Experience for Employees. *Strategic HR Review*, Volume 16(2), pp. 71–75

- Robertson, J., 2018. Digital Employee Experience is Where the Action Will Be. Available Online at: <https://www.cmswire.com/digital-workplace/digital-employee-experience-is-where-the-action-will-be/>, Accessed on March 31, 2022
- Srinivasan, S., 2022. The Great Resignation, Human Experiences and the Digitization Challenge. *Forbes*. Available Online at: <https://www.forbes.com/sites/forbesbusinessdevelopmentcouncil/2022/02/22/the-great-resignation-human-experiences-and-the-digitization-challenge/?sh=67008b7264ba> , Accessed on April 15, 2022
- Sudrajat, D., Larasati, A., Farmania, A., Caesar, L.A.Y., Moeke, D., 2021. Does Digital Employee Experience Matters for Employee Service Orientation, Ambidexterity, and Agility?. *In: The 2021 12th International Conference on E-business, Management and Economics*, Volume 2021, pp. 672–677
- Syahchari, D.H., Herlina, M.G., Saroso, H., Sudrajat, D., Jordaan, H.K., 2021, August. The Influence of Digital Employee Experience and Employee Agility: Do They Boost Firm's Effectiveness? *In: 2021 International Conference on Information Management and Technology (ICIMTech)*, Volume 1, pp. 67–71
- The Josh Bersin Company, 2021. *The Definitive Guide: Employee Experience*. Commissioned by Microsoft.
- ThoughtFarmer Intranet Blog, 2022. What is the Digital Employee Experience. *ThoughtFarmer Intranet Blog*. Available Online at: <https://www.thoughtfarmer.com/blog/what-is-the-digital-employee-experience/>, Accessed on April 15, 2022
- Utami, H., Alamanos, E., 2021. Resource-Based Theory. *Theoryhub*. Available Online at: <https://open.ncl.ac.uk/theories/4/resource-based-theory/>, Accessed on February 20, 2022
- Wilson, J., 2022. How to Combat the Great Resignation through Better Employee Experience. *Oracle Fusion Cloud Human Capital Management Blog*. Available Online at: <https://blogs.oracle.com/oraclehcm/post/how-to-combat-the-great-resignation-through-better-employee-experience>, Accessed on March 07, 2022
- Wohlin, C., Kalinowski, M., Felizardo, K.R., Mendes, E., 2022. Successful Combination of Database Search and Snowballing for Identification of Primary Studies in Systematic Literature Studies. *Information and Software Technology*, Volume 147, p. 106908
- Zel, S., Kongar, E., 2020. Transforming Digital Employee Experience with Artificial Intelligence. *In: 2020 IEEE/ITU International Conference on Artificial Intelligence for Good (AI4G)*
- Zucker, J., Rome, J., Sivak, M., Stavsky, G., 2020. Elevating the Workforce Experience: The Digital Lens. *Deloitte Development LLC*. Available Online at: <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/human-capital/us-elevating-the-workforce-experience.pdf>, Accessed on March 07, 2022