

Exploring the Future of America's Digital Workspace Solutions

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Abstract

Digital workplace transformation has considerably more profound implications when redesigning a workplace than deciding which technologies to use or not. Not only will the equipment utilized in work activities change in the future due to digital work, but working activities and processes themselves will frequently alter as well. Employee psychological requirements, such as the desire for relatedness, competence, and autonomy, are significant in this setting because they influence the employees' willingness to embrace their new workplace. More precisely, employees will be more inclined to embrace digital transformation if they believe that working in a digital environment would make it easier for them to achieve higher performance, greater happiness, and personal well-being. Therefore, this study aims to ascertain if employee participation, well-being, and support for digital work contribute to the workplace's digital transformation. By doing this, we bridge a gap in the research and provide evidence that the interpersonal relatedness of employees in a digital work environment significantly impacts their performance and overall well-being. Employee intentions to support the shift to a digital workplace are subsequently increased. To meet the difficulties of digital transformation, we hope this study will assist pre-digital organizations in reevaluating their plans in light of employee participation. The report also invites researchers to use missing value analysis to examine whether and how those parameters are formed differently in light of the COVID-19 pandemic scenario in the northern state of the USA.

Keywords: *Digital Workplace, Workplace Learning, Information Systems, Workplace Studies, IT Jobs.*

Introduction

The Fourth Industrial Revolution has transformed the role of production workers, who once created value through essential technologies like steam power. This shift has placed skilled white-collar employees at the core of today's economies, requiring organizations to implement digital transformation processes (Colbert et al., 2016a). Employee mindsets play a critical role in success, as they can view transformation as an opportunity for growth or a threat to their routine. Digital transformation, a concept with a long history, began in the corporate world in the late 1970s with the adoption of computer-aided design and production. This led to the rise of online banking, enterprise resource planning, and customer relationship management (Selimović et al., 2021). As internet speeds increased, these activities were shifted online, and social media transformed communication and information exchange. Businesses initially focused on communicating with customers, but as their digital goals developed, they realized the need for specialist digital teams to manage new social and mobile channels (Peinado et al., 2021). As work becomes increasingly digital, mobile, and social, changes in technology, demographics, and the workplace are driving this transformation, impacting all work areas, from communication and collaboration to learning and innovation (Khan et al., 2024; Thomas Craig et al., 2021).

The digital transformation has significantly transformed the working environment, predominantly digital. Employees must now familiarize themselves with digital tools and apply modern technology to perform various tasks in the digital workplace (Chatterjee et al., 2023; Prova, 2024). The digital workplace includes all the digital tools workers use to perform their professions. All platforms, tools, apps, and software fall

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under this category. It includes social media tools, email, instant messaging, virtual meetings, HR, and core business software (Aladwani, 2001). This environment requires employees to enhance their capabilities, such as continuous learning, quick response to unforeseen events, and collaborative problem-solving. The digital workplace also includes the interplay of people and machines, which will perform more significant parts of work in the future, challenging employees to be creative and innovative (Richardson, 2022).

The success of a digital working environment is not based on the efficiency of technology but on the process and adaptability of the people who use it. Digital literacy is a highly valued skill that offers numerous advantages for employees and organizations (Sadik et al., 2024). Workplace digital transformation goes beyond digital tools and employee digital skills, requiring redesigning the working environment and culture. Organizations are shifting to a culture focusing on digital innovations and deep employee participation (Aladwani, 2001; Colbert et al., 2016a). The digital transformation of a workplace starts with a shift in leadership and organizational mindset at the employee level. Employees' intention to continue using the digital workplace, positive expectancy, and perception of their future working environment is crucial. The transformation journey should enhance employees' productivity and performance and contribute to their well-being (HM et al., 2023).

The digital working environment is a dynamic and evolving landscape that demands continuous learning, quick response to unforeseen events, and collaborative problem-solving. It also involves the interplay of people and machines, which will play a significant role in future work. Digital work goes beyond offering new technology; success lies in the process and adaptability of the people who use it. Digital literacy is a highly valued skill that benefits both employees and organizations (Schwade, 2021). Workplace digital transformation goes beyond digital tools and employee skills; it involves redesigning the working environment and culture. Organizations are increasingly shifting towards a culture centered on digital innovations and deep employee participation. This shift starts at the leadership and organization levels and employee levels (Hossain et al., 2024; Treviño et al., 2021). Adopting digital tools and employees' intention to continue using the digital workplace is crucial for the transformation journey. Positive expectancy and perception of the future working environment contribute to the enhancement of productivity and performance. Psychological needs, such as autonomy, competencies, and relatedness, are essential for employees' performance and well-being expectations in a digital work environment (Meske & Junglas, 2021).

Digital transformation is a significant trend in the modern workplace, with organizations increasingly adopting digital technologies to improve their working environment and employees' experience and performance. This transformation is substantial for pre-digital organizations, typically traditional industries that were successful in the pre-digital economy but now face the threat of the digital economy (Adrian et al., 2015). To sustain their businesses, these companies must change and transform their processes by adopting digital technologies (Maran et al., 2022; Nikou et al., 2022). Developing a future digital workplace is not only about digital technology and tools but also about employees' expectations and individual perceptions regarding the challenges of digital transformation. Employees' attitudes and perceptions regarding new technologies do not imply the classic question of adoption but rather their expectations of a future working environment. A digital workplace provides better flexibility and productivity benefits by using digital resources regardless of place and time. Organizations can facilitate digital work through the appreciation and self-esteem of each employee by giving them responsibilities and decision-making power, encouraging their creativity and innovativeness (Leesakul et al., 2022; Prabha et al., 2024).

The focus of the future workplace lies in the accomplishment of results and the efficient fulfillment of working tasks rather than formalities such as the place and time of their realizations. A digital workplace eliminates silo thinking and pushes cross-functional collaboration. Digital tools and platforms help employees communicate and work, and the transformation journey requires open space that enables the exchange of information and cooperation among departments (Colbert et al., 2016b). This contributes to employees' creativity and innovativeness, thus driving productivity/efficiency and creativity into the future workplace culture. However, the positive effects of a digital working environment, such as creativity, well-being, and employee performance, can be reduced by technostress (Vallo Hult & Byström, 2022). Technostress occurs when technology is used without adequate change of the working environment and redesign of sufficient changes in the working environment and the workplace. Digital transformation must

be followed by digital leadership and a change in organizational culture. Implementation of digital work requires open and collaborative leadership with a clear vision and commitment instead of a command and control management style (Rakovic et al., 2022).

The digital transformation of a workplace goes beyond the adoption or non-adoption of technologies. It has more profound effects in the context of re-designing a workplace. A future digital workplace implies a change in the tools used in work activities and often changes the nature of those working activities and processes (Nikou et al., 2022). The psychological needs of employees are essential in this context: the need for autonomy, competence, and relatedness, which affect the employees' motivation to accept the future workplace. These universal psychological needs affect employees' perceptions and expectations of work design and outcomes (Selimović et al., 2021). Enabling a workforce to feel competent, autonomous, and connected with others becomes critical to achieving employees' positive attitudes toward digital transformation. Remote working has been shown to benefit employee autonomy, but it also negatively impacts relational aspects of work and employee well-being (Adrian et al., 2015). In remote work, characteristics such as employee autonomy, relatedness, and well-being become more significant, and they should fit the new way of working to achieve better performance and well-being. In the financial service sector in the B&H transition economy, digital workplace transformation is happening first and fast due to the significant and accelerated transfer of knowledge and technology from abroad and the highly standardized and strictly regulated environment (White, 2012).

Financial service employees are increasingly demanding transparency and trust, leading to the adoption of innovative online banking platforms and various insurance applications (McKellar et al., 2024). The emergence of new technology innovations and process disruptions have significantly changed how jobs are conducted, necessitating greater employee innovativeness and autonomy. This has led to customized financial products tailored to client's needs and preferences (Patel et al., 2022). As jobs become service-focused and cognitively demanding, many employees work as knowledge workers (Arpita et al., 2024). The digital working environment has increased productivity and stress, overload, exhaustion, and burnout, even in traditional decision-making industries like finance, science, education, and health. Therefore, employees' psychological needs, performance, and well-being expectations are crucial in the digital workplace transformation in pre-digital organizations (Meske & Junglas, 2021).

However, limited research exists on how to motivate and prepare employees to accept digital work environments. This paper addresses this gap by understanding whether employee involvement, well-being, and support of digital work foster digital transformation in pre-digital organizations in the USA. By confirming that interpersonal relatedness in a digital work environment significantly influences employees' performance and well-being, employees' intentions to support digital workplace transformation have increased. The study focuses on the digital transformation of the financial sector in North America and the impact of employees' involvement in the workplace. The research surveyed 150 financial institutions, highlighting this sector's rapid and significant digitalization due to its foreign-owned nature. The study found that employees' social connectedness in the workplace positively influences their intentions to support digital workplace transformation, highlighting the importance of rethinking strategies for pre-digital organizations.

Literature Review

Digital workplace transformation refers to the significant changes by new technologies, affecting various aspects of work, including employee tasks, processes, social relations, and overall workplace experience. This transformation utilizes digital technologies as automated support tools, affecting job expectations, designs, and resources, thus impacting employee engagement (Chatterjee et al., 2023). Organizations undergoing digital transformation should focus on hiring open employees. A binomial effect size display indicates that employers who hire open individuals have a 62.7% likelihood of hiring employees with higher digital self-efficacy. Emotional stability increases employees' proficiency with digital technologies, enhancing their workplace agility. However, employees' interests play a crucial role in developing digital self-efficacy and agility. Realistic interest in doing and investigative interest in thinking to strengthen digital

self-efficacy. High-performing employees form an agile workforce, enabling the organization to succeed in the complex market environment (Maran et al., 2022).

The growing awareness of the gap between existing and needed digital competencies in the workforce is causing a need for a comprehensive framework and definition of digital competencies at work. This study aims to provide a holistic view by combining diverse methods, including literature review, critical incidents technique (CIT) interviews, and a literature review. The results from these methods led to the creation of 25 dimensions of digital competencies for white-collar workers with office jobs, encompassing a wide range of knowledge, skills, and abilities. The research aims to enhance the applicability of professional learning and the development of digital competencies at work by providing a coherent and detailed framework and definition (Oberländer et al., 2020). Effective information management is crucial for worker productivity and organizational performance, but the growth in information volumes has not led to increased capability. The consumerization of technology, social media, and work environment expectations are putting pressure on IT and IM functions to deliver information through multiple channels and interfaces. The digital workplace can be achieved through integrating four technologies: mobile, big data, cloud computing, and search-based applications, with a focus on developing for the mobile environment. Understanding organizations through an ethnological and cultural perspective is essential for designing and managing this transformation (White, 2012).

Advancements in technology, particularly AI and automated systems, are significantly altering the work environment, particularly for older workers and those with disabilities. The COVID-19 pandemic has exacerbated these changes and widened the unemployment gap for these groups. To support their reskilling and upskilling, inclusive work environments must be created. The Global Public Inclusive Infrastructure (GPII) offers tools to incorporate accessibility into practices and policies. The SmartWork project provides an opportunity to test Morphic, an auto-personalization solution, in creating a more inclusive workplace (Peinado et al., 2021). A study investigates employees' perceptions of change management in implementing a digital workplace and their challenges. The research, conducted through semi-structured interviews with six employees from different industries, reveals that technical projects primarily drive digital workplace implementations without considering re-evaluation or the benefits of the tools to employees. This results in challenges impacting productivity, satisfaction, and engagement. Despite the strategic advantage of new technology and digital culture, executive management often lacks active support for its implementation. The study provides insights for future research topics, but no general conclusions are made (Lagus, 2020).

Digitalization transforms workplaces and social constructions, affecting employees' interaction and learning. This paper explores challenges related to digitalization and the changing prerequisites for working and competence. A qualitative exploratory study reveals the complexity of developing digital workplaces with solid relationships between people, technology, and work practices. The paper argues that focusing solely on information systems and training is insufficient, as understanding learning practices and leadership practices is crucial for new competencies and transitioning to a digital workplace (Vallo Hult & Byström, 2022). Another study explores the concept of a digital workplace, focusing on its essential components and tools from selected IT companies. A survey of 500 IT employees from the top 15 software service companies in Bengaluru was conducted, and data was analyzed using the percentage method (Schwade, 2021). The conceptual model included factors such as Digital workplace, employee efficiency, Engagement, Digital Competency, and Employee and organizational performance. The results showed a strong relationship between the digital workplace and significant digital components, positively impacting an organization's performance in the IT industry. The study concludes that designing a flexible, location-independent workplace can improve performance (HM et al., 2023).

Digital transformation is a significant topic in information systems research, focusing on digitalizing business models and their impact on the economy and society. This paper investigates success factors of digital workplace transformation, adding a micro-perspective to ongoing research. The study reveals that expected work design characteristics significantly influence employees' attitudes toward digital workplace transformation. Ensuring employees are autonomous, competent, and connected at the workplace is crucial

for their future work performance and well-being, increasing their positive attitudes towards digital workplace transformation and their intentions to support the change process actively [11].

The literature empowers what a digital workplace is. Benefits and challenges are also factors for choosing a digital workplace over a traditional workspace. For the IT industry, the digital workplace is a blessing. Considering these concepts, the study explores the impact of employee involvement, well-being, and digital work on digital transformation in pre-digital organizations in the USA. It finds that interpersonal relatedness significantly influences employees' performance and well-being, leading to increased intentions to support digital workplace transformation in the financial sector.

Materials and Methodology

The research involved 150 financial institutions, banks, and insurance companies in B&H, who were asked to distribute a questionnaire to all employees. The survey was conducted through a mailing list-based sampling structure, with data collected from September until November 2020. Employees were assured of complete anonymity, and their participation was optional.

The survey consisted of six main parts with separate questions that reflected the research variables. It also included demographic questions regarding gender, age, years of experience, and organization type. Autonomy and relatedness were measured using three indicators: "I would like to be able to/ can decide for myself to what extent I will use digital technologies in the workplace." Relatedness was defined as the extent to which a digitally transformed workplace is likely to generate an impression of connectedness among employees within an organization. Performance was measured using four indicators: "I would find a digitally transformed workplace useful in my job." Well-being was measured using four indicators: "I would have fun using the digitally transformed workplace." Intention to actively support digital workplace transformation was measured using five indicators: "I intend to actively participate in the process of change towards a digitally transformed workplace."

The survey used a five-level Likert scale, confirmatory factor analysis (CFA), and structural equation modeling (SEM) to analyze quantitative data using SPSS 22 and Lisrel 8.8. Overall, 150 responses were collected, with 35% male and 65% female respondents, over 60% older than 40, having a bachelor's and master's degree, and most employees having been with the institution for between one and six years. Table 1 shows the sample structure for the survey.

Table 1. Sample Structure

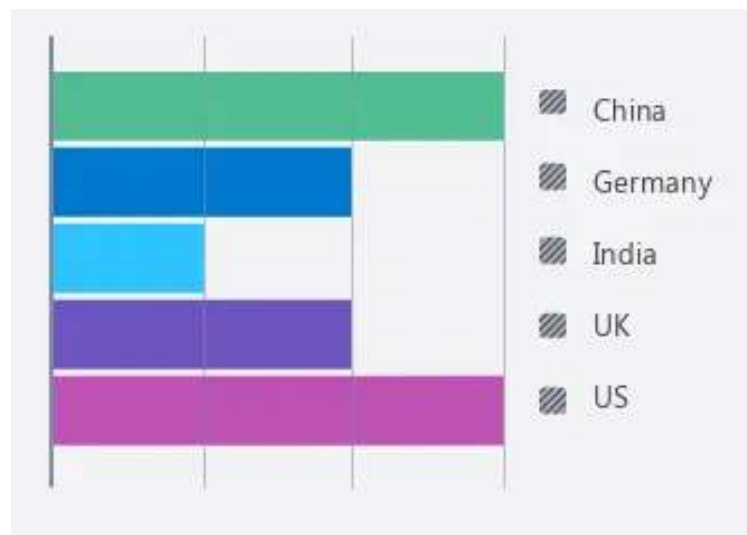
Organizations	Number	Percentage (%)
Insurance Company	70	46.7
Bank	66	44.0
Microsoft Organization	8	5.3
Leasing	4	2.7
Financial Agency	2	1.3
Total	150	100.0

Results and Discussions

The data was examined using missing value analysis (MVA) to identify missing data and retain all observations. The Mahalanobis method was used to test for outliers, with a threshold of 3.50. The multivariate analysis did not show any outliers, allowing all observations to be retained for further study. The data was also tested on assumptions of multivariate techniques for normality, homoskedasticity, and linearity. The data was not entirely customarily distributed, but larger samples with symmetry and roundness deviating from the normal distribution did not affect the essential results. The maximum likelihood method was used, which is robust to data deviations from normality assumptions in multivariate techniques. The

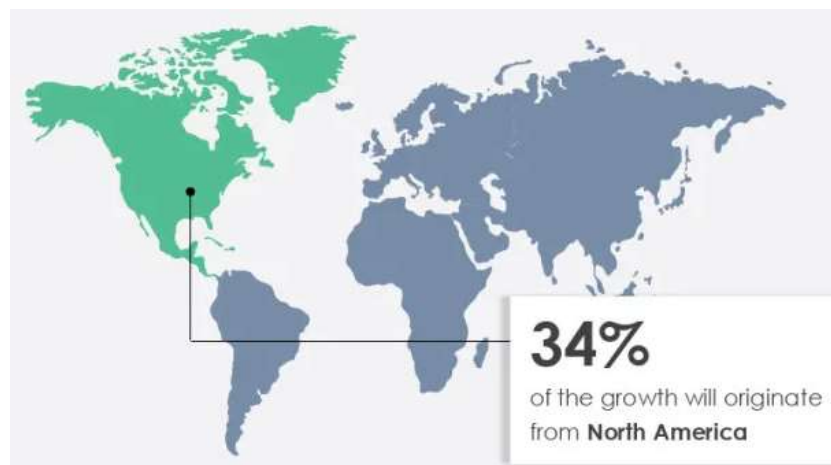
SEM method was considered highly reliable, and the sample contained 150 observations, allowing for the use of data without transformation. The Breusch-Pagan test confirmed the existence of homoskedasticity, with the null hypothesis being rejected ($\epsilon = 0.076$). Finally, the variance inflation factor (VIF) of predictor latent variables was calculated, and the results were compared with a threshold of 5, indicating no significant multicollinearity of the data. The data shows that the digital workplace is more adaptive in the USA than in many other countries (Figure 1).

Figure 1. Adaptation Rate of the Digital Workplace Market in High-Standard Countries.



North America is expected to contribute 34% to the global market's growth during the forecast period shown in figure 2. The analysts have highlighted regional trends and drivers influencing the market's trajectory. North American organizations focus on enhancing work-life balance and employee experience through advanced technologies. New employees are being on boarded digitally, and training programs are being delivered via cloud deployment for flexibility and scalability. This shift towards virtual workplace solutions offers numerous benefits, including increased productivity, cost savings, and a competitive advantage. Industries like manufacturing, retail, healthcare, and government are adopting work styles that prioritize flexibility and adaptability. Virtual workplace solutions, including desktop-as-a-service, artificial intelligence, and virtual reality, are essential for enterprise mobility and healthier work-life balances. Professional services and consulting services are playing a significant role in helping businesses navigate this digital transformation.

Figure 2. North America, the Global Market's Growth Center from 2018 To 2028.



The digital workplace market is expected to grow by USD 76.22 billion at a CAGR of 23.6% between 2023 and 2028, as depicted in Figure 3. This growth is driven by factors such as decreasing hardware costs, increasing internet accessibility, and a shift in employee preferences toward better work-life balance. Digital workplace solutions facilitate this flexibility, contributing to the market's upward trajectory. Key players in the market include Capgemini Service SAS, Cognizant Technology Solutions Corp., DXC Technology Co., Fujitsu Ltd., HCL Technologies Ltd., Hewlett Packard Enterprise Co., Infosys Ltd., Kissflow Inc., Kyndryl Inc., Microsoft Corp., Mphasis Ltd., Nippon Telegraph and Telephone Corp., Tata Consultancy Services Ltd., Tech Mahindra Ltd., Trianz, Unisys Corp., Wipro Ltd., and Zensar Technologies Inc. Accenture Plc offers digital workplace solutions that prioritize user-centric experiences and digital transformation, promoting flexible collaboration and productivity.

Figure 3. Market Size Outlook in USD Billion for the Digital Market



The market place outlook survey brings several factors to light.

Market Dynamics

Artificial Intelligence (AI) and Virtual Reality (VR) are revolutionizing the digital workplace, enhancing work-life balance, and attracting top talent. Organizations are leveraging cloud services and AI-powered tools to streamline business processes and provide a modern, flexible, and efficient work environment. This shift is particularly relevant in industries like healthcare and IT, where complex business processes are becoming more complicated. To ensure a positive employee experience, organizations must prioritize data security and cloud services. The market is witnessing significant growth as organizations strive to provide a modern, flexible, and efficient work environment. Organizations can improve work-life balance, enhance employee experience, and streamline business processes by leveraging AI, VR, and cloud services. A comprehensive analysis of drivers, trends, and challenges can help companies refine their marketing strategies and gain a competitive advantage.

Key Market Driver

The digital workplace transforms businesses' operations, offering a seamless blend of technology and human capital. By implementing bring-your-own-device (BYOD) policies, companies can save on hardware costs, enhance work-life balance, and achieve cost savings. This approach caters to employee experience and work style, particularly for new hires and those requiring training programs. The virtual workplace offers competitive advantages such as flexibility, adaptability, and employee engagement. The Fourth Industrial Revolution is also transforming enterprise mobility, with industries like BFSI, healthcare, pharmaceuticals, IT, telecom, media, and entertainment adopting work-from-home models for improved

data security and cloud services. The digital workplace revolutionizes work culture, contributing to the growth of the global market during the forecast period.

Significant Market Trends

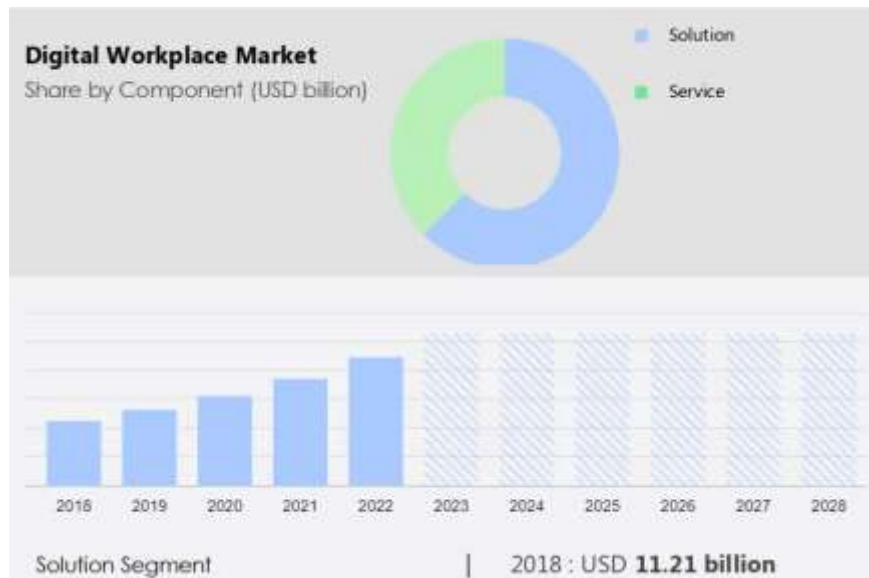
Virtual workplace solutions are gaining popularity in SMEs as they enhance work-life balance, employee experience, and productivity. These solutions enable new employees to quickly adapt to business processes through training programs, providing a competitive advantage. By embracing flexible work styles and cloud deployment, organizations can achieve cost savings and scalability, making them more adaptable to the demands of the Fourth Industrial Revolution. Professional services and consulting firms leverage virtual workplaces to streamline operations, improve employee engagement, and provide real-time insights. Implementing automated systems, robotics, and data-driven methods in various regions has led to lower costs and increased flexibility. Virtual workplace solutions, including desktop-as-a-service, artificial intelligence (AI), and virtual reality (VR), are transforming industries like BFSI, healthcare, pharmaceuticals, IT, telecom, media, and entertainment. Integrating these solutions into business processes is crucial for organizations to thrive in the digital age.

Major Market Restrain

Cloud-based solutions are being used by organizations in the digital era to improve work-life balance and employee experience. Cloud implementation facilitates professional services and productivity by providing flexibility, scalability, and competitive advantage. Cloud services are crucial as the Fourth Industrial Revolution introduces automation, robots, and data-driven methodologies to enterprises. The pace of adoption varies by location, with enterprise mobility, virtual reality (VR), desktop-as-a-service, and artificial intelligence (AI) leading the way. Because cloud services provide data protection and business process integration, they are revolutionizing industries such as BFSI, healthcare, pharmaceuticals, IT, telecom, media, entertainment, and work-from-home. However, worries about data security and privacy might impede the expansion of the worldwide industry, especially among end users who handle a lot of sensitive data.

Market Segmentation

The solution segment is expected to experience significant growth in the Fourth Industrial Revolution market, driven by organizations prioritizing work-life balance and employee experience. Unified communication and collaboration solutions facilitate seamless work styles for new employees through integrated training programs, offering competitive advantages like increased productivity, cost savings, and flexibility.

Figure 4. Market Segment for the Digital Workplace Market

The largest segment, valued at USD 11.21 billion in 2018 shown in Figure 4, benefits from adaptability and engagement, while professional services enable cloud deployment for lower costs and manpower savings. Automated systems, including AI and VR, are integral to the market's growth, with regions like BFSI, healthcare, IT and telecom, media and entertainment, and work-from-home sectors adopting this transformation. The rising adoption of virtual workplace solutions will drive the global market's growth.

Adopting digital workplaces in large enterprises is expected to drive market growth. These organizations, which have a large workforce and complex IT environments, prioritize work-life balance and employee experience. Virtual workplaces offer productivity, cost savings, and a competitive advantage. Training programs are necessary for new employees, while leadership and organizational structure seek flexibility. Cloud deployment facilitates lower costs, manpower efficiency, and scalability. Virtual workplaces must accommodate work styles across departments and locations, ensuring data-driven methods. Industries like healthcare, pharmaceuticals, BFSI, IT, telecom, media, and entertainment are adopting this transformation, with work-from-home and data security becoming essential. Enterprise mobility, Desktop-as-a-service, Artificial Intelligence, Virtual Reality, and automation systems are integral components. Cloud services, including AI and VR, offer flexibility, lower costs, and geographic reach, fueling the growth of this segment and driving the market during the forecast period.

Conclusion

In the current digital era, businesses are adopting digital workspaces at an increasing rate to improve productivity and cooperation. The market is expanding significantly, and the three main drivers of this expansion are productivity (improving workflow efficiency), flexibility (allowing remote work), and empowerment (providing employees with the necessary skills). To promote a collaborative work environment, organizations utilize employee engagement (involving people through digital methods), profiles (creating personalized profiles), and communication (using effective communication technologies). The absence of education and training, a mobile and flexible workforce, training support and upkeep, quicker and more effective outcomes, Bring Your Device, and cloud services are all necessary for the market. Leaders and reality real-time data and analytics are essential in making decisions. Advisors and consultants, or cons, offer insightful advice on how to maximize digital workspaces.

The way employees work is changing as a result of workplace technology like robotics (RPA), machine learning (ML), and artificial intelligence (AI). Desktops and Topics (Desktop programs and tools unique to a given topic) address particular requirements. Data security is of utmost importance. The market is

primarily concerned with highlighting the advantages of digital workplaces, such as higher employee engagement, flexibility, and productivity.

Furthermore, the industry is undergoing significant changes due to adopting data-driven and data-enabled methodologies. Using new tools and technology to promote work-life balance and the employee experience across various work types is part of this. Employers are concentrating on providing creative training programs to meet the demands of both new hires and seasoned professionals. Transitioning to virtual, mobile, augmented, remote, collaborative, and virtual work environments is essential, particularly in geographically varied areas. In the wake of the COVID-19 epidemic, service providers provide end-to-end setup, migration, and administration services, such as Desktop-as-a-service. The digital workplace includes tools for web and video conferencing, artificial intelligence (AI), the Internet of Things (IoT), and virtual reality (VR). These technologies improve business processes and make work-from-home scenarios productive while guaranteeing data security via cloud services. The industries leading the adoption of these market innovations include BFSI (Banking, Financial Services, and Insurance), healthcare, IT, and telecom.

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