Pacific Asia Journal of the Association for Information Systems

ISSN 1943-7544

Research Paper doi: 10.17705/1pais.14302 Volume 14, Issue 3 (2022)

Understanding Digital Work and its Use in Organizations from a Literature Review

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Abstract

Background: *Digital work is becoming increasingly popular due to its benefits and the continuous surge of the COVID-19 pandemic. Despite numerous studies in attempting at understanding the adoption of digital work and its impact from various perspectives, there is lack of a systematic review of such studies. As a result, a systematic review of this nature is becoming critical as such a review can summarize what has been done and provide a solid foundation for future research.*

Method: *A comprehensive review of existing studies of digital work and its use in organizations is conducted in a systematic manner. This leads to the identification of 87 papers published between 2010 and 2020 in major journals from the mostly popular databases including ProQuest, Emerald, ScienceDirect and Web of Science. Such papers then have been critically analyzed and synthesized.*

Results: *The review of the related literature leads to the formulation of a working definition for digital work, the identification of the characteristics of digital work, and the emerging issues that influence the adoption of digital work in organizations. An integrated framework is proposed for better understanding the adoption of digital work from the perspectives of individuals, organizations, and society.*

Conclusion: *This study proposes an integrated framework for better understanding the adoption of digital work in organizations. Such a framework can be tested and validated in various contexts. The study contributes to existing research from both theoretical and practical perspectives. Theoretically, this study identifies the characteristics of digital work and the emerging issues for affecting the adoption of digital work through reviewing the related literature in a holistic manner. Practically, this study provides organizations with useful information on how to address the emerging issues in the adoption of digital work.*

Keywords: Digital Work, Digital Technologies, Technology Adoption, Integrated Framework, Literature Review.

This research article was submitted on 15-Oct-2021 and under two revisions, accepted on 18-Mar-2022.

Citation: Wibowo, S., Deng, H., & Duan, S. (2022). Understanding Digital Work and its Use in Organizations from a Literature Review. *Pacific Asia Journal of the Association for Information Systems, 14*(3), 29-51. https://doi.org/10.17705/1pais.14302

Introduction

The increasing use of digital technologies has dramatically transformed the traditional workplace (Deng et al., 2022; Fletcher & Griffiths, 2020; Richter et al., 2018; Sahu et al., 2018a). These digital technologies, including big data, artificial intelligence, cognitive computing, internet of things, cloud computing, mobile computing, social media, and digital platforms, are reshaping how work is designed, performed, and managed at individual, organizational, and societal levels (De et al., 2020; Ellder, 2019; Sahu et al., 2018b). Furthermore, the increasing automation and augmentation of work activities through the application of artificial intelligence are transforming the labour market with humans being replaced by or working together with ever-smarter robots under various circumstances (Holmström, 2021). This leads to the wide use of digital work commonly described as the work arrangement between individuals and organizations for performing job-related tasks using digital technologies from remote locations (Duan et al., 2020; Nakrosiene et al., 2019).

With the rapid development of digital technologies and the continuous surge of the COVID-19 pandemic, digital work is becoming increasingly popular (Duan et al., 2020; Messenger & Gschwind, 2016; Richter et al., 2018). The popularity of digital work is due to its benefits to organizations and individuals including higher job satisfaction, increased autonomy, improved productivity, reduced work-family conflict, lower stress, and reduced commuting time and costs, leading to better job performance for individuals and enhanced competitiveness for organizations (Nakrosiene et al., 2019; Solis, 2017; Zhang et al., 2020). The potential of digital work leads to its increasing use across the world (Howarth et al., 2018; Madakam et al., 2019), in particular during the pandemic in which individuals have been forced to work at home using digital technologies (De et al., 2020; Duan et al., 2021).

There are specific issues and challenges in the adoption of digital technologies in organizations (Ali-Hassan et al., 2015; De et al., 2020; Farivar & Richardson, 2021). The application of digital technologies, for example, can lead to increasingly blurred boundaries between the public and private spheres of the everyday life of individuals (Jarrahi et al., 2017). It can increase stress and burnout as individuals are separated and common social interaction between individuals is reduced (Sarker et al., 2012). The use of digital technologies can add pressures on individuals to engage in exhausting emotional labour and increase technocratic and peer control, leading to technostress (Ayyagari et al., 2011) and 'zoom fatigue' (Fosslien & Duffy, 2020). Furthermore, the need for requesting connectivity, the inability to disconnect from work, and the intrusive interruption leading to stress (Sarker et al., 2012) directly affect the job performance of individuals in a digitalized work environment.

There are many studies for understanding digital work and its adoption in organizations from different perspectives including information systems, computer science, management, and health. Information systems-oriented studies look at digital technology use (Schwarzmuller et al., 2018), security (Hicks, 2019; Park et al., 2018), information acquisition, privacy, and trust (Brown et al., 2021; Grant et al., 2019) in the adoption of digital work. Computer science-aligned studies explore the development of specific algorithms and applications for facilitating the automation of specific business processes (Dubbelt et al.,2015; Madakam et al., 2019) in the pursuit of digital work. Management-based studies focus on understanding the impact of leadership (Mayo et al., 2016), flexible work arrangement (Bathini & Kandathil, 2019), communication (Bordi et al., 2018), job performance (Solis, 2017), autonomy and control (Bader & Kaiser, 2017) on the use of digital work in organizations. Health-destined studies concentrate on the use of digital technologies for better health-related outcomes in the adoption of digital work (Howarth et al., 2018). Such studies above have provided specific insights on the adoption of digital work in organizations from different perspectives.

Despite numerous studies discussed as above in exploring the adoption of digital work and its impact in organizations, there is lack of systematic reviews of such studies (Duan et al., 2020).

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DOI: 10.17705/1pais.14302

With the increasing popularity of digital work, a systematic review of the related studies is becoming critical. This is because such a review can summarize what has been done in this area. It can help identify the emerging issues for the use of digital work. This can lead to the development of specific frameworks for better understanding digital work and its use in organizations. In line with the discussion above, this study addresses this problem with the formulation of the research question as follows:

- *What are the characteristics of digital work?*
- *What are the emerging issues for the adoption of digital work in organizations?*
- *What is an appropriate framework for better understanding the adoption of digital work in organizations?*

This study presents a comprehensive investigation of existing studies of digital work in organizations in a systematic manner. A total of 87 papers published between 2010 and 2020 are synthesized. This results in the formulation of a working definition for digital work and the identification of the characteristics of digital work and the emerging issues that influence the adoption of digital work in organizations. To adequately address such issues, an integrated framework is proposed from the perspective of individuals, organizations, and society for better understanding the adoption of digital work. Such a framework can then be used as a foundation for exploring the use of digital work in organizations with empirical evidence.

In what follows, Section 2 presents the systematic method that this study uses for reviewing the related studies. Section 3 presents an overview of the development of digital work, leading to the identification of the characteristics of digital work and the emerging issues for the use of digital work. Section 4 reviews existing studies on digital work adoption, leading to the development of an integrated framework in Section 5. Finally, Section 6 concludes the paper.

Method

Conducting a literature review of a specific paradigm is an established form of enquiry in research (Chau & Deng, 2021; Wolfswinkel et al., 2013). Such reviews are suitable for creating a consolidated foundation for advancing knowledge and theory development (Vial, 2019). This research explores the development of digital work and its adoption from existing research over recent years to help organizations better understand digital work and its adoption.

To achieve the aim of this study, the guideline of Wolfswinkel et al. (2013) is followed for conducting the systematic review of the literature. Five steps including (a) defining the scope of the review, (b) searching the literature, (c) selecting the sample, (d) analysing the sample, and (e) presenting the findings, have been adopted in the study.

Defining the scope of the literature review entails the definition of specific criteria for the inclusion and exclusion of relevant sources and the criteria for identifying and retrieving those sources in the literature. In this study, four prominent databases are used to source the literature including ProQuest, Emerald, ScienceDirect and Web of Science. The selection of these databases is due to their representativeness and coverage in the publication of top academic papers in digital work in organizations (Chau & Deng, 2021).

To ensure broad coverage of the studies of digital work in these databases, several keywords have been used for the search include ‘digital workplace’, ‘digital work’, ‘telework’, ‘e-workplace’, ‘e-work’, 'virtual work’, and ‘e-working’. The use of these keywords in the search is due to their similarity in focusing on the use of digital technologies in delivering specific working commitments and the evolution of the workplace with the rapid development of digital technologies (Deng et al., 2022; Duan et al., 2020; Richter et al., 2018).

Several criteria have been adopted for ensuring that the most relevant articles are selected for the literature review. These criteria include restricting the document type to scholarly journals, the language in English, and the publish time between 2010 to 2020. Conference papers, book chapters, and reports are excluded. While recognizing that conference papers often provide interesting insights on the development in specific areas, refereed journal articles are more representative of the state-of-the-art research output with high impact (Wolfswinkel et al., 2013). As a result, only journal papers have been selected in this review. This approach is consistent with the one commonly used in previous literature reviews (Chau & Deng, 2018; Chong & Duan, 2020; Vial, 2019).

The second step is to run the search query within the selected databases for retrieving the search results. A total of 1,137 articles are returned using the above pre-defined search strings. This initial search enables the study to gain a general understanding of the coverage of existing research in digital work topics in various disciplines including information systems, computer sciences, management, and health.

The third step involves selecting the final sample for detailed analysis. The search is limited to the title and the abstract to focus on the search results. The title and the abstract of all initially identified articles are screened for checking the relevance of the identified sample to digital work. This leads to the identification of 129 relevant articles. Duplicate articles are then removed, leading to the identification of 72 articles. This sample is then augmented through backward and forward search (Vial, 2019). As a result, a total of 87 articles have been obtained for further analysis. The identified 87 articles have been read in full for coding and analysis.

To analyze the selected articles, a four-step approach is used (Vial, 2019; Wolfswinkel et al., 2013). First, several data points are collected for each paper including the publication outlet, the type of paper, the context, the theoretical foundation, as well as the research method. Second, open coding is performed to extract findings from each paper relevant to address the research questions. Third, axial coding is used to refine the coding scheme into a more manageable set of themes, mainly around the characteristics of digital work and the emerging issue that influence the adoption of digital work in organizations. Fourth, selective coding is adopted to finalize and integrate the findings. This leads to the development of an integrated framework for better understanding the adoption of digital work in organizations.

Characteristics of Digital Work and Emerging Issues

Digital work was originated from telework in 1970s (Pyoria, 2011). It is to avoid commuting to offices, therefore helping to reduce the dependence on fossil fuel (Byrne et al., 2005). Digital work has evolved over three stages (Messenger & Gschwind, 2016). The first stage is the development of home office based on the use of personal computers and fixed telephones. The second stage is related to the establishment of mobile office with the use of laptop computers and mobile phones connected through enabled wireless connection so that portable work can be delivered from locations other than home or office. The third stage is the use of virtual office in which online connection and digital technology use enable virtual connection between individuals and organizations from almost anywhere and at any time (Mills, 2016), leading to the increasing use of digital work.

Digital work is a broad concept that lacks a commonly accepted definition (Duan et al., 2020; Messenger & Gschwind, 2016;). Different terms have been used to describe this multifaceted phenomenon including digital workplace, teleworking, telecommuting, e-working, remote working, and agile working (Pyoria, 2011). Table 1 presents an overview of various definitions of digital work from different perspectives in the literature.

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DOI: 10.17705/1pais.14302

Table 1 - An Overview of the Definitions of Digital Work		
References	**Definition**	**Characteristics**
Kelliher & Anderson (2010)	Flexible working environment designed to give employees a degree of choice over how, when and where they work for achieving a satisfactory work-life balance	Flexible working time, remote location, and work-life balance
Morganson et al. (2010)	Work performed at home or satellite offices to reduce commuting	Remote locations
Breaugh & Farabee (2012)	Alternative work arrangement in which employees perform tasks elsewhere that are normally done in primary or central workplace using electronic media	Use of technology and remote location
Galvez et al. (2012)	Flexible work arrangement in which work is conducted from remote location using ICT	Use of technology, flexible working time, remote location, and work-life balance
U.S. Office of Personnel Management (2013)	Work arrangements from approved worksites other than the location from which the employee would otherwise work	Contractual arrangement and remote location
Davison et al. (2014)	Work practices that are being reconfigured via the use of digital technologies	Technology use and collaboration
Orlikowski & Scott (2016)	Work practices being reconfigured through digital platforms, algorithms, and the processing of multiple, diverse kinds of data	Use of digital technologies
Bader & Kaiser (2017)	Distributed work arrangement between employees and organizations	Contractual arrangement
Nakrosiene et al. (2018)	Work performed from different locations that enables workers to access to their working activities using digital technologies	Use of technology and remote location
Grant et al. (2019)	Work practices undertaken outside the office using digital technologies	Use of technology, flexible working time, and remote location
Silva-C et al. (2019)	Work practice via contractual agreement performed by using digital technologies	Use of technology, flexible time, remote location, and contractual agreement
Baptista et al. (2020)	Work practices with elements of automation and AI-driven capabilities	Use of digital technologies
Cortes-Perez et al. (2020)	Work arrangement between employees and organizations from remote locations using digital technologies	Use of technology, contractual arrangement, remote location
Meske et al. (2020)	Work arrangement using digital technologies across formal boundaries	Use of digital technologies and flexibility

An examination of these definitions in Table 1 shows that there are several common characteristics in approaching digital work. These characteristics include the use of technology, remote location, contractual arrangement, and flexible time. This leads to a holistic definition of digital work as 'work arrangement between individuals and organizations for performing job-related tasks using digital technologies through processing diverse kinds of data from remote location' with detailed discussion of such characteristics in the following.

Use of Technology

Digital technologies are an enabler for facilitating the delivery of specific tasks in organizations (Sahu et al., 2018a; Wang et al., 2020). Personal computers and telephones initiate the relocation of traditional work away from offices (Pyoria, 2011). With the growing use of mobile devices like laptops and mobile phones, workplaces are extended to places like trains,

subways, and cafes. The dispersion of Internet access further virtualizes work, making it accessible on smaller and more powerful devices like smartphones and tablet computers. As a result, mobility has become an important characteristic of digital work (Mayo et al., 2016).

There is an increasing use of digital technologies for delivering working tasks in organizations. Such technologies include business analytics (Bader & Kaiser, 2017), instant messaging, emails, social media, and bulletin boards (Bordi et al., 2018), social networks (Cortini & Fantinelli, 2018), cloud computing (Park et al., 2018), smart devices (Thulin et al., 2019), Skype (Meske et al., 2020), and artificial intelligence (Rani & Furrer, 2020). Various disruptive technologies including mobile computing and virtual reality, sensor-embedded wearable devices and machines, telepresence systems (Schwarzmuller, 2018), robotic process automation (Madakam et al., 2019), and mobile online technologies are increasingly being used. Furthermore, digital platforms, video conferencing, Internet of Things, cloud solutions, Zoom, apps and video conferencing software are continuously shaping and transforming how working commitments are being delivered, leading to the growing use of digital work in organization (Saura et al., 2022).

The rapid development of digital technologies makes digital work attractive for individuals and organizations (Duan et al., 2020; Messenger & Gschwind, 2016) due to the potential that digital technologies provide. Such potential, however, is often under-utilized (Argyris & Monu, 2015; Deng et al., 2022). This is due to the behaviour of individuals which are afforded and constrained by digital technology use (Majchrzak & Markus, 2012; Treem & Leonardi, 2013; Wang et al., 2020) and the complex interaction among individuals in organizations (Argyris & Monu, 2015; Duan et al., 2020). There are two emerging issues associated with the use of digital technologies for digital work. One is the dependence of individuals on digital technologies for carrying out digital work independently. Often individuals must face technical problems on their own in digital work (Richter et al., 2018). This can be very demanding under circumstances. The other is to do with information security in digital work in organizations (Zhang et al., 2020). As more data and information are being shared online in digital work, individuals and organizations are more at risk of having their data and information hacked or accidentally leaked (Park et al., 2018). This shows that the dependence on digital technologies and the concern on information security directly affect the use of digital work in organizations.

Remote Location

Remote location is attractive for the popularity of digital work (Duan et al., 2020). The rapid development of digital technologies provides organizations and individuals with the capacity to move the working place away from traditional office (Galvez et al., 2012). As a result, much work can be delivered at remote location including satellite office, neighbour work centre, mobile office, and home (Eom et al., 2014). Overall, home is the most common location for the delivery of digital work (Bathini & Kandathil, 2019). This leads to the provision of greater temporal and locational flexibilities for organizations and individuals in the delivery of digital work. The presence of such flexibilities allows individuals to better manage the delivery of their working commitments, therefore having a positive impact on their work-life balance (Leung & Zhang, 2017) and resulting in better job performance (Johari et al., 2018).

The use of remote location for digital work has several challenges. It, for example, can limit the potential of individuals for socializing with colleagues and impede their ability to develop social and informal ties with colleagues (Huber & Gartner, 2018). Working in remote location leads to increased blurring of the boundary between work and private life (Thulin et al., 2019), therefore increasing the potential for conflict, stress and even health problems (Howarth et al., 2018). Individuals are more subject to interruption when working remotely (Richter et al., 2018). Furthermore, working in remote location involves reconstitution of traditional organization controls since spatial separation between managers and individuals reduces their

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DOI: 10.17705/1pais.14302

physical visibility (Bader & Kaiser, 2017; Huber & Gartner, 2018). The lack of visibility makes behaviour-based control more difficult (Richter et al., 2018). A change in the leadership style in the adoption of digital work is therefore needed (Boell et al., 2013; Hoch & Dulebohn, 2017).

Contractual Arrangements

Specific contractual arrangements between organizations and individuals must be made in the adoption of digital work (Duan et al., 2020). There are two types of contractual arrangements in the adoption of digital work including formal and informal arrangements depending on whether such arrangements have been officially articulated or not in the labour contract. Much of the digital work today is still conducted largely on informal arrangements even though this type of arrangement is undesirable (Aguilera et al., 2016). This is because the implementation of formal working arrangement involves high transaction costs including (a) change of employment contracts, (b) provision of business equipment, (c) converting a homeroom into a working area, and (d) imposing work schedules (Bertil & Eva, 2016). As a result, the informal working arrangement in digital work is the preferred option.

There are several emerging issues that need to be addressed in relation to contractual agreements for digital work in organizations. Specific agreements must be in place to define the rights and duties of employees and employers. This is to ensure that both employers and employees have a clear and shared understanding of the digital work arrangement. There is also a clear need for employers and employees to be fully aware of the labour legislation and the critical area of occupational health and social interaction in the workplace (Bertil & Eva, 2016; Duan et al., 2020). In addition, these employees should have the same status and enjoy the same working conditions as other employees in equivalent jobs.

Flexible Working Hours

Digital work provides individuals with flexible working hours in most situations (Duan et al., 2020). Individuals have the freedom to decide how, where, when and with whom to engage in work-related tasks (Richter et al., 2018). This ability in deciding how and when to work has a substantial impact on employees' perception and their engagement with their jobs, teams, supervisors, and organizations. The practice of flexible working hours positively affects organization performance by (a) reducing absenteeism and employee turnover, (b) decreasing operating costs, (c) enhancing work-life balance, and (d) improving job performance for individuals and enhancing productivity for organizations (Farivar & Richardson, 2021; Saridakis et al., 2020). Furthermore, such flexibilities enable employees to align their work with private lives, leading to better work-life balance (Kelliher & Anderson, 2010).

There are two emerging issues on flexible working hours in digital work including work intensification and work-life balance (Brown et al., 2021; Galvez et al., 2012). Work intensification is concerned with the increasing amount of effort that individuals must invest during working resulted from increased economic pressures and societal changes. Frequent work interruptions, long working hours, lack of recovery time, and the demand to work during one's free time are becoming increasingly common that can lead to occupational stress (Brown et al., 2021; Galvez et al., 2012). Work-life balance is about a healthy compromise between working life and personal life for individuals (Brown et al., 2021). Flexible working-time arrangements might threaten the boundary between home and work life, leading to poor work-life balance (Williams et al., 2013).

The discussion above shows that the adoption of digital work has provided organizations and individuals with various challenges and issues in their pursuit of better job performance and organizational competitiveness. This shows that there is an increasing need for understanding the adoption of digital work in organizations from different perspectives.

Digital Work Adoption

The popularity of digital work in organizations has led numerous studies that have been conducted using various theories under various circumstances for better understanding the adoption of digital work (Duan et al., 2020; Langa & Conradie 2003; Morrison et al., 2019). An examination of such studies shows that these studies can be categorized into three groups including individual-based, organization-based, and integration-based.

Individual-based studies focus on exploring the use of digital work with respect to the perception, expectation, and behaviors of individuals in the context of technology adoption in organizations (Silva-C et al., 2019). In such studies, specific technology adoption theories including the technology acceptance model (TAM) (Davis, 1985), the theory of planned behaviour (TPB) (Ajzen, 1985), and the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) have been used to better understand the adoption of digital work in organizations. This leads to the identification of various critical factors for the adoption of digital factors from the perspective of individuals under different circumstances.

TAM-related studies assume that the adoption of digital work is influenced by perceived usefulness and perceived ease of use through the application of digital technologies in organizations. Eom et al. (2014), for example, apply TAM to examine the use of digital work showing that perceived technology usefulness and organizational support directly influence the adoption of digital work in organizations. Morrison (2017) extends TAM to investigate the use of digital work revealing that technology usefulness and organizational support positively influence the adoption of digital work. Silva-C et al. (2019) use TAM to explore the adoption of digital work finding that perceived self-efficacy, organizational support, work-life balance, and information security are critical to the use of digital work. Zhang et al. (2020) apply TAM to examine the adoption of digital work stating that technology usefulness and ease of use are critical for the use of digital work in organizations.

TPB-oriented studies argue that the adoption of digital work is dependent on the attitudes, subjective and social norms, and perceived behavioural control of individuals (Taherdoost, 2018). Seol et al. (2016), for example, apply TPB to understand the adoption of digital work showing that perceived self-efficacy, perceived value, and perceived usefulness directly affect the use of digital work. Massu et al. (2018) extend TPB to explore the impact of employee attitude and top management support on the use of digital work revealing that both these factors influence the adoption of digital work. Morrison et al. (2019) use TPB to examine the adoption of digital work showing that perceived self-efficacy and top management support influence the adoption of digital work in organizations.

UTAUT-linked studies explore the role of social influence, effort expectancy, performance expectancy and facilitating conditions in the adoption of digital work in organizations (Venkatesh et al., 2003). Mills (2016), for example, applies UTAUT to study the effect of perceived ease of use, social influence and facilitating conditions on digital work use revealing that these three factors have a direct impact on the adoption of digital work. Razif et al. (2020) apply UTAUT to study the effect of organizational support, social influence and facilitating conditions revealing that these factors positively influence the adoption of digital work.

Organization-oriented studies concentrate on the adoption of digital work from the perspective of organizations. Such studies try to understand the use of digital work in organizations with the use of specific theories including the resource-based view theory (Melville et al., 2004), the social exchange theory (Cropanzano & Mitchell, 2005), and the institutional theory (Krell et al., 2016). The use of these theories for exploring the use of digital work provides an innovative perspective for better understanding the adoption of digital work with respect to the impact of digital work on organizational performance.

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DOI: 10.17705/1pais.14302

Resource-based view theory-oriented studies assume that digital technologies are critical organizational resources that can be used for improving the competitiveness of organizations. Taskin and Bridoux (2010) apply the resource-based view theory to examine the relationship between organizational readiness and organizational competencies on digital work use revealing that organizational readiness and organizational competencies positively influence the adoption of digital work. Chatfield et al. (2014) use the resource-based view theory to understand the digital work adoption revealing that organizational support, organizational readiness and organizational competencies positively influence the digital work adoption. Tokarchuk et al. (2021) apply the resource-based view theory to investigate the critical factors for the adoption of digital work stating that organizational support and organizational readiness are important for the use of digital work.

Social exchange theory-based studies focus on the social behaviour of individuals in the interaction between individuals and organizations with respect to the exchange of benefits and risks in adopting digital work (Cropanzano & Mitchell, 2005). Kelliher and Anderson (2010), for example, find that organizational culture, organizational commitment, and a sense of obligation of employees to their employers are critical for the use of digital work. Morris (2012) states that organizational culture and strategic orientation are critical for digital work adoption. Ollo-Lopez et al. (2021) find out that organizational culture, autonomy and control, and positive attitude are the critical factors for the use of digital work in organizations.

Institutional theory aligned studies try to understand the impact of institutional pressures on the use of digital work in organizations (Liang et al., 2007). There are three isomorphic institutional pressures including coercive, normative, and mimetic pressures that organizations must deal with in the adoption of digital work. Coercive pressures come from formal rules and cultural expectation of organizations in an institutional environment (Heugens & Lander, 2009). Normative pressures originate from shared norms regarding the conditions and methods of performing certain works (DiMaggio & Powell, 1983). Mimetic pressures derive from imitating others for pursuing specific organizational objectives (Liang et al., 2007). Peters and Heusinkveld (2010), for example, point out that organizations need to consider the effect of both mimetic and normative pressures for the adoption of digital work in organizations. Yang and Konrad (2011) apply the institutional theory to understand the impact of management resistance and organizational culture in the adoption of digital work. Krell et al. (2016) use the institutional theory to examine the adoption of digital work revealing that coercive, mimetic and normative pressures have a significant influence on the adoption of digital work. Bouncken et al. (2020) find that coercive, mimetic and normative pressures have a positive influence on the adoption of digital work in organizations.

Integration-focused studies try to understand the adoption of digital work using a holistic approach by integrating the perspectives of individuals, organizations and the environment, leading to the identification of the critical factors for the use of digital work. Obulo (2019) apply TAM, Diffusion of Innovation theory, and TOE to understand the impact of digital work showing that perceived ease of use, technology development and organizational culture are critical for the use of digital work. Ollo-Lopez et al. (2021) apply TAM and TOE in an integrated manner for better understanding the use of digital work in organisations revealing that perceived ease of use, work-life balance, employee empowerment, government regulations and technology development are critical for the adoption of digital work in organizations. Sastararuji et al. (2021) combine DOI, TOE and the institutional theory in exploring the use of digital work in organizations stating that perceived ease of use, technology development, organizational culture, management support and environment are critical for digital work adoption. Table 2 presents the summary of the discussion above.

The discussion above shows that the use of specific theories is useful for investigating the adoption of digital work from different perspectives. However, those studies have not comprehensively explored the adoption of digital work in organizations with respect to the

requirements and expectation of individuals, organizations, and society. This means that a comprehensive framework capable of better understanding the adoption of digital work in organization in a holistic manner is required.

Table 2 - A Summary of Studies on Digital Work

Perspectives	Theories	References	Critical Factors
Individual	TAM	Eom et al. (2014)	Perceived technology usefulness and organizational support
		Morrison (2017)	Perceived technology usefulness and organizational support
		Silva-C et al. (2019)	Perceived self-efficacy, organizational support, work-life balance and information security
		Zhang et al. (2020)	Perceived technology usefulness and ease of use
	TPB	Seol et al. (2016)	Perceived self-efficacy, perceived value and perceived usefulness
		Massu et al. (2018)	Attitude and top management support
		Morrison et al. (2019)	Perceived self-efficacy and top management support
	UTAUT	Mills (2016)	Perceived ease of use, social influence and facilitating conditions
		Razif et al. (2020)	Organizational support, social influence and facilitating conditions
Organization	Resource-based view	Taskin & Bridoux (2010)	Organizational readiness and competencies
		Chatfield et al. (2014)	Organizational support, readiness and competencies
		Tokarchuk et al. (2021)	Organizational support and readiness
	Social exchange theory	Kelliher & Anderson (2010)	Organizational culture, commitment and obligations
		Morris (2012)	Organizational culture and strategic orientation
		Ollo-Lopez (2021)	Organizational culture, autonomy and control
	Institutional theory	Peters & Heusinkveld (2010)	Mimetic and normative pressures
		Yang & Konrad (2011)	Management resistance and organizational culture
		Krell et al. (2016)	Coercive, mimetic, and normative pressures
		Bouncken et al. (2020)	Coercive, mimetic, and normative pressures
Integration	TAM, DOI and TOE	Obulo (2019)	Perceived ease of use, technology development and organizational culture
	TAM and TOE	Ollo-Lopez et al. (2021)	Perceived ease of use, work-life balance, employee empowerment, regulations and technology development
	DOI, TOE and institutional theory	Sastararuji et al. (2021)	Perceived ease of use, technology development, organizational culture, management support and environment

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DOI: 10.17705/1pais.14302

A Conceptual Framework

This study aims to develop an integrated conceptual framework for better exploring the critical factors on the adoption of digital work in organizations. Due to the unique characteristics of digital work as discussed above, a holistic perspective that comprehensively considers the critical factors related to individuals, organizations and society has been pursued for better understanding on the adoption of digital work in organizations. Furthermore, the increasing importance of security in the use of digital work and the lack of studies on this critical issue (Balasooriya et al., 2017; Schwarzmuller et al., 2018) show that there is a need for including security in the development of such a framework shown as in Figure 1. The proposed integrated framework hypothesizes that the adoption of digital work is influenced by various critical factors from the perspectives of individuals, organizations, and society.

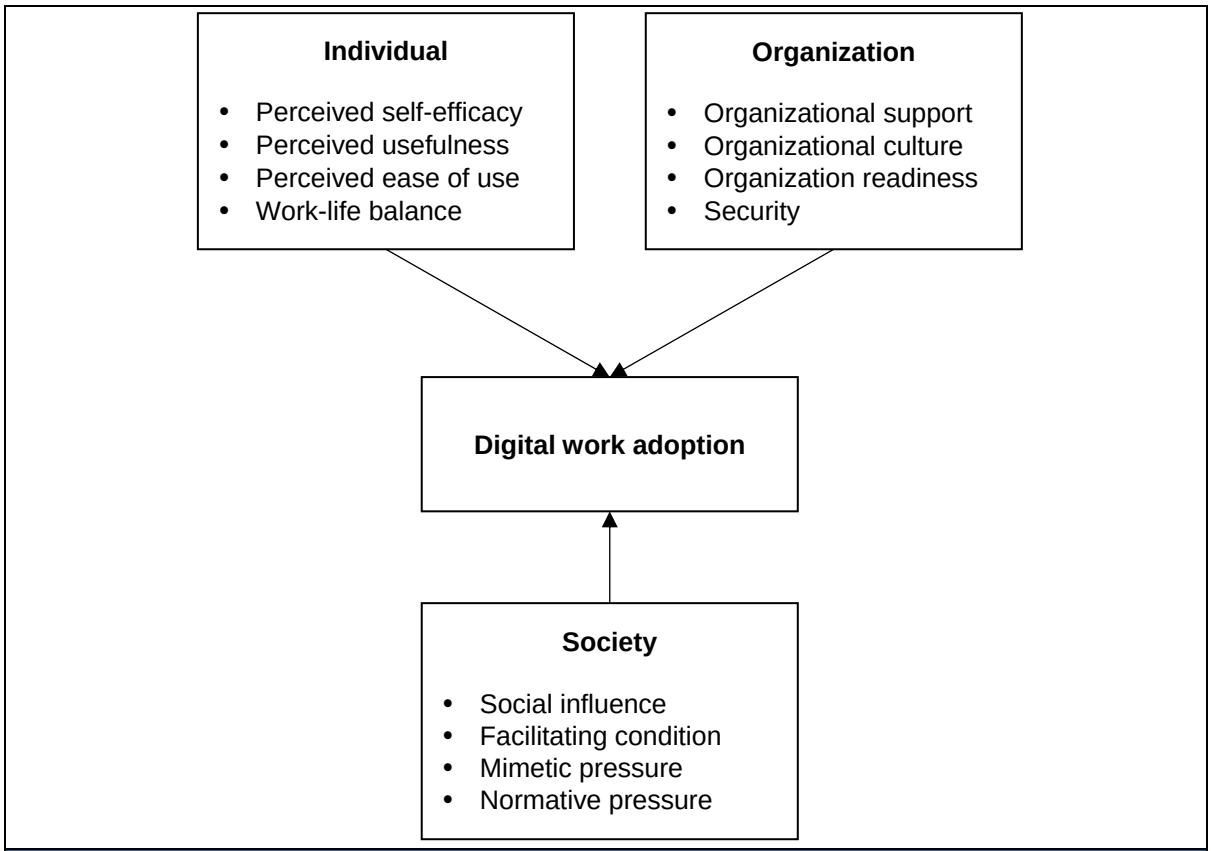

Figure 1 – A Conceptual Framework

The dimension of individuals considers the characteristics of individuals in the adoption of digital work in organizations (Balasooriya et al., 2017). Understanding the characteristics in this dimension is critical as individuals are usually heavily dependent on digital technologies for conducting their work and they often face numerous challenges in the use of these technologies (Wang et al., 2019). Such characteristics can be reflected by perceived self-efficacy, perceived usefulness, perceived ease of use and work-life balance.

Perceived self-efficacy is related to the degree to which individuals consider that they have the skills and abilities to perform specific tasks using digital technologies (Venkatesh et al., 2003). The higher the perceived self-efficacy, the more likely that individuals adopt digital work (Morrison et al., 2019; Silva-C et al., 2019). Silva-C et al. (2019) show that self-efficacy is critical for the adoption of digital work in organizations. Morrison et al. (2019) believe that self-efficacy shows the level of confidence that individuals must have in using digital technologies for performing work tasks, thus positively contributing to the use of digital work.

Perceived usefulness is about the degree to which individuals believe that using a specific technology can improve their performance (Seol et al., 2016; Waizenegger et al., 2020). It is a critical determinant in digital work adoption (Balassoriya et al., 2017; Langa & Conradie, 2003; Seol et al., 2016). Langa and Conradie (2003), for example, find that perceived technology usefulness directly influences the adoption of digital work in organizations. Seol et al. (2016) show that perceived usefulness of digital technologies drives the adoption of digital work through the increase of the perceived value of digital technologies.

Perceived ease of use is linked to the perception of individuals on how easy digital technologies can be used for performing required tasks in digital work (Davis, 1985; Liang et al., 2007). Individuals adopt digital technologies based on the evaluation of the skills, information and experiences required to use the technology. The higher the perceived ease of use of digital technologies, the more likely that individuals adopt digital work (Wang et al., 2019). Liang et al. (2007), for example, show that perceived ease of use of digital technologies in the organization influences both managers' and employees' attitude towards the adoption of digital work. Wang et al. (2019) find that the greater the perceived ease of use among employees for using digital technology, the more likely that individuals will adopt digital work.

Work-life balance reflects the autonomy and control of individuals in managing work and life in digital work (Duan et al., 2020; Grant et al., 2019; Wang et al., 2020). Perceived work-life balance is critical to digital work adoption (Clark, 2000; Grant et al., 2019; Moqbel et al. 2013). Clark (2000), for example, finds that work-life balance enables employees to balance their work and family demands, leading to enhanced employee productivity and increased digital work adoption. Moqbel et al. (2013) point out that work-life balance has a direct positive effect on digital work adoption. Grant et al. (2019) state that work-life balance can bring multiple benefits such as improved motivation, increased productivity and less stress to employees, leading to the increased adoption of digital work.

The dimension of organizations encompasses the characteristics, structures, processes, and resources of organizations that constrain or facilitate the adoption of digital work (Deng et al., 2019). Organizations are often faced with the issues on work processes, individual's roles and responsibilities, and technical resources in the adoption of digital technologies for digital work. Understanding the role that organizations play can help facilitate the adoption of digital work (Duan et al., 2020). The organization dimension usually includes various factors such as organizational support, organizational culture, organizational readiness, and security (Balasooriya et al., 2017; Chatfield et al. 2014; Seol et al., 2016).

Organizational support is about the level of support received from top management in adopting digital technologies for digital work (Balasooriya et al., 2017; Seol et al., 2016). Balasooriya et al. (2017), for example, believe that top management support is a critical predictor for the adoption of digital technologies in digital work. Schwarzmuller et al. (2018) claim that organizations with top management support for the adoption of innovative technologies are more likely to adopt digital work.

Organizational culture is related to the collection of values, expectations, and practices to guide and inform the decision to adopt digital work (Balasooriya et al., 2017). The introduction of digital work causes important changes (a) in the way employees conduct their work and (b) in the relationship between employees, supervisors and organizations in general. The non-physical presence of employees in the workplace is one of the main barriers to its implementation. Gajendran and Harrison (2007), for example, state that digital work increases job autonomy and widens the range of tasks that may be undertaken by employees. Furthermore, digital work is suited for organizations with a participative culture whereby direct control is not important. Seol et al. (2016) find that organizations that have a participative culture and are open to new changes are more successful in the adoption of digital work.

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DOI: 10.17705/1pais.14302

Organizational readiness reflects the level of the available organizational resources such as financial and technical resources for the adoption of digital work (Awa et al., 2016; Mayo et al., 2016). The higher the organizational readiness, the more likely that organizations can adopt digital work (Awa et al., 2016). Mayo et al. (2016), for example, state that organizations need to increase financial resources available for accommodating the necessary installation costs, implementation of subsequent enhancements, and ongoing expenses in the adoption of digital technologies for digital work. Ollo-Lopez et al. (2021) believe that organizations need to provide more intensive trainings for employees for the adoption of digital work.

Security is related to the extent to which digital technologies are reliable and secure for conducting digital work (Park et al., 2018; Salum & Rozan 2016). As more data and information are being shared online in digital work, individuals and organizations are exposed to a higher risk of having their data and information hacked or accidentally leaked (Salum & Rozan, 2016). Balasooriya et al. (2017) find that the dependence on digital technologies and the concern on information security directly affect the use of digital work in organizations. Park et al. (2018) show that there is a negative relationship between security risks and digital work adoption revealing that security risks would delay the adoption of digital work in organizations.

The dimension of society concerns about external impact on organizations in the adoption of digital work (Ghani et al., 2018). Silva-C et al. (2019) believe that there is a need to consider external factors in exploring digital work adoption. Duan et al. (2020) state that understanding the impact of external factors on organizations facilitates the adoption of digital work. The critical factors for this dimension include social influence, facilitating conditions, and normative and mimetic pressures (Abbas & Hamdy, 2015; Awa et al., 2016; Ghani et al., 2018).

Social influence is related to how individuals change their behaviours to meet the demand of the environment (Venkatesh et al., 2003). It has a positive influence on the adoption of digital work (Collins et al., 2016; Paez & Scott, 2007; Scott et al., 2012). Paez and Scott (2007), for example, suggest that the decision for individuals to adopt digital work is strongly influenced by their social networks. Scott et al. (2012) suggest that social influence has a positive effect on individuals, leading to the increased adoption of digital work. Collins et al. (2016) show that social influence has a great influence on individuals' intention to adopt digital work.

Facilitating condition is linked to the perception of individuals on the availability of necessary resources for digital work adoption (Venkatesh et al., 2003). Moqbel et al. (2013) point out that facilitating condition directly influences the adoption of digital work. Balasooriya et al. (2017) show that facilitating conditions such as availability of up-to-date information and assistance can increase an individual's intention to adopt digital work. Silva-C et al. (2019) find that the provision of training and technical support can facilitate the adoption of digital work.

Mimetic pressure reflects on the pressure that causes organizations to imitate or copy the behaviour of other organizations in the adoption of technology for digital work (Teo et al., 2003). An organization faces high levels of mimetic pressures when an increasing number of organizations in its environment are successful in adopting a digital technology for improving their competitive advantages (Reeves & Deimler, 2011). Richter et al. (2018) claim that mimetic pressure plays a significant role in the organization's decision to adopt digital work. Cortes-Perez et al. (2020) find that mimetic pressure has significantly increased the organization's intention to adopt digital work.

Normative pressure concerns with the direct or indirect influence of a non-competing parties in the network such as customers and suppliers on the adoption of technology for digital work (Teo et al., 2003). Reeves and Deimler (2011) state that a higher number of organizations in the network adopting digital technologies for digital work will increase the likelihood of the organization to adopt digital work. Obal (2017) find that normative pressure is the primary driver that influences the organizations' decision to adopt digital work to remain competitive.

This study contributes to existing research from both theoretical and practical perspectives. Theoretically, this study identifies the characteristics of digital work and the emerging issues for the adoption of digital work in organizations through reviewing the related literature in a holistic manner. It extends existing studies with the consideration of additional critical factors including security and work-life balance in the use of digital work through the development of an integrated framework for better understanding the adoption of digital work in organizations. Such a framework approaches the adoption of digital work from an integrative perspective that provides a solid foundation for exploring the use of digital work in organizations.

Practically, this study provides organizations with useful information on how to address the emerging issues in the adoption of digital work. Such a study would be of practical significance for the development of appropriate strategies and policies to facilitate the use of digital work in organizations. This study also provides organizations with better understanding of digital work and its impact on job performance. Such understanding is significant for organizations in their active pursuit of better organizational performance with the adoption of digital work.

There are several issues that can be further researched in future. First, digital work has been recognized as the solution to a viable future of the business world since the outbreak of the COVID-19 pandemic (De et al., 2020; Deng et al., 2022). It is therefore important to understand the adoption of digital work in organizations under various circumstances. Future research can then explore the adoption of digital work in different industries, different countries, and different economic environments respectively for better understanding the use of digital work. Second, exploring the affordance of digital technologies and its impact on job performance at digital work is of significance as digital technologies both afford and constrain the delivery of working commitments under various circumstances. Digital technologies have both positive and negative impact on job performance for individuals and competitiveness for organizations(Salazar-Concha et al., 2021). This shows that there is a need to further investigate the impact of digital technology use and its impact in digital work. Third, the use of digital work has challenged the traditional management practices. This means that more must be done in better understanding the relationship between management practices and job performance in digital work. In particular, further research is necessary for clarifying the impact of different leadership styles on job performance and organizational competitiveness and exploring the role of managers in the adoption of digital work (Silva-C et al., 2019). Table 3 summarizes the three areas for future research and provides suggestions on how these gaps in the literature could be addressed in future research.

Table 3 – Future Research Areas on Digital Work

Future Research	Suggestions
To understand the adoption of digital work in different contexts	A mixed-methods study consisting of survey questionnaires and interviews can be conducted to understand the adoption of digital work in different industries and countries.
To investigate the effects of technostress and other psychosocial effects of digital technology use in organizations	Semi-structured interviews can be adopted to further understand the technostress and other psychosocial effects of digital technology use on employees in organizations.
To clarify the effect of different leadership styles and the role of the manager in the adoption of digital work	Four types of leadership style such as passive Laissez-Faire, transformational, transactional and directive can be explored to understand the effect of individual leadership style on job performance. In addition, the goal setting theory can be included in this study for investigating the relationship employee's role and job performance.

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DOI: 10.17705/1pais.14302

Furthermore, specific research on digital work that is relevant to the Asia Pacific region can be conducted. Asia Pacific region is in a unique context exemplified by diverse kinds of national cultures in different countries. There are different stages that individual countries are positioned in the digital transformation of their respective economies. Furthermore, the development of individual countries in this region is very much different. This provides a rich background for exploring the use of digital work in those countries with different cultures in different stages of digital transformation and different development phases of their economies. With the increasing use of digital work, there is an increasing need for better understanding how different cultures and different degree of digital transformation affect the adoption of digital work under various circumstances (Hosoda, 2021; Mori, 2021).

Conclusion

With the rapid development of digital technologies, digital work is becoming increasingly popular. Despite the increasing research in attempting at understanding the adoption of digital work and its impact on organizations from various perspectives, there is lack of systematic review of existing studies in digital work and its use in organizations. This study presents a comprehensive review of the related literature in digital work and its use in organizations. This leads to the identification of the characteristics of digital work and the emerging issues for the adoption of digital work. An integrated framework is developed for better understanding the adoption of digital work in organizations. Such a framework approaches the adoption of digital work from an integrative perspective of individuals, organizations, and society. This provides a solid foundation for exploring the use of digital work in organizations.

There are two limitations in this study. First, this study investigates the critical issues for the adoption of digital work in organizations without specifying any regions. Future studies should discuss issues specific to individual regions including the Asia Pacific region. Second, only refereed journal articles have been selected in this study. Conference papers, book chapters, theses, and reports can be considered in future studies to enrich the findings of this study.

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https://aisel.aisnet.org/pajais/vol14/iss3/2
DOI: 10.17705/1pais.14302

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