A MODEL OF PAPERLESS TECHNOLOGY CONTINUANCE USE INTENTION BY BUSINESS END-USERS: A DYADIC PERSPECTIVE

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A model of paperless technology continuance use intention by business end-users: A dyadic perspective

Abstract

The ambiguity of paperless technology use in offices prevails, and there is a lack of paperless technology adoption information that can be used to inform strategy within the office automation industry. Office automation organisations require information on the continuance use of paperless technology to ascertain technological improvement areas and strengthen their marketing strategies. This study aimed to identify how the perception of business end-users regarding paperless technology and the buyer-supplier relationship influence their continued use of office paperless technology. By applying the behavioural reasoning theory, the study used an often overlooked behavioural theory in technology use literature and business-to-business marketing literature to investigate the continuance use of paperless technology. The model developed comprises 'reasons for' and 'reasons against' relating to technological and buyer-supplier factors that impact the continuance use intention of business end-users. Empirical data was collected using an online survey, and quantitative methodology was applied. A total of 297 responses from customers (end-users of an office automation organisation in South Africa) were statistically analysed. The results showed that both attitude towards the technology and attitude towards the supplier significantly influence the continuance use intention of paperless technology. Attitude towards the supplier had a lower influence on continuance use intention but also influenced attitude towards the technology. Compatibility, ease of use, usefulness, and reliability shortcomings were confirmed as factors influencing attitudes toward the technology. However, the influence of capability shortcomings was not statistically significant. Goal congruence, trust, commitment, and distrust were supported factors influencing attitudes toward the supplier, while the influence of opportunism was not statistically significant. The supported model contributed to theory building and enabled the development of marketing strategies and strategies to manage the paramount buyer-seller relationships.

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Chapter 1: Prologue

1.1 Introduction

The internet-of-things (connection of physical and digital applications through networks) is part of the Fourth Industrial Revolution (Adebayo, Chaubey, and Numbu, 2019), which has made it possible for businesses to embrace more paperless procedures (Rayburn, 2020; Schwab, 2016). Most organisations are now using computers and transitioning towards paperless offices (Prasanthi, 2016). Considering the movement towards a paperless world, office automation organisations (businesses that sell office technology) need to adapt their products and services (Orantes-Jiménez, Zavala-Galindo & Vázquez-Álvarez, 2015). In this context, developing effective marketing strategies becomes essential for office automation firms (Visintin, 2014) to respond to business customers' needs as they transition from paper towards digital document management (Orantes-Jiménez *et al.,* 2015).

First-world countries are leading in adopting paperless technology (Karabulut & Civelek, 2019). As such, developed countries would ordinarily be the primary target for governments and multinational organisations to introduce novel paperless technology (Rojas-Méndez, Parasuraman & Papadopoulos, 2017). Although developing continents like Africa are lagging in economic development and paperless technology (Nweke, 2019), South African organisations and government institutions have implemented some paperless processes, such as using scanned documents when e-filling.

The challenge for office automation organisations management is to develop a marketing strategy that addresses the customer’s current and future dynamic needs (Mhlungu, Chen & Alkema, 2019; Oliveira & Azevedo, 2018; Visintin, 2014). Due to the outsourcing of office automation, such as paperless technology, end-users interact directly with suppliers of the technology (Lansing & Sunyaev, 2016; Szalavetz, 2020). Therefore, the success in business-to-business relationships of office paperless technology depends on the quality of the product and the relationship between the two organisations. This study investigated the influence of paperless office technology perceptions and the seller-buyer relationship on the continuance use of office paperless technology.

This chapter introduces and outlines the background of the study. The gaps in the literature on paperless technology continuance use are also discussed. From the identified gaps, the chapter outlines the research questions that were answered and the objectives achieved. Furthermore, the chapter briefly explores the methodology followed in the study, providing the limitations, delimitations and contributions of the study. The research establishes factors influencing the continuance use of paperless technology by customers (end-users in the businesses) and makes recommendations that can inform marketing strategies for office automation organisations to enhance the continuance use of paperless technology by business customers.

1.2 Background

Office automation is the creation, collection, storage, manipulation, and transfer of office information using various technological hardware and software (Garson, 1988). According to Lesi (2020), office automation refers to the processes that integrate communication and computer technology with paper-based processes. Computers merged with other technologies have become valuable tools that continuously substitute previous mechanical technologies globally (Nyahodza & Higgs, 2017). This study focused on the continuance use of digital multifunction printers that can copy, fax, scan, store and share digital documents (Karovič, Kováč, Karovič & Veselý, 2020) for paperless work purposes.

Previously regarded as a myth, the paperless office is becoming a reality for many organisations (Briscoe, 2022). According to Orantes-Jiménez *et al.* (2015), most businesses want and need a paperless office. However, Fernandes (2018) found that 78% of institutions in the United States of America and Europe admitted that printing is necessary for their business, falling to 64% who expected printing to be necessary for their business in 2025. Kim, Kim, Oh, Kim and Lee (2021) added that most of the previously paper-based office processes are now paperless in many institutions, with Neagle (2017) and Satish (2019) arguing that the ‘reduced-paper’ offices are more practical and probable than the completely paperless offices.

1.2.1 Global paperless technology adoption trends

Processing paper is costly for organisations, and the technology for the paperless office does exist (Cygnetise, 2022). However, the paperless office is a paradigm taking longer to materialise than other disruptions by technology (Xiong, 2020). McGuire (2022) reported that 30% of prints are not collected from the printer, and 45% of the prints in offices are disposed of. According to McGuire (2022), it costs USD20 to file a paper document and USD120 to find a misfiled document. Not surprisingly, 80% of respondents from a recent study among members of the Governance, Risk and Compliance Management group on LinkedIn agreed that organisations should stop using paper copies and digitise documents (Cygnetise, 2022).

Table 1-1: *Writing and printing paper changes - Global production, Africa imports and South Africa imports 2010-2020*

Year	Total (Global)		Africa		South Africa	
	Production (Mega-Tonnes)	% Change from 2010	Imports (Mega-Tonnes)	% Change from 2010	Imports (Mega-Tonnes)	% Change from 2010
2010	110.221	0.00%	1.445	0.00%	0.335	0.00%
2011	109.228	-0.90%	1.560	7.98%	0.318	-4.94%
2012	106.098	-3.74%	1.491	3.23%	0.366	9.23%
2013	103.906	-5.73%	1.683	16.49%	0.333	-0.44%
2014	102.766	-6.76%	1.797	24.39%	0.301	-10.18%
2015	101.133	-8.25%	1.576	9.07%	0.307	-8.42%
2016	99.305	-9.90%	1.732	19.88%	0.305	-8.87%
2017	99.516	-9.71%	1.999	38.40%	0.345	2.97%
2018	96.171	-12.75%	2.087	44.43%	0.350	4.45%
2019	91.936	-16.59%	2.023	40.00%	0.301	-10.18%
2020	82.248	-25.38%	1.652	14.37%	0.194	-41.95%

Source: FAO (2022)

The growth of the use of office paperless technology can be gauged by the reduction in paper orders (Lavenda, 2021). According to Latta, Plantinga and Sloggy (2016),

paperless technology reduced paper consumption in the United States of America and the Organisation for Economic Co-operation and Development countries. Using data from the Food and Agriculture Organisation of the United Nations (FAO) and 2010 as the base year, the total global printing and writing paper production decreased from 110.221 mega-tonnes in 2010 to 82.248 mega-tonnes in 2020 (FAO, 2022), representing a decline of 25.38% in this period. This decline in the production of paper suggests that the consumption of paper is also decreasing. The total global printing and writing paper production had already decreased by 16.59% in 2019 compared to 2010 (FAO, 2022), as shown in Table 1-1.

Though Africa's total printing and writing paper imports increased, South Africa's importing of this product decreased. According to the data from FAO (2022), Africa is a net importer of printing and writing paper. Africa's total printing and writing paper imports increased from 1.445 mega-tonnes in 2012 to 1.652 mega-tonnes in 2020 (FAO, 2022), indicating an increase of 14.37% in this period. In contrast, South Africa's total printing and writing paper imports decreased from 0.335 mega-tonnes in 2012 to 0.194 mega-tonnes in 2020 (FAO, 2022), showing a decrease of 41.95% in this period. This decline can also partly be attributed to COVID-19, although South Africa's printing and writing paper imports had already decreased by 10.18% in 2019.

A second indicator to gauge the growth of paperless technology adoption trends is to review the adoption of enabling technologies. According to Statista (2023), the global sales volume of printers and copiers (which also have paperless functions) will grow by 2.70% in 2023 and increase to 105.3 million pieces in 2027. Cloud services have become an important tool for employees to share files, communicate and share content (Gangwar, 2017). The introduction of cloud computing appears to be the ideal tool for realising the paperless office (Karlsson & Stöckel, 2017; Šuleř and Machová, 2020). The ability to store documents remotely and retrieve them from anywhere at any time significantly reduces the need for paper in the workplace (Karlsson & Stöckel, 2017). The worldwide market for document management sharing is projected to reach USD10.17 billion by 2025 (Reportlinker, 2020).

Internet penetration is another potential indicator of the adoption of paperless technology. Internet population penetration is positively correlated to paperless technology adoption (Latta *et al.,* 2016) and negatively correlated to paper consumption in offices (Briscoe, 2022). According to ITU (2022), 66% of people will be using the Internet by 2022, from 49% in 2018 (ITU, 2022), as shown in Figure 1-1. Although lagging behind other continents, the data from ITU (2022) shows that Africa improved from approximately 24% of its people using the Internet in 2018 to 40% in 2022. However, South Africa had 70% of its people using the Internet since 2021, an internet percentage penetration much higher than in other African countries (ITU, 2022). Andres, Zentner and Zentner (2014) found that a 1% increase in Internet penetration led to a 0.4% decrease in paper consumption.

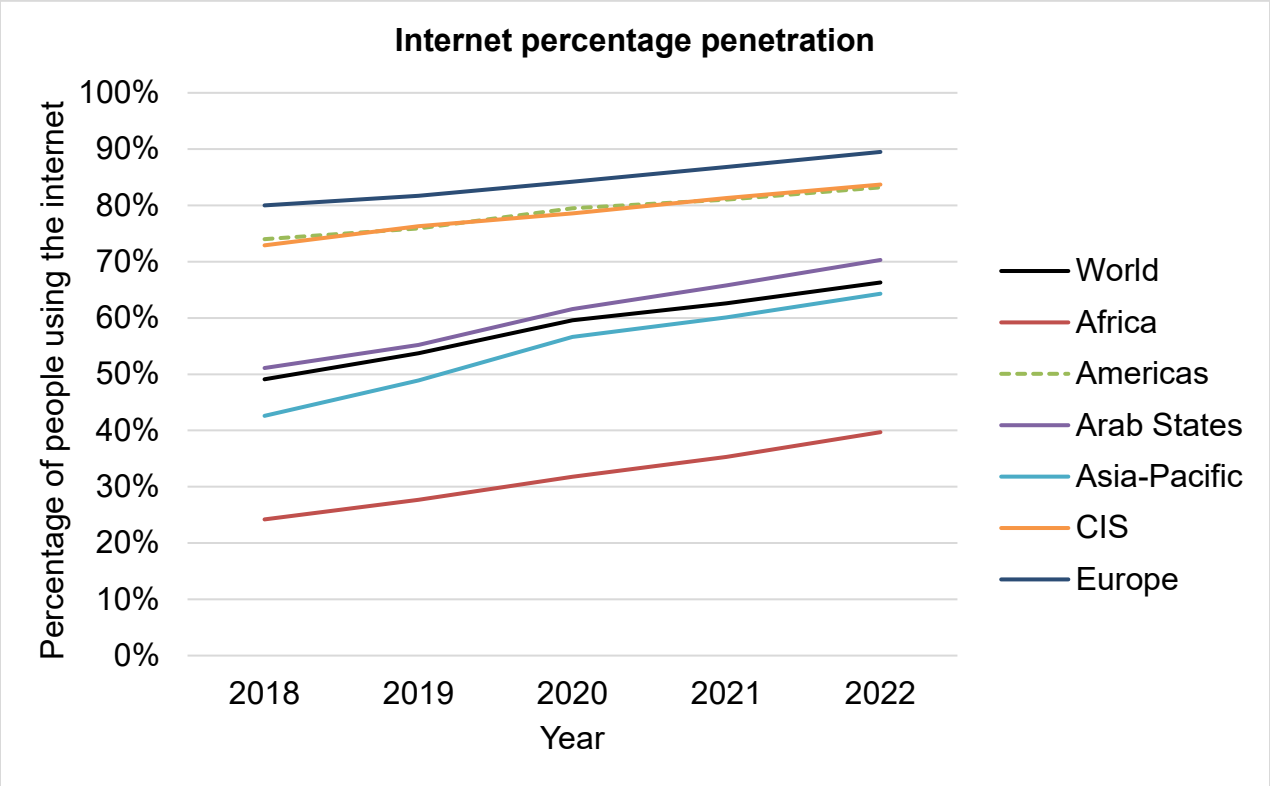

Figure 1-1: *Percentage of people using the Internet 2018-2022*
Source: ITU (2022)

1.2.2 Concept of a paperless office

A paperless office is where paper usage is eliminated or restricted by converting documents into digital formats (Sil, 2022); Business Week (1975) predicted the possibility of paperless offices. Since the 1980s, the idea of paperless offices has gained popularity because many people believed that introducing computers in offices would render paper obsolete (Kim *et al*., 2021). Sellen and Harper (2003) argued that though the world might significantly shift to paperless technology, a considerable portion of office processes would keep using paper technology. Most organisations have integrated paperless technology into their processes without eliminating paper (Khan & Kumari, 2016; Pupulin, 2018). The uncertainty of paper technology abandonment still prevails, necessitating gathering information by office automation organisations on paperless technology use to create awareness of business opportunities (Oliveira & Azevedo, 2018; Visintin, 2014). Examining how the end-users in business-to-business (B2B) settings cope with the move towards paperless offices is vital, as this provides strategic information for office automation organisations (Oliveira, Azevedo, Ferreira, Gomes & Lopes, 2021).

1.2.3 Use of paperless technology at work

In order to make instrumental contributions to the body of knowledge on a subject matter through research, it is necessary to demonstrate what has been investigated about that topic (Farrugia, Petrisor, Farrokhyar & Bhandari, 2010). Research on the shift toward office paperless technology is still limited (Oliveira *et al.*, 2021). As shown in Table 1-2, most of the published research on office paperless technology is non-empirical (without collection of primary data) and applied the qualitative methodology. These qualitative studies explored areas such as feasibility (Carr, 2005), challenges (Abdulkareem, Bello, Ishola & Jimoh, 2020), advantages (Obiora, Bamisile, Dodge & Dagbasi, 2017), health effects (Åborg & Billing, 2003) and disadvantages (Alam, Parihar & Singhal, 2019) of paperless technology in offices. Tyhulu, Sibande, Zilwa, Langa, Hollis-Turner and Bruwer (2016) applied the mixed-method design to determine the impact of a paperless technology on the sustainability of a government institution. The limited quantitative studies have investigated office paperless technologies in contexts such as the willingness of university employees to adopt a paperless system (Obeidat, 2015), prediction of staff performance (Oke & Oludele, 2022), organisational impact (Oliveira *et*

al., 2021), and workforce readiness (Umaima & Hutabarat, 2021). Thus, there is a paucity of empirical quantitative research on the continuance use of office paperless technology by end-users, which can be used for informing marketing strategy formulation by office automation organisations.

Table 1-2: Review of research on paperless technology in work settings

Authors	Data type and Methodology	Theory	Context
Oliveira *et al.* (2021)	Empirical (Quantitative)	Not specified	Analyse the implementation and impact of paperless technology in Portuguese organisations
Putintseva (2023)	Empirical (Quantitative)	Not specified	Evaluate the document management process of an oil company in Russia and determine its readiness to implement paperless technology
Yousufi (2023)	Non-empirical (Qualitative)	Not specified	Challenges and benefits of implementing paperless technology in global corporations, and how to successfully implement paperless processes
Abdulkareem *et al*. (2020)	Non-empirical (Qualitative)	Not specified	Challenges and issues that inhibit the adoption of paperless technology in Nigerian universities
Åborg and Billing (2003)	Empirical (Quantitative)	Not specified	Health effects of paperless technology on Swedish workers
Alam *et al*. (2019)	Non-empirical (Qualitative)	Not specified	Advantages and challenges of implementing paperless processes in institutions
Aprilia and Cahyaningtias (2021)	Empirical (Qualitative)	Not specified	The level of use and effects of paperless technology in life insurance organisations in Indonesia

Ashby (2011)	Non-empirical (Qualitative)	Not specified	The feasibility, disadvantages, and advantages of paperless offices
Bans-Akutey (2018)	Non-empirical (Qualitative)	Not specified	Perceptions (advantages, challenges, training needs) of workers on using paperless technology at a business in Ghana
Carr (2005)	Empirical (Qualitative)	Not specified	Requirements for a university in Jamaica to move towards a paperless environment
Civelek, Çemberci, Uca, Çelebi and Özalp (2017)	Non-empirical (Qualitative)	Not specified	Requirements for businesses in Turkey to move towards paperless foreign trade
Davis, Hadley, Davis and Kepczyk (2012)	Empirical (Quantitative)	Not specified	The level of implementation of paperless technology at small accounting firms in comparison to large accounting firms in the USA
Dhumne (2017)	Non-empirical (Qualitative)	Not specified	The feasibility, disadvantages, and advantages of paperless technology in offices and society
Genesis And Oluwole (2018)	Non-empirical (Qualitative)	Not specified	The feasibility of a paperless system for higher education in Nigeria
Gross, Neely and Sidgman (2015)	Non-empirical (Qualitative)	Not specified	The advantages of using optical character recognition (OCR) for work
Karabulut and Civelek (2019)	Empirical (Qualitative)	Not specified	The level of paperless technology adoption (integration) by businesses in Turkey
Kim *et al*. (2021)	Empirical (Quantitative)	Not specified	The impact (environmental and cost) of paperless technology use for South Korean businesses
King and Toland (2014)	Empirical (Quantitative)	Theory of affordances	The impact of using tablet devices on the consumption of paper at an education institution in New Zealand

Neagle (2017)	Non-empirical (Qualitative)	Not specified	The feasibility, disadvantages, and advantages of paperless technology in law firms
Obeidat (2015)	Empirical (Quantitative)	Technology acceptance model	Factors inhibiting the realisation of paperless offices at a university in Cyprus
Obiora *et al*. (2017)	Empirical (Quantitative)	Not specified	The feasibility and advantages of paperless technology at a university in Cyprus
Oke and Oludele (2022)	Empirical (Quantitative)	Not specified	The level of use and effect of using paperless technology on worker performance at technical colleges in Nigeria
Orantes-Jiménez *et al.* (2015)	Non-empirical (Qualitative)	Not specified	The feasibility, disadvantages and advantages of paperless technology in businesses
Prasanthi (2016)	Non-empirical (Qualitative)	Not specified	The feasibility, disadvantages and advantages of paperless technology in businesses
Prasetyo, Damaraji and Kusumawardani (2021)	Non-empirical (Qualitative)	Not specified	The feasibility, disadvantages and advantages of paperless technology in institutions
Samsudin and Bakar (2018)	Empirical (Qualitative)	Not specified	The feasibility and advantages of implementing paperless technology at a hospital in Malaysia
Sandhu and Seth (2014).	Non-empirical (Qualitative)	Not specified	The feasibility, disadvantages and advantages of paperless technology in businesses
Shibata (2017)	Empirical (Quantitative)	Not specified	Factors inhibiting the use of paperless technology and factors driving the continuance use of paper in Japanese offices
Shibata, Fukase, Hashimoto, Kinoshita,	Empirical (Quantitative)	Not specified	An exploration of how to use electronic paper for office work in Japanese institutions and a

Kobayashi, Nebashi, Omodani and Takahashi (2016)			synopsis of the disadvantages and advantages
Srimathi and Krishnamoorthy (2019)	Non-empirical (Qualitative)	Not specified	Factors minimising the usage of paper-based systems and the feasibility of paperless workflows within education and government institutions in India
Šuleř and Machová (2020)	Non-empirical (Qualitative)	Not specified	The possibilities and opportunities of paperless technology within businesses
Thimbleby (2019)	Non-empirical (Qualitative)	Not specified	How healthcare institutions can implement paperless workflows
Tiwari, Diwan and Sahu (2017)	Non-empirical (Qualitative)	Not specified	The feasibility, disadvantages, and advantages of paperless technology in businesses
Udende, Yusuf and Aderinoye (2021)	Empirical (Qualitative)	Diffusion of innovation theory	The attitude (and readiness) of end-users towards paperless technology at a government institution in Nigeria
Umaima and Hutabarat (2021)	Empirical (Quantitative)	Theory of uses and gratification / Theory of interpersonal behaviour	The readiness of workers to use paperless technology in offices at an institution in Indonesia
Zunic, Djedovic and Zunic (2016)	Non-empirical (Qualitative)	Not specified	The feasibility, disadvantages, and advantages of paperless technology in businesses
Mohamed, Mohamad, Ab Ghani, Baker, Lamin, Mohaiyadin and Mardzuki (2020)	Non-empirical (Qualitative)	Technology acceptance model	How organisational support influences workers' behavioural intention to use paperless technology

Alenazi, Shittu, Al-Matari and Alanzi (2014)	Non-empirical (Qualitative)	Not specified	The feasibility of implementing paperless technology at offices of a government institution in Saudi Arabia
Tyhulu *et al.* (2016)	Empirical (Mixed-methods)	Not specified	The impact of paperless technology on the sustainability of a government institution in South Africa

1.2.4 Continuance use of technology in a business context

The expectation-confirmation model (ECM), diffusion of innovations theory (DOI), technology acceptance model (TAM) and technology-organisation-environment framework (TOE) have been applied in most studies of technology continuance use in a business context (see Appendix B and C). These theories (DOI, TAM and TOE) accommodate external and technological factors in the business-to-business (B2B) context. However, the main factors in these theories might not alone capture the context-specific justifications of technology continuance or discontinuance of use by business end-users. Previous research suggested that investigating reasons for and reasons against the use of technology could provide a better apprehension of customers' decision-taking than a study based on only the pro-use factors (Claudy, Garcia & O'Driscoll, 2015; Gupta & Arora, 2017; Westaby, 2005). The behavioural reasoning theory (BRT) developed by Westaby (2005) incorporates context-specific antecedents to the analysis of technology use behaviour underpinned by reasons for or against the behaviour. To date, the BRT has not been utilised to investigate the continuance use of paperless technology in the B2B context (see Appendix B and E).

1.2.5 Continuance use of technology and B2B relationships

Buyer-seller factors influence the customers' attitude towards the supplier in B2B relationships. Based on principles of the social exchange theory, studies by Chen, Liu, Li and Yen (2013) and Claybaugh, Reychav and Nah (2022) suggested the positive correlation between B2B relationships and technology use continuance by customers. Claybaugh *et al.* (2022) added that models of technology use in the B2B context should explore elements of the exchange relationship in addition to technology factors.

As shown in Appendix C, several relational factors (e.g., trust, relationship satisfaction, distrust, commitment, goal congruence, information quality, resilience, asset specificity, communication, support, external pressure, relationship strength, and loyalty) have been investigated for their contribution to technology use behaviour in buyer-seller relationships. In the study by Chen *et al.* (2013), relationship quality was investigated for its contribution to the end-users' continuance use of a technological system. Claybaugh *et al.* (2022) investigated the effect of relationship satisfaction on the continuance use of customer relationship management software. However, research on the influence of the users' attitude towards the supplier on the continuance use of the technology remains lacking. The behavioural reasoning theory (BRT) has not been applied in technology continuance use research studies based on both technological and relational factors.

1.2.6 Challenge for office automation business managers

The current literature offers limited information on paperless technology use continuance by businesses (Sayar & Er, 2019), which is essential for technology suppliers to develop marketing strategies (Anderson, Narus & Wouters, 2014; Beckmann, Royer & Schiavone, 2016; Visintin, 2014). The study conducted by Jagodič and Milfelner (2022) in a general information technology context provides evidence that marketing strategies positively influence the organisational performance of the supplier. The marketing strategies should be developed based on end-users' changing needs (Jagodič & Milfelner, 2022). Finding information on the continuance use of office paperless technology that can be used to inform marketing strategies is a challenge within the office automation industry. Research enables the identification of potential issues before the development and implementation of marketing approaches by organisations (Morgan & Lurie, 2021; Wilson & Stephens, 2022).

1.3 Gaps in the literature

Based on the literature reviewed, the following gaps in the context of using office paperless technology were identified:

- Research on the adoption and the continuance use of office paperless technology is lacking.

- According to Cenfetelli and Schwarz (2011), it is important to consider both drivers and the inhibitors of technology use simultaneously to comprehend the significance of concurrently unfavourable and favourable reasons for technology adoption. The BRT enables researchers to distinguish between factors influencing information technology adoption and measure the effect of these hypothetically diverse factors in a solitary behavioural choice framework (Westably, 2005). Research drawing on the BRT is lacking to investigate the factors influencing business end-users' continuance use of paperless technology (see Appendix B, C and E).
- Technology continuance use studies have provided valuable results in various organisational settings (see Appendix B and C) but have scarcely examined B2B relationships (particularly attitude towards the supplier) for their contribution to the continuance use of technology, thereby informing supplier marketing strategy formation to enhance the seller-buyer relationship.

The scope, objective and functioning of businesses vary. Thus, investigating paperless technology use continuance using the BRT model in B2B settings could provide a richer understanding of psychological processes leading to business end-users' continued use of paperless technology. This study used the BRT to investigate the continuance use factors of paperless technology by incorporating technology factors and buyer-supplier (relational) factors in a single study.

1.4 Problem statement

Against the preceding background, the problem to be addressed in this study is the lack of paperless technology continuance use information, as posited by Sayar and Er (2019). This information can be used to inform strategy development within the office automation industry. Additionally, academic literature on transformation towards digital technologies is still limited (Alloghani, Thron & Subair, 2022; Šuleř & Machová 2020).

Motivation of why this is a problem

Paperless technology adoption and the continuance use of it by business end-users of office automation organisations are not being monitored, evaluated and leveraged (Oliveira & Azevedo, 2018). Suppose office automation organisations ignore business end-users' continuous use of paperless technology. In that case, office automation organisations may risk declining growth and profitability (Clements, 2023) through customer dissatisfaction and customer turnover (Aichner & Gruber, 2017).

The advancements in information technology have lessened the consumption of paper in offices (Sil, 2022). Despite the availability of paperless technology, the extent of usage is still small (Oke & Oludele, 2022). Marketing executives (e.g., managers of office automation organisations) need to continuously implement new marketing strategies and tactics to improve marketing productivity, brand prominence and customer experience (B2B relationships), which will ultimately increase sales and profitability (Wilson & Stephens, 2022). According to Rogers and Euchner (2022), digital technologies are generally changing how workers behave (high technological expectations) and how institutions operate (capabilities and business models). How the business end-users' perceptions of paperless technology and the buyer-supplier relationship influence their continued use of office paperless technology can assist office automation managers in developing marketing strategies.

1.5 Research questions and objectives

1.5.1 Research questions

The primary research question was as follows:

1. What are the factors influencing office paperless technology use continuance by business end-users?

From the primary research question, the following secondary research questions emerged:

1. What are the key developments in the adoption of office paperless technology?
2. Which theories can be used to investigate office paperless technology use continuance factors in the B2B context?

3. What are the B2B relational factors influencing office paperless technology use continuance from the perspective of business end-users?
4. What technology factors influence office paperless technology use continuance from the perspective of business end-users?
5. How can office automation businesses strategise to enhance the continuance use of office paperless technology by business end-users?

1.5.2 Research objectives

The primary aim of this study was to identify how business end-users' perceptions of paperless technology and buyer-supplier relationships influence their continuance use of office paperless technology.

In order to realise this primary objective, the following secondary objectives were set:

1. To provide an overview of office paperless technology adoption.
2. To identify theories from the literature that can be used to investigate the continuance use of office paperless technology by business end-users.
3. To identify B2B relational factors influencing office paperless technology use continuance from the perspective of business end-users, in line with the identified theories.
4. To identify technology factors influencing office paperless technology use continuance from the perspective of business end-users, in line with the identified theories.
5. To develop a conceptual model of the use continuance of office paperless technology by business end-users.
6. To make recommendations that can be used by office automation businesses to inform marketing strategy formulation to enhance the continuance use of paperless technology by business end-users.

1.6 Research methodology and design

This study applied the rationalism philosophical stance (Khaldi, 2017). Thus, an objectivist (positivistic, deductive) epistemological approach was used (Niraula, 2019). Positivistic

designs are quantitative, collecting data numerically, but require large samples to be valid (Mohajan, 2020).

Research design

This investigation was quantitative because this method enables hypothesis testing (Barroga & Matanguihan, 2022; Counsell & Harlow 2017) and reduces uncertainty in decision-making (Verma & Sharma, 2017). The population size was also large enough to obtain a sample suitable for quantitative data analysis, which Memon, Ting, Cheah, Thurasamy, Chuah and Cham (2020) suggested should exceed 160 usable responses.

Population

The population for this study comprised all the end-users of an office automation organisation in South Africa with email addresses registered with the organisation (total number: 24667). These end-users had access to multifunctional printers used for paperless functions (scan, store and share digital documents).

Sampling

A census was conducted in this study, as the researcher had access to a sampling frame from which all information was easily accessible and available (Martinez-Mesa, González-Chica, Duquia, Bonamigo & Bastos, 2016). From a population of 24667 end-users, 313 responses were received, from which 297 were analysed after the screening of the data.

Data collection method

An online data collection method was utilised in this study. A questionnaire was uploaded on a survey website (QuestionPro), and the link was sent using emails to the respondents through the office automation organisation's communication channels.

Data analysis method

Partial least squares (PLS) structural equation modelling was used to assess the hypothesised paths of the developed model. Due to its extensive usage in quantitative psychological and business studies, the SmartPLS software (Version 4) was used to analyse the quantitative data (Sarstedt & Cheah, 2019). After analysis of the

measurement model for reliability and validity (Henseler, Ringle & Sinkovics, 2009), the path coefficients were considered statistically significant if the probability of obtaining a false-positive result (*p*-value) was less than 0.05 (Fisher, 1992).

Ethical considerations

The University of the Free State (UFS) has a Research Ethics policy. This study received approval (protocol reference UFS-HSD2021/1602/21) from the UFS Ethics committee. Ethical factors addressed in the application for the ethics clearance included permission, confidentiality, anonymity, harm and danger, justice, privacy, conflict of interest, informed consent, ethical data management and non-disclosure (Quinlan, Babin, Carr & Griffin, 2019).

1.7 Delimitation and limitations

According to Theofanidis and Fountouki (2018), authors must extensively and openly report the assumptions, limitations and delimitations to increase the quality of their results and the understanding of the outcomes. Citing the limitations, assumptions, and delimitations can be benchmarked by other authors for future studies (Theofanidis & Fountouki, 2018).

1.7.1 Delimitation

The boundaries or scope of a study as it is being proposed refer to the delimitations of that research (Hancock & Algozzine, 2017; Theofanidis & Fountouki, 2018). Thus, a study's delimitation shows how the scope was narrowed to focus on the study's objectives (Theofanidis & Fountouki, 2018). This study focused on the continuance use factors of paperless technology from the perspective of business end-users. The investigation was delimited to customers of an office automation organisation in South Africa. The paperless technology investigated was delimited to paperless products (multifunctional printers) and services the office automation organisation supplies to the population of this study. Additionally, the study was delimited to end-users who had used multifunctional printers for paperless work (scanning, storing and sharing digital documents for work). Therefore, the findings of this study may not be generalised beyond the office automation organisation where the data was collected. Repetition of the study in different contexts

(e.g., other organisations, industries and countries) can increase the generalisability of the findings (Cheng, Dimoka & Pavlou, 2016)

1.7.2 Limitations

For Hancock and Algozzine (2017), the limitations of a study are aspects affecting the research outcomes that the researcher does not control. Such aspects are connected to the selected research design, constraints of the statistical model, finances and other factors (Theofanidis & Fountouki, 2018). In this study, the limitations identified included the following:

1. Money and time were limited, which may have influenced the decision-making in this study research, such as the target population.
2. The target population were customers of one office automation organisation in South Africa, and a single-mode (emailed online surveys) data collection technique was utilised.
3. The adopted quantitative method research design is usually criticised for not capturing underlying meanings and understandings (Denzin, 1989), having a rigid structure (Khaldi, 2017; Queirós, Faria & Almeida, 2017), and snapshotting dynamic phenomena (Rahman, 2017). Additionally, cross-sectional primary data used in this study inhibited the assessment of end-user change of perceptions (Connelly, 2016).
4. The literature review was conducted by identifying relevant material using keywords and combinations of keywords in specific databases. Thus, publications not available in the databases and documents without the keywords used were not identified or used as part of this study's literature (Grewal, Kataria & Dhawan, 2016).

1.8 Contribution of the study

This study applied the behavioural reasoning theory (BRT), an overlooked behavioural theory in technology continuance use literature and B2B marketing literature, to investigate business end-users' continuance use of paperless technology. This study developed a conceptual model and statistically assessed it using empirical data. The conceptual model developed comprises 'reasons for' and 'reasons against' relating to

technology and buyer-supplier relational factors. The empirically supported model contributed to theory building and also enabled organisations to develop marketing strategies for paperless technology and strategies to manage the all-important buyer-seller relationship from business end-users' continuance use intention.

1.9 Field of study

The essence of this investigation was to examine the aspects that influence the end-users' (customers of an office automation organisation in South Africa) continuance use of paperless technology. By comprehending the significance of the aspects that influence the end-users' continuance use intention (which predicts continuance use behaviour), the study made recommendations that can be used to inform the marketing strategy of the supplier. The findings provide information that office automation suppliers can use to assist customers with paperless technology needs. The study field for this investigation was customer relations management. According to Hassan, Nawaz, Lashari and Zafard (2015:564), "customer relations management is the process of creating and maintaining relationships with customers". This process manages relationships with current and potential customers through coordination of marketing, sales, customer service and field support (Tien, Diem, Vu, Dung, Dat & Duc, 2021). Customer relations management enables customer retention and drives sales and growth (Navimipoura & Soltani, 2016).

1.10 Outline of chapters

Phillips and Pugh (2015) proposed a six-chapter outline for PhD studies that was modified in this research. These chapter contents are sequential: introduction, literature review, method, results, discussion and conclusion (Phillips & Pugh, 2015). Dunleavy (2003) suggested expanding the literature review into multiple chapters for PhD studies. For Wolfe (1996), one literature review chapter should show where the problem comes from, and the other literature review chapter can report the existing knowledge related to the study, such as theories, models and frameworks. The adapted study outline is displayed in Table 1-3.

Table 1-3: Outline of chapters

Chapter and title	Chapter objective
1. Prologue	To introduce the empirical study.
2. Office automation and paperless technology use	To provide an overarching synopsis of paperless technology continuance use concepts.
3. Conceptual model development	To develop a theoretical model of factors influencing paperless technology continuance use intention of business end-users.
4. Methodology	To outline the method of research used for the investigation.
5. Results	To provide the findings of the investigation.
6. Discussion and conclusion	To outline the importance, meaning, and relevance of study findings and summerise the study.

1.11 Financial aid

There was no external financing sought or acquired for this research study. The quantitative study utilised an online questionnaire on the QuestionPro website, which has a free service option (QuestionPro, 2022), that this study used. The participants used their data to complete the online survey. In order to minimise deception by the respondents, there were no benefits for participating (Lynch, Joffe, Thirumurthy, Xie & Largent, 2019). Trial versions of the SmartPLS software (Ringle, Wende & Becker, 2022) and SPSS software (IBM, 2021) were used for data analysis; thus, there were no extra costs in conducting this study added to the institutional academic fees.

1.12 Conclusion

This research study evaluated paperless technology continuance use factors in the B2B context. The conceptual model combines B2B factors and technological factors, thereby availing information that managers of office automation businesses can use in marketing strategy formulation and management of the B2B relationships. This study added to the literature by formulating a model that can be used to investigate technology continuance

use factors in the B2B context. Chapter 1 introduced and outlined the background of the study. The next chapter provides an overarching synopsis of paperless technology continuance use concepts in the B2B context.

Chapter 2: Office automation and paperless technology use

2.1 Introduction

In the contemporary business environment, organisations longing to stay competitive must not overlook digital transformation initiatives (Kotarba, 2018; Schwertner, 2017). Computers that digitise and automate information have shifted the knowledge system significantly since the development of mechanical printing during the 15th Century (Yaghoubi & Sargazi, 2014). For Tsichritzis (1985), office automation is a broad spectrum of advanced office technologies ranging from better office tools (telephones and typewriters) to replacing workers with machines that automatically perform office procedures. Various authors (e.g., Jatain, 2013; Safari & Javadi, 2013; Shah & Irfan, 2017) define office automation as technological hardware and software used in the creation, collection, storage, manipulation, and transfer of office information to achieve work-related goals, while others (e.g., Garson, 1988; Kimutai & Kwambai, 2017; Olson & Lucas, 1982) define it as the use of the technology to achieve these goals. The authors agree that 'office automation' optimises existing office information processes despite differing definitions.

Office automation systems integrate office functions like electronic communication (mail, voice, video), electronic publishing (word processing, graphics, printing), electronic collaboration (meetings, simultaneous system updates), office management (programmed action plans) and information management (storage, transfer) (Cardoso, 2006; Shah & Irfan, 2017). In this study, office automation referred to using technology to create, store, and transfer office information. This study focused on document office automation (paper and digital documents). Digitisation of office documents has become standard across all industries as the use of the Internet in offices is increasing (Oliveira *et al.*, 2021) and shaping how businesses generate, keep and transmit information (Ali, Farooq, Wasim, Jahanzaib & Hussain, 2016). The move towards paperless office automation presents a direct replacement threat to office automation organisations that provide paper-based office solutions (Qian, 2021). This chapter elaborates on document office automation's evolution, driving and inhibiting forces of office document paperless

technology, outlook, benefits and drawbacks of office paperless technology, challenges and openings for office automation organisations.

2.2 The chronicle of document office automation

Myriad forms of document office automation existed before the 1950s. However, according to Haigh (2006), the concept of office automation gained traction in the 1970s, after the publication of an article by Infosystems with the title “Here Comes the Automated Office” and Business Week (1975) proclamation that office automation will revolutionise office functions. By the 2nd Century, the generation, gathering, keeping, management and transmission of data in the paper format already existed in China (Oliveira *et al.*, 2021). Before the systematic usage of paper for data (accredited to Cai Lun), costly and difficult-to-handle resources were used for data management, such as cloth, bamboo and clay tablets (Bhodiwal, Chauhan, & Agarwal, 2022; Fitzgerald, 2021). Paper technology was upgraded from the intensive processing of resources such as papyrus and hide (Shenoy & Aithal, 2016) to the processing of various plants (Jain & Gupta, 2021) and recycling (Ono, Hayashi, Yokoyama, Okamura & Itsubo, 2020). The use of paper became customary in offices. However, replicating documents (when necessary) was the primary challenge for individuals and organisations (Kahn, 2018). The previous ways of duplicating office documents constituted using typewriters, printing/copying press and carbon paper (Oliveira *et al.,* 2021). Printed documents considerably increased by the 15th Century when Guttenberg in Germany invented the press (Oliveira *et al.*, 2021). Typewriters were advanced in the 1820s from the idea by Francesco Rampazetto, who had developed the ‘*scrittura tattile’* to mechanically type letters on papers in the 1570s (Prajapati, Jasani, Patel & Sharma, 2020). Electronic typewriters and copiers were regarded as improved forms of office automation in the 1970s, which had taken decades to develop and popularise (Haigh, 2006).

2.2.1 Institutionalisation of copiers in organisations

In 1906, George Beidler developed the earliest photographic replicating machine (the Rectigraph) that produced copies without using a photographic negative (Ellis, 2011). Owen (2008) explained that the requirements of using the Rectigraph (electricity, running water, a dedicated room) were not easily obtainable in organisations at the time.

Provoked by the similar problem of copying paper documents, Chester Carlson concentrated on electrophotography patented in the 1930s when office automation organisations were advancing photographic duplicators (Dommann, 2019). During the 1950s, Xerox popularised commercial office photocopiers using Chester Carlson's developments (Ahmar Habib & Yazdanifard, 2017). The colour copiers were introduced in the late 1960s during the same era when other office automation organisations were developing innovative photocopiers (Wiffler, 2016) for both B2B and B2C markets (Oliveira *et al.,* 2021)

2.2.2 Popularisation of copiers in offices

The middle of the 1960s was a critical juncture for office automation due to the popularisation of the Xerox 914 duplicator that improved how organisations copied documents (Matsumoto & Kamigaki, 2013). This device (Xerox 914) became fashionable with organisations and had payment terms that motivated businesses to hire rather than buy (Matsumoto & Kamigaki, 2013). The Xerox 914 device weighed approximately 295kg and required floor space of at least 2.74m in length and 2.43m in width (Macfarlan, 1962). Regarded as cutting edge during the 1960s, the Xerox 914 device could make seven copies per minute (100,000 monthly) of originals measuring up to 359mm by 229mm (Mort, 1994). With only the analogue-based copy function, the average copies per Xerox 914 device ranged from 3,000 to 4,000 monthly at the time (Finne, Brax & Holmström, 2013). Analogue printing methods, also referred to as mechanical methods, were the early ways of printing, which used objects such as fixed cylinders, masters, printing plates and stencils (Viluksela, Kariniemi & Nors, 2010). These objects had image areas, which received and transferred ink or toner, and non-image areas, such that the transfer of an image onto a blank paper was done by the image areas (Viluksela *et al.,* 2010). Customers could rent the Xerox 914 device for US$95 monthly, amounting to nearly 4 cents per copy (Dommann, 2019), instead of buying it for approximately $29,500 (Nicoll, 2018). In the 1970s, new office automation organisations such as Konica Minolta and Canon entered the office automation business, manufacturing simpler devices that were more affordable to buy, sustain (Visintin, 2014), and designed to accommodate multiple connected users (D'Alessandro, 2017). Digital printing methods, also called non-impact printing, were introduced, generating a new image for each printed copy without the need

for masters or printing plates, making it faster and simpler to print or make copies using both electrography (Viluksela *et al.,* 2010) and thermal inkjet methods introduced in the 1970s (Morita, 2012).

2.2.3 Internet and computer integration in workplaces

Information and technology automation, the Internet, and personal computers formed the Third Industrial Revolution's technological breakthroughs (Odubiyi, Aigbavboa & Thwala, 2021), contributing to the expectations of paperless offices. The catchphrases “paperless office” and “word processing” were used in the early 1960s as customer relations management terms by International Business Machines Corporation (IBM) (Tesler, 2018) to market computer services and software (Bauer, 2015). Word processing is the usage of a computer(s) to generate, save, manipulate and print documents (Gates, 1999; Haigh, 2006), while paperless offices are offices in which the use of paper technology becomes very limited or eliminated as predicted by Business Week (1975). During the late 1960s, the invention of computer terminals such as the IBM 2260 boosted the use of the term “paperless office” until Business Week (1975) published “The Office of the Future”, which made the idea popular. The introduction of personal computers was a significant turning point in office automation because office tasks were simplified and digitised (Odubiyi *et al.*, 2021).

Most businesses utilised IBM’s mainframe computers during the 1960s and migrated to personal computers in the 1980s (Roch, Smith & Fowler, 2022). According to Kostylev (2000) and Sdegno (2017), scanning and image processing using computers had already started during the 1950s. Substantial propagation of cutting-edge computer technology (scanning included) transpired in the 1980s and 1990s, facilitating the widespread use of digital media (Sdegno, 2017). The Internet was developed in the 1960s but flourished in the 1990s (Roch *et al.,* 2022). Despite the diffusion of the Internet, more than 80% of organisations increased the purchase of office paper until the mid-2010s (Peterson, 2015). After emails were introduced, word processing and electronic messaging increased significantly in the 1990s, when the Internet flourished (Haigh, 2006). Loh and Kanai (2016) argued that the cognitive systems of individuals were significantly reshaped

by the Internet in the 1990s, the same period when copiers were upgraded to provide more functions.

2.2.4 Introduction of multifunction printers in offices

According to Matsumoto and Kamigaki (2013) and Visintin (2012), digital multifunction printers (MFPs) substituted analogue copiers during the 1990s. The idea of paperless work was dampened by the upgrade of copiers to MFPs (Wiffler, 2016) that could copy, scan, fax and print documents in bulk (Karovič *et al.*, 2020). The use of paper documents continued in organisations but at reduced levels (Oliveira *et al.,* 2021). Through MFPs, digital technology enabled the conversion of paper documents to electronic ones, digital storage and dissemination of scanned documents, thereby producing digital administrative processes (Visintin, 2014), which require internal or external support services (Matsumoto & Kamigaki, 2013).

Managed services can be defined as the conveyance of value chain functions and operations to a proficient service provider (Ismail & Islam, 2019). This concept progressed in the 1990s (Palachuk, 2013). Ning, Babich, Handley and Keppo (2018:2) referred to managed print services (MPS) as “the centralised management of companies and organisations’ printer fleets which covers supplies and the maintenance of printers in return for monthly payments”. Valcik and Indyk (2019) posited that MPS customers gain from advanced, low-priced services.

IBM invented the digital retention of documents during the 1950s (Memon, Sami, Khan & Uddin, 2020; Namasudra, 2018). Other office automation organisations have improved digital storage technology and introduced devices universally used now (D'Alessandro, 2017). In the 2000s, many organisations started cloud computing popularised after the collaboration between IBM and Google (Namasudra, 2018). Cloud computing uses networked remote servers available on the Internet to process, manipulate, store and transfer data instead of a local server (Ahmed & Hussan, 2018). In the early 2010s, producers improved MFPs, which now have cloud services, remote monitoring and security policies (Narayanan, 2013). These smart applications are compatible with mobile operating systems such as Android and iPhone (Narayanan, 2013). Thus, document

paperless technology in offices can be linked to the cloud. MFPs can save documents directly that can be accessed, manipulated and shared using computers and other smart devices. By 2012, MFPs were already able to complete smart functions such as multiple security layers, mobile printing incorporated with Wi-Fi direct and tap-to-pair, cloud optimised (direct scan to cloud, and retrieval from cloud), customisable interface, and self-diagnosis of errors) and communication with other smart devices like Android, Apple and AirPrint (Baer, 2012). Most MFPs are manufactured using standard smart technology that supports remote and paperless management (Trevarthen, 2017).

2.2.5 Advancements towards the use of paperless documents in offices

According to Bhuyar and Ansari (2016), an extremely paperless office has a few smart devices connected to a cloud solution. Content governance platforms provide improved ways organisations can manipulate digital data onsite or offsite (Xerox, 2019). Time-consuming and document-heavy processes can be automated on these fast and cost-efficient content governance omnipresent platforms (Xerox, 2019). Generally, office automation can aid in attaining a strategic advantage in businesses (Jatain, 2013).

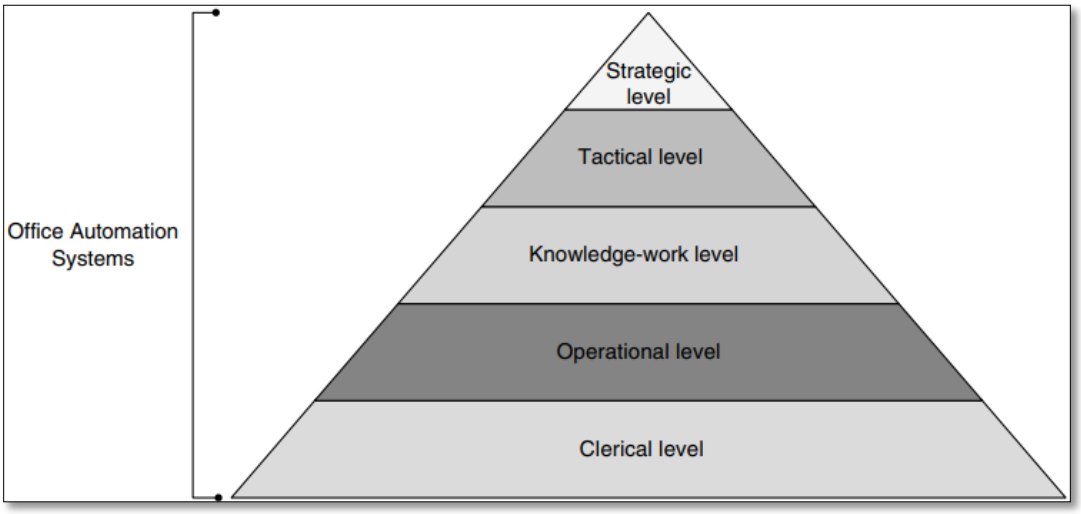

Figure 2-1: *Different organisational levels supported by office automation systems*. Source: Cardoso (2006:152)

As shown in Figure 2-1, office automation systems are utilised at strategic, tactical, knowledge-work, operational and clerical levels, assisting personnel to create, disseminate, manipulate and use information while helping management organise, plan,

control and make decisions (Cardoso, 2006). Paperless technology was initially developed as a replacement for paper in offices (Shibata *et al.*, 2016).

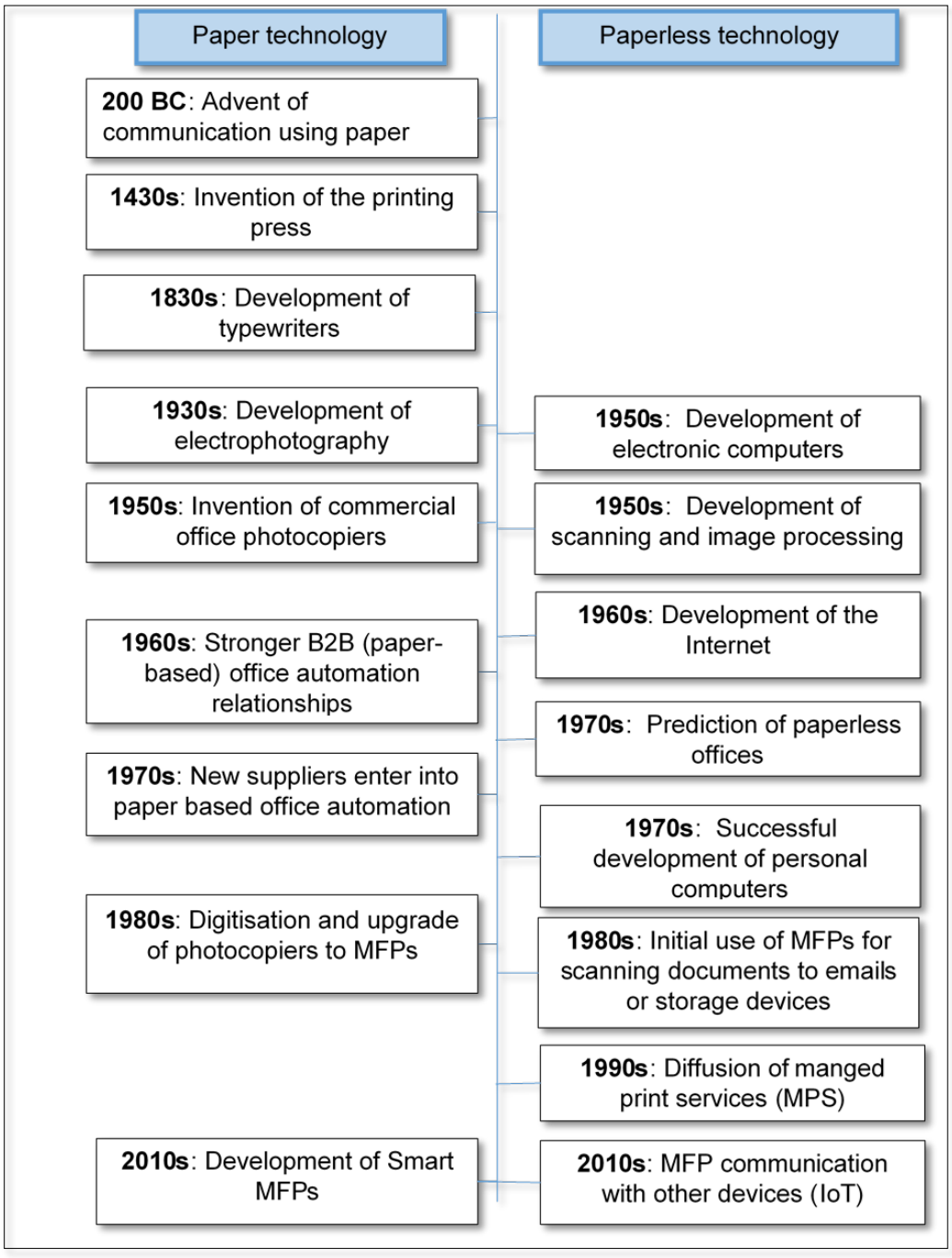

Figure 2-2: *Key milestones of document office automation*.

Adapted from Business Week (1975), Haigh (2006), Narayanan (2013), Oliveira *et al.* (2021), Roch *et al.* (2022), Sdegno (2017), Trevarthen (2017) and Visintin (2014).

Figure 2-2 displays the critical milestones of the evolution of document office automation (paperless and paper-based). From the time the expectation of paperless offices was announced, experts and academics advanced the idea, but many have now concurred that the less-paper office is more realistic (Neagle, 2017; Satish, 2019). Many organisations have integrated paperless processes into their operations (Fernandes, 2018), including businesses in emerging economies (Olaleye & Sanusi, 2019). Businesses previously used MFPs mainly to copy and print documents (Haigh, 2006). However, the printing volumes are expected to decline while usage of MFPs for office paperless technology (e.g., scanning to file, email or cloud) and remote management are expected to increase (Fernandes, 2018). Several factors are driving the use of office paperless technology, while several inhibiting factors are limiting its use in offices.

2.3 Office paperless technology use driving forces

The office automation industry is confronted by various disruptive forces (Rossi, Festa, Devalle & Mueller, 2020). Paperless document office automation has forces driving its use and forces inhibiting its use, making it a complex system (AbdulKareem *et al.,* 2020; Zunic *et al.*, 2016). The key driving forces influencing the use of paperless document office automation are technology advancements, flexible structures, outsourcing and demographics (Balliester & Elsheikhi, 2018; Vermeulen, Kesselhut, Pyka & Saviotti, 2018).

2.3.1 Office paperless technology driving force 1: Technology advancements

Mechanical facilities, electricity-enabled mass production and digital technology were the advancements of the first three industrial revolutions, respectively (Sharma & Singh, 2020). The current Fourth Industrial Revolution is marked by quantum computing, artificial intelligence (AI), the Internet of Things (IoT), autonomous automobiles, biotechnology, robotics, additive manufacturing and nanotechnology, among others (Oosthuizen, 2021). IoT is the networking of devices over the Internet to connect and exchange data using software, sensors and other technologies installed in them, enabling the establishment of data that can support new operations and yield new analytical insights (Nord, Koohang & Paliszkiewicz, 2019). For organisations, IoT has facilitated the implementation of

paperless processes through machine-to-machine communication (Fisch & Fleury, 2020).

Technology generally advances while its cost (manufacturing/purchasing hardware and software, use, maintenance) declines (Khan Pathan, 2018). In line with the technological trends, MFPs have advanced since the popularisation of the Xerox 914 into smaller, cheaper, internet-compatible devices with several paperless functionalities (see Table 2.1). Additionally, the Internet is becoming more affordable even in developing countries such that entry-level broadband services are expected to be below 2% of the Gross National Income (GNI) per capita by 2025 (ITU & UNESCO, 2020), which can increase the use of MFP's for paperless functions that require the Internet (Tiwari *et al.*, 2017).

As shown in Table 2-1, the quality of MFP-enabled paperless document office automation technology continues to improve while its cost is declining (Acemoglu & Restrepo, 2018). Single-function photocopiers (e.g., Xerox 914, which used to cost US$25,000) (Brooks, 1967) were upgraded to MFPs (Visintin, 2012) that now cost an average of approximately US$100 (Statista, 2021). It is important to note that technological advancements can be detrimental to some suppliers of the preceding technology, such as replacing fax machines with MFPs (Khan Pathan, 2018). End-users are increasingly expecting versatile MFP devices, which negatively affects market leaders that offer single-function devices (Khan Pathan, 2018).

Table 2-1: Key *MFP technological advancements*

Aspect	Xerox 914	Modern MFPs		
	Paper-based	Paper-based	Paperless	Comment(s)
Average entry level MFP hardware cost	US$25000	US$100	US$100	More than 95% decrease in cost of MFP hardware
Average yield rate cartridge cost (US$)	4c to 5c per page	5c to 10c per page	Not applicable	Up to 100% increase in printing cost based on cartridge yield
Maintenance	Complex (required large support) and expensive	Less complex (requires less support) and cheaper	Simpler (requires minimal support) and very cheap	Maintenance of MFPs for paperless functions is simpler and cheaper compared to paper-based ones
Functions / utilities	Copy, print	Copy, print, fax, Wifi, self-diagnosis, security	Scan, fax, cloud, security, storage, self-diagnosis, Wi-Fi, tap-to-pair, customisable interface, customised apps	More paperless functions on modern MFPs
Average size	295Kg (area above 6.5m^2)	25Kg (area below 0.3m^2)	25Kg (area below 0.3m^2)	More than 90% decrease in the size of MFPs
Internet / connectivity	Incompatible	Compatible	Compatible	MFPs can be connected to the Internet (now above 65% penetration and 85% coverage globally) or local networks
Average cost of internet connectivity	Incompatible	US$11 to US$33 per month in 2019	US$11 to US$33 per month in 2019	Cost of broadband connectivity decreased from a peak of US$198 per month in 2010 to US$33 per month in 2019 (more than 80% decline)

Adapted from Baer (2012), Brooks (1967), Chen and Carrillo (2011), Fujiwara (2017), ITU (2022), ITU and UNESCO (2020), Narayanan (2013), Statista (2021) and Visintin (2014).

The price of office automation devices has declined significantly, but the cost of supplies has remained high, thereby upholding the “razor-and-razor-blade” model (Fujiwara, 2017). The “razor-and-razor-blade” model is a form of derived demand whereby supplies for the MFPs (consumables and spares) are sold at higher margins than the MFPs after the customer is locked in (Erickson, 2019) to increase the installed base (Finne *et al.,* 2013). For example, the cost of original cartridges required to print in MFPs has remained high and, in some cases, increased (Fujiwara, 2017). However, the use of refills and generic consumables (which are as cheap as 10% of the cost of the originals) reduces the cost of maintaining MFPs for paper-based functions, though it is at the expense of quality and risk of damage (Fujiwara, 2017). Paperless functions do not use up cartridges; thus, the costs of paperless functions when operating MFPs are much lower than paper-based ones.

Entry-level MFPs are now manufactured with several paperless functions (e.g., cloud connection capabilities) compatible with other smart devices such as personal computers (PCs) and phones (Narayanan, 2013; Sato, 2017). Šuleř and Machová (2020) argued that the developments of cloud technologies made paperless technology concepts more apparent. Modern MFPs have onboard hard drives with a greater memory capacity that can handle many files for different functions, including storage of digital documents (Teeselink, Somers, Basten, Trcka & Hendriks, 2011). MFPs can now self-diagnose errors and inform users how to fix the problems themselves (Sakao, Shimomura & Tsuboi, 2009; Shimomura, Tanigawa, Umeda & Tomiyama, 1995). Most manufacturers combine key components (e.g., the charger, drum, cleaner and toner of an MFP) in one replaceable cartridge (Visintin, 2014). Parts like rollers that move pages in the scanning process are more affordable, recyclable and simpler to replace. Thus, MFPs can be expected to have advanced paperless functions that will be cheaper to purchase and maintain going forward, which will likely increase the usage of the devices for paperless functions in offices.

2.3.2 Office paperless technology driving force 2: Workplace structures

Beno (2020) and Kasza (2019) stated that the world of work is now multifaceted with an accordingly flexible workforce. Numerous people worked flexible hours unofficially, which

became formal for many workplaces in 2020, necessitated by the COVID-19 pandemic (De', Pandey & Pal, 2020; Klerk, Joubert, & Mosca, 2021). Paperless document management allows workers to contribute distantly to their businesses (Pollock & Hauseman, 2019), including when they are on holiday (Pecsek, 2018).

Office jobs have changed from monotonous work to more versatile, knowledge-based and flexible duties (Attaran, Attaran & Kirkland, 2020). Sato (2017) argued that flexible operational structures came in an era when the change to digital technologies allowed for greater connectivity and movement of workers. The “Bring Your Own Device” policy drives mobility as workers access resources of their institutions from their gadgets such as PCs, phones and tablets (Narayanan, 2013). As the mobile workforce increases, the demand for institutional applications can be expected to rise considerably (Narayanan, 2013). Paperless office technology can better support flexible working conditions and worker mobility (Dimopoulos, 2008), thus encouraging more organisations and individuals who want mobility and flexible working conditions to adopt and continue using office paperless technology (Dhumne, 2017).

2.3.3 Office paperless technology driving force 3: Demographics

Peckham, Baker, Camp, Kaufman and Seixas (2017) posited that the composition of the workforce is becoming proportionally equal in terms of age and gender. Characteristics such as gender and age are important in technology use investigations (Rojas-Méndez *et al.,* 2017). In addition to gender and age, key technology adoption and use theories such as the unified theory of acceptance and use of technology (UTAUT) have analysed individual-level demographic variables (e.g., voluntariness of use and experience). However, this discussion focuses on age, level of education (which can be an experience antecedent) and gender as the most applicable demographics in the B2B context, omitting voluntariness of use because most employees receive the technology they must use for work (Mushi, 2018). Individuals more familiar with new or similar technologies (young, highly educated or experienced) will have a more positive attitude towards using them (Agarwal & Prasad, 1999; Mahmood, Hall & Swanberg, 2001).

Concerning age, the preceding three industrial revolutions improved lifestyles and increased the life expectancy of individuals (Schwab, 2016). Accordingly, many work beyond the normal retirement age (Oude Mulders, 2019). Paperless technology enables flexibility (Richardson, 2021). However, according to Mitzner, Savla, Boot, Sharit, Charness, Czaja, and Rogers (2019), older individuals tend to be negative when it comes to embracing it. The young workers bring positive attitudes towards technology to the organisations and become agents of change towards acceptance of advanced office automation functions (Delaney & D'Agostino, 2015; Kim, 2018). Younger workers exposed to technology early on will likely be more comfortable with paperless processes (Henderson, Pollack, Gordon & Miller, 2014; Obeidat, 2015; Udende *et al.*, 2021). Additionally, older workers can resist office paperless technology because they lack technical knowledge and relevant skill sets (Ashby, 2011; Udende *et al.*, 2021). Therefore, as younger generations increase in the workforce, paperless technology use can be expected to increase in offices (Ashby, 2011).

Men are more skilled and more positive about using paperless technology than women, such as email, computers, and electronic data management systems, although academics have reached conflicting conclusions regarding how gender affects technology adoption and use (Goswami & Dutta, 2016). Similar to global trends, South African offices used to be male and White-dominated, but changed in the post-apartheid era in line with the Employment Equity Act of 1998, offering more opportunities to women and non-white workers (Jaga, Arabandi, Bagraim & Mdlongwa, 2018). Women now get similar work and education opportunities to men in most countries, including South Africa (Klasen, 2019). Cai, Fan and Du (2017) concluded that men show slightly more positive attitudes toward new technologies than women, but women's attitudes toward technology are still positive. The gender gap in attitude towards technology is reducing (Cai *et al*., 2017); thus, the use of office paperless technology at an individual level can be expected to increase even as the labour force attains gender balance.

Superior positions in many South African organisations are still male-dominated (Matotoka & Odeku, 2018), although female representation has slightly improved (Jaga *et al.,* 2018). Superiors significantly impact the use of technology in institutions (Rezvani,

Dong & Khosravi, 2017) through subjective pressure (Belghith & Jedidi, 2019) and the choices they make. Males still dominate superior positions (Poorhosseinzadeh & Strachan, 2021) and have slightly more positive attitudes towards technology (Cai *et al.,* 2017). Therefore, organisations can be expected to adopt and use paperless technology more at an organisational level.

Educational levels are a consistent forecaster of one's enthusiasm to use novel technology (Rojas-Méndez *et al.,* 2017). Highly educated individuals are more enthusiastic about employing new technology than individuals with lower education levels (Agarwal & Prasad, 1999). Thus, highly educated workers will likely have highly positive attitudes toward new office automation tools compared to those with lower levels of education. Most employers hire individuals with tertiary qualifications for work formerly conducted by those with basic education (Groshen & Holzer, 2019). Widespread online courses have simplified the accessibility of tertiary certificates (Purarjomandlangrudi, Chen & Nguyen, 2016). Troshina and Mantulenko (2020) found that individuals with low qualifications lack the confidence to use technology. Therefore, as education levels within the labour force increase (Groshen & Holzer, 2019), workers' confidence in using office paperless technology can also be expected to increase, thus increasing its use by workers.

2.3.4 Office paperless technology driving force 4: Outsourcing

Rather than dedicating time and assets to striving to provide a service or make a product, several institutions outsource non-core tasks to organisations that can provide enhanced services at lower costs (Gambal, Asatiani & Kotlarsky, 2022). According to Fernandes (2018), numerous institutions outsource their office automation needs (paperless and paper-based). Outsourcing office automation helps organisations focus on their primary goals and benefit from cost savings, improved customer service, and effective communication and monitoring, which support growth strategies (Agburu, Anza & Iyortsuun, 2017). Office automation organisations that provide managed print services (MPS) can be expected to deliver great strategic value by 2025 as they become more software- and services-oriented (Fernandes, 2018).

Davis *et al*. (2012) noted that smaller institutions were previously lagging in terms of technology adoption, but Fernandes (2018) argued that the price of paperless technology and its maintenance has declined, causing smaller institutions to have more paperless processes. Small institutions will probably use low-end paperless technology, while larger businesses mostly use high-end technology that requires higher levels of implementation and maintenance services (Sato, 2017). According to the World Economic Forum (2018), larger institutions can be anticipated to intensify the outsourcing of technical work, utilise remote staffing and flexibly engage employees. In line with the outsourcing trends, businesses can be expected to continue outsourcing their document office automation needs, which, according to Fernandes (2018), will become more paperless.

2.4 Office paperless technology use inhibiting forces

Office automation technological innovations have encountered multifaceted use resistance. Factors precipitating technology use resistance in institutions can be individualistic, technological or organisational (Popovič, 2017). According to Schneck (2015), the key office paperless technology use inhibiting forces are i) organisational culture, ii) paper-based business environment, iii) cost of paperless document management, iv) existing technology limitations, v) compliance with regulations, vi) ease of printing, and vi) the affinity of using paper.

2.4.1 Office paperless technology inhibiting force 1: Organisational culture

Changing the culture of how things are done is challenging for most organisations (Sivam, Dieguez, Ferreira & Silva, 2019), especially changing from paper-based to paperless technology (Ariffin, Ismail, Kadir & Kamal, 2018; Orantes-Jiménez *et al.* 2015). The use of paper is a traditional work behaviour pattern (Barnad, 2019; Widiantoro, 2018), causing workers and individuals to continue using paper habitually, owing to its desirable affordances (Shibata & Omura, 2020). For example, many workers posit that documents signed with “wet” ink are more trustworthy than digital ones (Bans-Akutey, 2018). Excessive use of paper in offices is costly, but workers may prefer using paper because it is easier to read compared to digital documents (Bans-Akutey, 2018). Some users with access to paperless technology still make backups of the paperless system in paper format because they are uncomfortable with not having tangible records (Orantes-

Jiménez *et al.,* 2015), although cloud facilities can provide such backup services (Sandhu & Seth, 2014).

King and Toland (2014) argued that many institutions and individuals prefer using paper because of its physical properties and affordances, such as ease of handling and usage without power. Paperless technology is more obscure than paper, as its hardware and software rarely show all the important information, and users must scroll to locate what they want (Thimbleby, 2019). Thus, users and stakeholders may be unaware of critical information, limiting the use of paperless technology (Thimbleby, 2019). In general, people still believe that printed documents have more value compared to digital ones (Orantes-Jiménez *et al.*, 2015), especially when the documents are supposed to have verifiable signatures (Lax, Buccafurri & Caminiti, 2015).

2.4.2 Office paperless technology inhibiting force 2: Large paper-based networks

Many organisations still operate under paper-centric environments, rendering paperless technology incompatible with other existing technologies (internal and external), the environment they operate in (suppliers, customers), and their organisation (type of business, volume, scope, internal resources) (Obeidat, 2015). Sato (2017) claimed that most institutions (including those in industries with strict principles like the financial sector) have implemented paperless processes. However, Thimbleby (2019) argued that the lack of standardisation limits the usage of paperless technology in offices. Information and communications technology facilities and network coverage are lagging in developing countries (e.g., South Africa), especially in rural areas (Turpin, 2018). Lack of access to technology can be a barrier (Ramavhona & Mokwena, 2016) that causes resistance and disengagement by individuals (Thimbleby, 2019). Additionally, paper is interoperable (between persons, suppliers and offices), while paperless technology created in one form can be unusable elsewhere (Thimbleby, 2019), such as document formats. Technological advancements are improving the operability of paperless technology. However, it will likely take some time before paperless technology achieves a universal level similar to paper (Shibata & Omura, 2020). Some authors believe that paperless technology will reduce jobs (Genesis & Oluwole, 2018), which can limit the acceptance of office paperless technology in countries with high unemployment rates such as South Africa.

2.4.3 Office paperless technology inhibiting force 3: Additional costs

Additional costs of implementing paperless technology, such as the costs of connectivity, backups, software upgrades and security (Prasetyo *et al.*, 2021), can inhibit the continuance use of paperless technology. According to Sinanian (2022), cyber-attacks through MFP networks are becoming more prevalent in institutions. Ankita (2015) claimed that authentication processes and technological supplements can be easily implemented on networks and MFPs but at an additional expense. Boehm, Kaplan and Sportsman (2020) found that changing flexible working arrangements can open various cyber-attack facets. Paperless technology lacks usability during software upgrades and can have compatibility issues afterwards (Thimbleby, 2019). Computers and MFPs are prone to cyber-attacks and data loss due to systems crashing, requiring ideal backup plans (Nambi, Dhayananth, Shrinivasan & Faizee, 2018). Backup plans and continuous upgrades of paperless technology can be costly (Pentland, Liu, Kremser & Hærem, 2020). Moreover, the price of connectivity in developing countries such as South Africa is comparatively expensive (Turpin, 2018). Thus, organisations and end-users that require the Internet to be able to use paperless technology (e.g., emails and cloud services) may resist the technology due to financial implications. Cost-effective choices can enable businesses to achieve a return on investment with a payback period as short as six months (Sandhu & Seth, 2014). However, the assessment of the return on investment (usually required by management) cannot be easily calculated concerning the usage of paperless technology (Zunic *et al.,* 2016).

2.4.4 Office paperless technology inhibiting force 4: Technological limitations

Institutions and users that have not kept up with technological changes will likely find paperless technology difficult (Schneck, 2015). For instance, businesses without the tools to manipulate, secure, and transfer data might go back to using paper documents due to technology limitations (Schneck, 2015). Smaller businesses often lack the capacity to expand storage capacity or increase server performance (Wang, 2013). The ability to acquire resources like infrastructure (hardware and software) and knowledge through partnership and expertise is critical in organisational paperless technology adoption (Mhlungu *et al.*, 2019). Some organisations and industries may require custom paperless software or functions that are not regular (Wallrodt, 2016), causing them to discontinue

the use of the standard technology when it fails to accomplish routine organisational requirements (Tully, 2015).

2.4.5 Office paperless technology inhibiting force 5: Regulations

Requirements to avail paper-based options, for example, regulations obliging organisations to provide hard copy communication to individuals lacking access to paperless technology and hard copy documents for regulatory requirements (e.g., audits), can limit paperless technology. Some documents must still be in their original 'hard copy' form, such as signed and sealed deeds, legally obligatory contracts, invoices and other business documentation required for legal reasons, tax filings and audits (Prasanthi, 2016). Countries like South Africa have regulations requiring organisations to continue using paper in offices despite the availability of 'pro-paperless' regulations such as the Electronic Communications and Transactions Act 25 of 2002. Because some individuals do not have access to paperless technology, other regulations in South Africa (e.g., the Companies Act 71 of 2008 and the Employment Equity Act 55 of 1998) may force institutions to avail paper communication. When paper communication is available, some users discontinue or reduce the use of paperless technology due to other inhibiting forces, such as organisational culture and the ease of printing (Schneck, 2015).

2.4.6 Office paperless technology inhibiting force 6: Ease of printing

MFPs nowadays come in different sizes and prices, making it easier to print office documents (Schneck, 2015). The average price of low-level MFPs has declined to under US $100 (Statista, 2021), although the cost of supplies has remained high (Fujiwara, 2017). Because it has become easy to print documents, some organisations and end-users do not use paperless technology even when it is available (Schneck, 2015). However, market forces (e.g., competitors gaining competitive advantage from using paperless technology) might encourage other organisations and end-users to increase their usage of paperless technology (Schneck, 2015). For an end-user, when the benefits of using paper (e.g., interoperability) greatly outweigh printing costs (e.g., specification of print settings and collection of prints), end-users will likely convert digital documents to paper documents (Shibata & Omura, 2020).

2.4.7 Office paperless technology inhibiting force 7: Affinity for using paper

Many people still prefer using paper for work (Schneck, 2015). Although paperless technology enables operations like inserting multiple bookmarks and using various documents simultaneously, such operations are not performed naturally, unconsciously and quickly, as with paper-based documents (Shibata & Omura, 2020). Shibata and Omura (2018) concluded that writing by hand has a lower cognitive load and memorisation interference than typing, causing users to prefer paper-based technology in many cases. Converting paper documents to digital ones using MFPs can be complex. Scanning using an MFP flatbed (placing each document separately on the scanning segment) produces high-quality documents but can be labour-intensive (Kadansky, 2014). The use of automatic document feeders can assist in scanning many pages at once but may result in poor quality (squished, stretched) digital documents, especially when the rollers that move the documents slip because they are worn, dusty, brittle or old (Kadansky, 2014). Some MFPs can easily scan double-sided documents in one movement, while other MFPs require the users to take additional actions, such as assembling the documents into single-sided formats (Kadansky, 2014). MFPs might produce a scanned document that has captured both sides of the original when the scanner settings are not adjusted correctly (Kadansky, 2018). Moreover, fragile, oversized, undersized, folded, irregularly shaped or torn documents may require the users to use the flatbed to prevent further damage (Kadansky, 2018). Documents with faint images or text (like those written in pencil) mostly produce poor-quality scans, although adjusting the scanning settings can improve the quality of the scans (Kadansky, 2018).

2.5 Advantages of paperless technology use in institutions

The impacts of using office paperless technology within organisations are contingent on its design and application (Pentland *et al.,* 2020). Implementation of paperless functions in offices has various benefits, from the internal functioning of organisations to benefiting customers and the environment (Alam *et al.*, 2019; Prasetyo *et al.*, 2021). The key advantages of using office paperless technology in offices are discussed below.

2.5.1 Improved efficiency of services and processes

The principal benefit of using paperless technology in offices is the enhancement of the institution's processes and services through incorporation and simplification (Oliveira *et al.,* 2021). When used properly, office paperless technology improves worker productivity through multiple-user access and saving time (Putintseva, 2023; Tiwari *et al.,* 2017). Workers can transfer information anytime by using simple steps, such as retrieving a scanned document and then emailing it (Balu, Tiruveedhula & Shastri, 2020; Tiwari *et al.,* 2017). The efficiency of individuals can be improved by real-time communication that positively impacts the institution's overall performance (Bhuyar & Ansari, 2016). Widiantoro (2018) concluded that office paperless technology assisted in resolving late receipt and delivery problems associated with mail and letters. A good database design ensures no duplicates and minimises data redundancy (Widiantoro, 2018), especially since centralised paperless document management eliminates information silos (Srimathi & Krishnamoorthy, 2019). Managers no longer need to delegate information processing and typing, as it can be done quickly and easily using office paperless technology (Jatain, 2013). The use of office paperless technology improves the level of management through standardised daily business work in different departments, enhanced archival manageability and online query of information by using a safer, more reliable, open and efficient information network (Orantes-Jiménez *et al.,* 2015).

2.5.2 Easy access to data

When documents are saved digitally and available on a network, users with access to the network may obtain the documents from various computers and even remotely if the network is connected to the Internet (Alam *et al.,* 2019; Tiwari *et al.,* 2017). Some organisations also use cloud-based services, which saves them money while enabling worker mobility and flexible working conditions because gadgets such as PCs, smartphones and tablets can be used to access cloud-based technology (Tiwari *et al.,* 2017). Also, when documents are scanned with optical character recognition (OCR), their content becomes compatible with other computer software like Microsoft Word, PDF (portable document format) and Excel, making them searchable electronic records that reduce errors and duplications (Gross *et al.*, 2015; Kadansky, 2014). OCR is the conversion and identification of scanned images of typed, handwritten or printed text into

digital text, which can be used by word processors (Gross *et al.,* 2015), simplifying the query of data (Widiantoro, 2018).

2.5.3 Cost reduction

The initial investment in document paperless technology may be high, but the paper-based processes are costly in the long run (Srimathi & Krishnamoorthy, 2019). The use of paperless technology in offices reduces operating costs (Alam *et al.,* 2019; Aprilia & Cahyaningtias, 2021; Civelek *et al.*, 2017). Obeidat (2015) showed that printing documents can cost up to 30,000 times more than keeping the documents stored electronically. Storing paper documents also costs much more than storing paperless documents due to the requirement of larger office spaces and file cabinets (Obeidat, 2015; Prabhu, 2019; Prasanthi, 2016). Thus, documents can be scanned instead of copied and then stored electronically, making it cheaper, easier and faster to send them electronically when required (Tiwari *et al.,* 2017; Widiantoro, 2018). Institutions can also eliminate costs associated with preserving paper documents, like chemical treating the storage area and important documents (Prasanthi, 2016).

2.5.4 Saving time

By increasing the quality and speed of service (Widiantoro, 2018), office paperless technology saves workers and institutions the time needed by paper technology (Alam *et al.,* 2019; Civelek *et al.,* 2017). There can be a positive feedback loop whereby paperless office technology accelerates information processing, such that each saved time unit becomes more valuable compared to a previous unit (Yaghoubi & Sargazi, 2014). Adequate training is required for workers to use office paperless systems efficiently, thereby saving transaction time, like using instant search instead of looking for filed hard copy documents (Carr, 2005; Obeidat, 2015; Tiwari *et al.,* 2017). Electronic communications provide noticeable time-saving benefits like instantaneous delivery of messages (Dhumne, 2017; Widiantoro, 2018).

2.5.5 Improved customer service

The institution's consumers will primarily benefit from the use of paperless technology due to the quick, easy and omnipresent accessibility of information and services (Alam *et al.,* 2019; Hichem & Yacine, 2022; Orantes-Jiménez *et al.,* 2015). The procedures and

requests made to suppliers can be supervised better (Tiwari *et al.,* 2017), and concurrent multiple users can access services through paperless technology (Alam *et al.,* 2019; Tiwari *et al.,* 2017). Improved information systems between suppliers and customers promote better value chain relations management (Srimathi & Krishnamoorthy, 2019). Generally, the service provided to customers can be improved by using paperless technology in terms of speed, reliability, availability, traceability, privacy, security (Hichem & Yacine, 2022; Prasetyo *et al.*, 2021) and diversification (Orantes-Jiménez *et al.,* 2015).

2.5.6 Diversification of products and services

Institutions implementing paperless processes can develop new business models, products and services (Hendriarto, 2021; Setyowati, Widayanti & Supriyanti, 2021). Employees can concentrate on non-routine innovative work when using office paperless technology effectively because doing so saves them time (Widiantoro, 2018). To benefit from digitalisation, institutions can provide relational service-oriented engagement instead of remaining on transactional product-centric business models (Kamalaldin, Linde, Sjödin & Parida, 2020). Services like e-Government (AbdulKareem *et al.,* 2020; Hichem & Yacine, 2022), e-filling (Hendriks & Maposa, 2020; Kantzavelos, 2013), health information systems that can be nationalised (Alsharo, Alnsour & Alabdallah, 2020) and cloud-based services (Tiwari *et al.,* 2017) can be offered by various institutions through paperless technology. According to Kamalaldin *et al.* (2020), both businesses and academics view paperless technology as one of the sources of future competitiveness because it produces new value and income prospects.

2.5.7 Improved security

Despite being vulnerable to cyber-attacks, MFPs can be password-protected (IPA, 2013), while PCs and other smart devices can have advanced access restrictions such as biometrics (Galterio, Shavit & Hayajneh, 2018). When paperless documents are password-protected at different levels, it limits the access that employees (and other stakeholders) have to office information (Asija, 2015; Tiwari *et al.,* 2017). All digital documents can have a unique identification, which generates an automatic audit trail (Tiwari *et al.,* 2017). Digital audit trails are traceable and can be strictly monitored to prevent data loss and fraud (Azih, 2018). Because paperless documents are often easier

to search compared to paper documents, the prospects of losing or misplacing important documents are lesser when the documents are scanned and stored electronically (Carr, 2005; Dhumne, 2017; Widiantoro, 2018). Instead of losing hard copy documents (internally or externally), office paperless technologies (e.g., emails) make it easier to search and retrieve documents (Tiwari *et al.,* 2017; Widiantoro, 2018).

2.5.8 Environmental benefits

Decreased production of waste and its removal expenses are the key environmental benefits of using paperless technology (Xiong, 2021). Institutions save paper by printing less, which lessens the utilisation of raw materials required to manufacture paper, such as trees, water and energy (Kim *et al.*, 2021). The energy MFPs consume to print and copy documents is also higher than that required for paperless functions (Kim *et al.,* 2021). Paperless technology lessens waste pollution (e.g., toner, paper and ink containers) created by paper-based processes (Obiora *et al.*, 2017). The issue of carbon debt, whereby devices used for office paperless processes are also manufactured using non-renewable resources, energy and environmentally detrimental materials, should not be ignored (Tiwari *et al.,* 2017), although office paperless technology saves global resources in the long run (Shah, Amjed & Alkathiri, 2019).

2.6 Disadvantages of paperless technology use in institutions

According to Webster and Gardner (2019), the disadvantages of paperless technology adoption can be regarded as extrinsic and intrinsic. The institutional disadvantages are considered to be extrinsic, while the personal disadvantages are considered to be intrinsic (Awadhiya & Miglani, 2016). These disadvantages are discussed next.

2.6.1 Integrating paper-based processes with paperless processes

Organisational culture obstacles for institutions can be insurmountable in adopting and using technology (Martínez-Caro, Cegarra-Navarro & Alfonso-Ruiz, 2020). D'Alessandro (2017) argued that due diligence and extensive culture shifts are required to successfully implement institutional paperless solutions. Adjusting the current processes and services can convolute technical consolidation needs (Zunic *et al.,* 2016), especially adjustments that require integration with previous processes, such as scanning old paper files (Grigoryan, 2018). In some cases, users may end up duplicating the paperless system in

paper format because they are uncomfortable with not having tangible records (Orantes-Jiménez *et al.,* 2015), thereby incurring costs associated with both paper-based and paperless office technology.

2.6.2 Indirect costs

The costs of digital devices, connectivity and software are some of the main disadvantages of adopting paperless technology (Prasetyo *et al.*, 2021). Due to the high costs and risks, larger institutions are better equipped to implement paperless technology (Khalifa, 2016). According to Javeria, Siddiqui, Rasheed, and Nawaz (2019), institutions should allocate appropriate money and time before adopting paperless processes. Steyn (2018) added that constant updates of paperless technology are necessary after implementing paperless processes. All levels of employees require training for the successful implementation of paperless systems, while some employees may need basic computer hardware training (Bans-Akutey, 2018). When the technology is upgraded, users may need additional training that will cost the institution time and money. Although printing and storing printed documents cost more than paperless documents (Obeidat, 2015), office paperless technology involves operational costs (e.g., upgrades, additional user training, internet data and security requirements) (Prasetyo *et al.*, 2021).

2.6.3 Cybersecurity risk

Many authors have stressed the disadvantages of using paperless technology regarding the cybersecurity of users and documents (Thimbleby, 2019). Paper documents are commonly accessed illegally in small quantities, but digital documents can be illegally accessed at once in large amounts (Shibata & Omura, 2020). Some MFP hard drives may store processed transactions such that information can be illegally accessed through security breaches or malicious misuse (Baer, 2012). Smaller businesses lack the resources to strengthen their cyber security, although the impact of security breaches is lower than larger businesses (Selznick & LaMacchia, 2017). However, smart MFPs have multiple security layers (Baer, 2012), which require activation and correct use to prevent security breaches. Obeidat (2015) stated that training users (which requires additional resources) can mitigate security concerns, but Thimbleby (2019) argued that continuous training does not ensure the safety of users and paperless systems of users. Thus, in

addition to concerns regarding the security of devices like PCs, cloud services and smartphones, users of office paperless technology need to be concerned about the security of MFPs as well.

2.6.4 Loss of power

According to De Wet, Koekemoer and Nel (2016), using office paperless technology can prejudice the chain of command and worsen the detachment between leaders and subordinates. For Thimbleby (2019), IT specialists (who can be intransigent) can end up ordering workflows. Marathe and Chandra (2020) concluded that some civil servants opposed paperless technology; they lost authority when they used paperless processes. Workers can be reduced to mere citizen-to-system interfaces who load information into the system without the need for autonomy and decision-making (Marathe & Chandra 2020), leading to employee dissatisfaction and disengagement (Imperatori, 2017). Superiors may need to develop new performance indicators after implementing paperless technology for work, especially in flexible working conditions. Some employees can be trusted to be professional in flexible structures (Ackerman, 2021) supported by paperless technology (Pollock & Hauseman, 2019). However, others can take advantage of flexible working conditions and use most of their time for personal activities which do not benefit their institutions (Bans-Akutey, 2018).

2.6.5 Loss of jobs

Paperless technology can be efficient such that a smaller workforce is required to perform the same duties previously requiring more employees (Deb, 2014). Samsudin and Bakar (2018) acknowledged that using paperless technology in hospital information systems can cause the loss of some manual information processing jobs in the healthcare industry. There are fears that digital innovations will result in large-scale job displacements in Africa (Choi, Dutz, & Usman, 2020). Machines are doing more jobs that require low skills, such as clerical occupations (Sumer, 2018). Wolcott (2020) attributed the reduced demand for low-skilled employees to increased automation and the use of IT (e.g., MFP-enabled paperless technology) in workplaces.

2.6.6 Health issues

Health concerns emanating from the constant use of displays must be considered when using digital technologies (Tiwari *et al.,* 2017), such as eyestrain or repetitive strain injuries (Deb, 2014; Kim *et al.,* 2021). Moreover, ICT, such as paperless technology, may cause users to have a more sedentary lifestyle, contributing to health issues such as heart disease, obesity and diabetes (Deb, 2014). Åborg and Billing (2003) found that the use of office paperless technology caused an increase in workload, workers to feel more controlled and constrained, an increase in static work postures and an increase in health-related issues. Common health issues emanating from using office paperless technology include vision problems, musculoskeletal problems, headaches, stress disorders, obesity, metabolic issues and burnout (van den Broek, 2017). Workers are obliged to adjust their cognitions and behaviour when shifting to paperless technology, consequently exacerbating the stress of workers, who will end up with negative attitudes toward the technology (Califf, Sarker & Sarker, 2020; Karimikia, Singh & Joseph, 2020). Paperless processes are beneficial but they reduce social interaction, causing many employees to feel unhappy and isolated (Yousufi, 2023), given that social interaction is a human need (Maslow, 1943).

2.7 Future of paperless documents office technology

Despite some disadvantages, paperless office functions have been proven better than paper-based ones (Kim *et al.,* 2021). For Abot and Ariyachandra (2020), paperless processes are no longer a fallacy that eludes institutions. All business sectors and societies are being reshaped by the digitalisation technological trend (Lang, 2021). D'Alessandro (2017) stated that institutions can leverage digital document management because it is now established and less expensive. Narayanan (2013) added that MPS, developing market initiatives and customer service will be the future drivers of office automation businesses, with technological innovations as enablers. Workers can be expected to print when needed, moving towards a 'distribute and print' instead of 'print and distribute' (Udende *et al.*, 2021).

As displayed in Table 2-2, the increase in the use of office paperless technology is expected to be much higher than that of paper-based technology by 2025, more so

beyond 2030. Functions like direct printing, copying and storing paper documents in offices are expected to decline globally (Ochuodho, Johnston & Withey, 2017). Developing countries such as those in Africa may experience marginal increments in using paper-based technology (e.g., print, copy and storage) in offices, which can be attributed to increased literacy (TMR, 2020). However, many organisations are expected to move towards paperless technology in their offices (Clements, 2023; Fernandes, 2018).

Table 2-2: Future of document office automation

Aspect	Paper-based technology		Paperless technology	
	2025 outlook	2030 outlook	2025 outlook	2030 outlook
Use of MFPs	Increase (marginally)	Stagnate	Increase (marginally)	Increase (considerably)
Direct print/copy of documents	Decline (marginally)	Decline (considerably)	n/a	n/a
Scanning of documents	n/a	n/a	Increase (considerably)	Increase (greatly)
Documents storage	Decline (considerably)	Decline (greatly)	Increase (considerably)	Increase (greatly)
Use of cloud services	n/a	n/a	Increase (marginally)	Increase (considerably)
Mobile services	Increase (marginally)	Decline (marginally)	Increase (marginally)	Increase (considerably)
MPS outsourcing	Decline (considerably)	Decline (greatly)	Increase (considerably)	Increase (greatly)

Adapted from Clements (2023), Fernandes (2018), Johnston (2016), Mordor Intelligence (2020) Ochuodho *et al*. (2017), Ricoh (2020), TMR (2020) and Wood (2020).

Estimate values: Stagnate = under 1%, Marginally = 1%-20%, Considerably 21%-50%, Greatly = Above 50%, n/a= Not applicable

Sato (2017) suggested that robust software and comprehension of how individuals use documents (paper and digital) will be vital for the prosperity of paperless technology for office automation organisations. The solutions of office automation organisations can be categorised based on the requirements of the institutions, usage levels, levels of business-to-business relations and degree of integration (Visintin, 2012). As digitisation in offices accelerates, the overall attitude toward paperless processes can be expected to transform (Sato, 2017). First, institutions must resolve to transform their methods into advanced technological processes (Nambi *et al.,* 2018). According to Lee, Park, Straub and Koo (2019), selecting inappropriate solutions results in wasteful expenditure and unaddressed institutional needs. Handley and Angst (2015) and Lee *et al.* 2019) asserted that B2B relationships must be based on mutual interests and goals to prevent the implementation of technologies that are not compatible with end-users.

According to Fernandes (2018), paper technology is anticipated to decline in importance such that office automation organisations that provide paperless solutions will gain a competitive advantage by 2025. Although the COVID-19 outbreak might have created more agile competitors (Boehm *et al.,* 2020), office automation organisations should take advantage of opportunities in the office automation industry, such as the move to digital processes, cloud technologies and security (Fernandes, 2020). Institutions reduced digital transformation timeframes during the COVID-19 pandemic (Priyono, Moin & Putri, 2020). Offices are being transformed (Prasetyo *et al.*, 2021) such that office automation organisations must transform to stay relevant. Assisting institutions and end-users to incorporate paperless processes should be the focus of office automation organisations (Okoro, Awodele, Kuyoro & Adekunle, 2013).

2.8 Prospects for office automation organisations

Addressing institutions' continuously changing technological requirements is profitable for office automation organisations (Raddats, Kowalkowski, Benedettini, Burton & Gebauer, 2019). According to Fernandes (2018), office automation organisations should establish a framework for digital offices to stay relevant among institutions. Yang (2020) argued that technological advancements facilitate the mapping of institutions centred on their characteristics. The mapped information can be used for prioritisation of institutions,

customised marketing, and services (Peters & Saidin, 2000). The trends that office automation organisations should take advantage of include i) contactless (speech or face identification) technology affordances, ii) mobile services, iii) secure MPS solutions, iv) the “Device-as-a-Service” affordances, and v) cloud-enabled workflows (Arora, Catlin, Forrest, Kaplan & Lars, 2020; Fernandes, 2020). Institutions continued with flexible work measures during the COVID-19 pandemic (Jevnaker & Olaisen, 2022), accelerating the change to paperless processes (Amankwah-Amoah, Khan, Wood & Knight, 2021).

2.9 Challenges for office automation organisations

In order to create advanced product-service frameworks, information about product usage is strategically important (Huang & Rust, 2021). Suppliers can proactively develop suitable products by deriving needs from the end-users (Abrell, Pihlajamaa, Kanto, Vom Brocke, & Uebernickel, 2016). Langley (2022) argued that service providers can better understand the requirements when exploring how end-users utilise the product-service systems. According to Šuleř and Machová (2020), there is inadequate literature on paperless technology usage, which necessitates inquiries on the use of paperless office processes to prepare for imminent shifts.

Sellen and Harper (2003) maintained that completely paperless institutions are a fable due to the strong influence of social and human aspects. Wilder (2022) and Sellen and Harper (2003) maintained that completely paperless offices are infeasible. Studies on paperless processes are outdated and confined to specific industries (Oliveira *et al.,* 2021). Thus, studying this subject can provide office automation organisations with information that can be used to formulate marketing strategies. Concerning cloud solutions and mobility, Narayanan (2013) suggested that the feature capabilities of the applications are a key challenge for office automation organisations, as these applications must be compatible with various versions of operating systems. Nambi *et al.* (2018) added that paperless processes should be dependable, simple to use and compatible with institutional practices. Office automation organisations must continuously monitor technological advancements so that products and services offered to institutions are upgraded accordingly (Narayanan, 2013). Therefore, the ability to adjust to technological

shifts will be crucial for office automation organisations (Arora *et al.,* 2020; Narayanan, 2013).

Emerging markets like South Africa pose peculiar concerns to the office automation industry, such as unstable power, different working styles and affordability (Narayanan, 2013). These aspects necessitate continuous inspection, which office automation organisations can conduct on behalf of MFP producers (Narayanan, 2013). Such partnerships between service providers and producers improve the accuracy of solutions and lower development costs (Castañer & Oliveira, 2020). Thus, market-specific research can provide the information required to develop market-specific MFPs, which are appropriately customised for businesses in developing countries like South Africa.

According to Hallikainen, Paesbrugghe, Laukkanen, Rangarajan, and Gabrielsson (2017), office automation organisations should comprehend how paperless technology benefits the institutions they serve and their organisation. Understanding aspects that determine the cognitions and behaviours of end-users is the beginning step for office automation organisations (Hallikainen *et al.* 2017). For Cowan, Paswan, and Van Steenburg (2015), technological products must be valuable for institutions, then the providers will profit. Providers should understand how end-users perceive their supplies in different countries (Cowan *et al.,* 2015). The use of paperless functions on MFPs in offices has driving and inhibiting forces depending on the experienced advantages and disadvantages during use. Olanrewaju, Smaje and Willmott (2020) proposed that perceptions of customers can help office automation organisations to confirm or disprove assumptions about the use of paperless technology and then make suitable adjustments to the technology and processes.

2.10 Conclusion

This chapter provided a B2B perspective of paperless technology continuance use concepts imposed on office automation organisations. A chronicle of the progress of office paperless technology was provided. Chapter 2 also discussed the development of MFPs and outlined the world of work trends impacting paperless technology use, prospects of the office automation industry, and benefits and detriments of paperless technology for institutions. Both office automation suppliers (service providers) and institutions should

progress past the appraisal of digital technology and transform towards paperless technology (Olanrewaju *et al.,* 2020). In Chapter 3, a conceptual model is designed to identify the key factors that indirectly and directly influence the continuance use of paperless technology by business end-users.

Chapter 3: Conceptual model development

3.1 Overview

Various scientific fields continuously try to understand human behaviour (Hutchison, 2018; Wilson, 2016). Theories to understand and explain general human behaviour have been developed mainly in psychology, economics, business and management, while other theories have been developed from biology, political science, sociology, physics and mathematics (Kwon & Silva, 2019). Explanations of why individuals behave in a certain way can help researchers identify ways to serve those individuals better and increase their efficiency (Wilson, 2016). Technology use behaviour has also been investigated in various settings using various theories (see Appendix B, C and D).

In general, the conceptualisation of technology use processes is determined by a) exposure, b) adoption (or rejection), c) continuance of use, and d) discontinuance of use (Rogers, 2003; Soliman & Rinta-Kahila, 2019). According to Rogers (2003), users can reject or discontinue technology use in any of the preceding stages to the continuance of use. Technology acceptance studies have focused more on business-to-customer (B2C) settings (Gorla, Chiravuri & Chinta, 2017). Researchers have seldom modelled the continuance use intention of technology by business-to-business (B2B) end-users. Moreover, how business end-users' perceptions of paperless technology and the buyer-supplier relationship influence their continuance use of paperless technology in the B2B context remains under-investigated.

In this chapter, the behavioural reasoning theory (BRT), technology-organisation-environment (TOE) framework, technology acceptance model (TAM) and social exchange theory (SET) were used to investigate the continuance use of paperless technology by business end-users. From these theories, a conceptual model of technological and relational factors that influence the end-users' continuance use intention of paperless technology was developed. This chapter also describes and discusses the hypothesised paths of the developed model.

3.2 Human behaviour

Human behaviour is how humans interact and respond to external and internal stimuli (Kopsov, 2021). Although individual traits (personality, genetics and temperament) generally remain unchanged (Abdullatif & Velázquez-Iturbide, 2020), a person's behaviour changes as they grow and go through different experiences (Lerner, 2019). Human behaviour falls on a spectrum (Sonne & Gash, 2018), with its acceptability often depending profoundly on social norms (McDonald & Crandall, 2015). Social norms align one's actions to what is deemed acceptable according to the respective culture, organisation or society (McDonald & Crandall, 2015). However, the preponderance of behaviour is driven by the individual psyche (feelings and thoughts) that have a bi-directional reciprocal association with values and motives (Siegfried, 2014).

Every individual carries patterns of feeling, thinking and prospective acting that were learned and cultured throughout their lifetime (Hofstede, Hofstede & Minkov, 2010). Anthropologists posit that a person's behaviour results from that person's previous experiences and culture (Abun & Aguot, 2017; Henrich, 2015). Albarracin and Shavitt (2018) defined culture as shared common values and meaning systems held amongst individuals who share a reference item such as language, historical period or geographic region. Culture causes individuals from different groups to think differently (Abun & Aguot, 2017; Armstrong, 2018) through value components of culture that determine intention and behaviour (Gure, 2015). Thus, culture is revealed in how individuals think, view things and act, which is their attitude (Hofstede *et al.,* 2010). In the world of work, people may be required to transform their behaviour because of decisions they cannot control (Wilson, 2016). However, people absorb more information by learning from experience (Haselhuhn, Pope, Schweitzer & Fishman, 2012). Thus, individuals tend to highly regard their personal experience more than information from other sources in their judgements and behaviour (Haselhuhn *et al.*, 2012)

Walla (2014) argued that the brain moulds human behaviour instead of only experience and culture. Although human beings have instincts based on an experience similar to other animals, they also have a superior reasoning capacity that generates mental

impulses to neutralise experience and cultural impulses (Hume, 2018). Thus, despite being governed by instincts similar to animals (Siegfried, 2014), humans do not always react to the instincts automatically like animals because their reasoning can create an alternative impulse (Fuentes, 2017).

Nicholson (1998) posited that emotions (which initiate instincts) come before reason in people, acting as the primary screen for information received. Emotions cannot be suppressed entirely (Nicholson, 1998), causing attitudes to have a particular relationship with one's reasoning (Epley, 2019). One's reasoning is characterised as considerations for or against having an attitude (Scanlon, 2006), justifying behaviour (Westaby, 2005). Thus, individuals make deliberate choices and decisions with some level of freedom (Armstrong, 2018). People often look for choices in recollection with the greatest defensible groups of reasons, implementing their decisions with confidence when they are identified (Westaby, 2005).

Motivational scholars argue that behaviour results from the interaction of situational variables and one's motivation to achieve (Barrick, Mount & Li, 2013). Explicit motives are repeatedly prompted by extrinsic causes and demonstrated by deliberate choices, while implicit motives (task performances) are stimulated by incentives intrinsic to the task and are usually impulsive (Schultheiss & Brunstein, 2010; Slabbinck & Van Witteloostuijn, 2020). Theories seeking to explain human behaviour include a cognitive element because needs (intrinsic and extrinsic) necessitate information processing, learning and understanding (Wilson, 2016). Accordingly, the behaviour of individuals in organisations is determined by the accomplishments to be achieved (Barrick *et al.,* 2013).

Festinger (1957) proposed the cognitive dissonance theory (CDT), used to investigate cognition consistency in many studies, arguing that maintaining cognitive consistency is a basic human motive. Cognitive dissonance is psychological stress one experiences when confronted with facts (or participates in action) that contradict their beliefs, values, ideas, feelings, other actions and other related things (Festinger, 1957). How affective responses to inconsistency or contradictions are established depends on how the

inconsistency or surprise is resolved (Noordewier, Topolinski & Van Dijk, 2016). Individuals can i) change the cognition or the behaviour, ii) justify the cognition or the behaviour, and iii) deny or ignore the new information that contradicts existing information (Brannon & Gawronski, 2018). Since Festinger's proposal, cognitive consistency has been debated by various authors, with some (e.g., Kruglanski, Jasko, Milyavsky, Chernikova, Webber, Pierro & Di Santo, 2018) questioning consistency's role in affective responses and others (e.g., Gawronski & Brannon, 2019) supporting its motivational effect. Cognitive dissonance can apply to every social situation that involves the development and alteration of human attitude (Yahya & Sukmayadi, 2020), which determines intention and, ultimately, behaviour (Ajzen, 2020). According to Festinger (1957), the higher the inconsistency between cognitions (e.g., beliefs, thoughts, understandings), the higher the motivation to reduce that inconsistency by changing one (or more) of the cognitions.

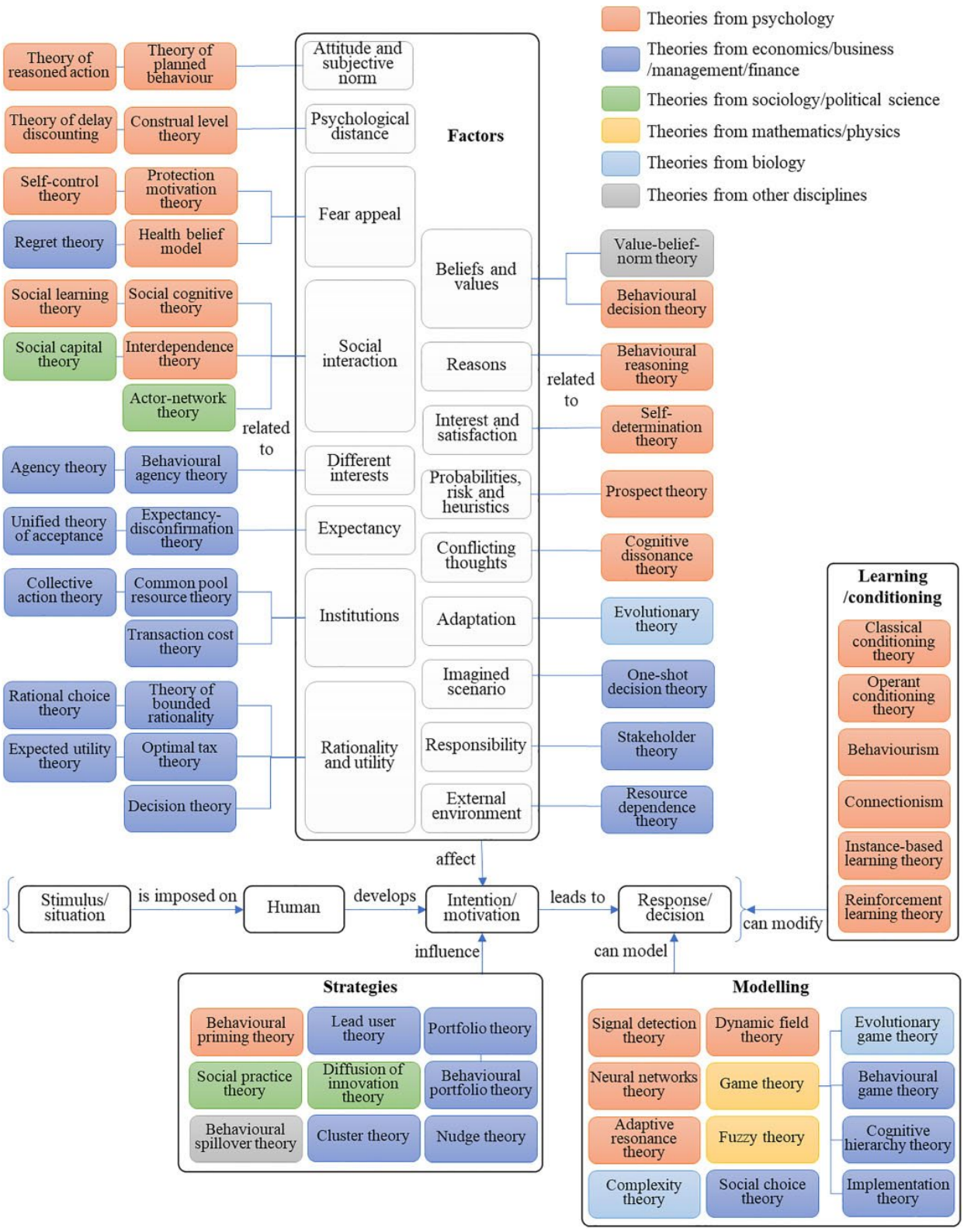

Figure 3-1: Fundamental general human behaviour theories

Source: Kwon and Silva (2019:168)

Figure 3-1 displays several key theories used to investigate general human behaviour. Theories studying general human behaviour agree that human behaviour can be modelled and modified, but it is predicted by motivation or intention (Kwon & Silva, 2019). Motivation and intention are determined by various contextual factors, which can be influenced by several strategies depending on the situations or stimuli imposed onto individuals (Kwon & Silva, 2019). Generally, people regulate their behaviour using outcome expectations, choosing actions that produce positive outcomes and avoiding unrewarding actions (Bandura, 2001). However, when confronted with competing influences, people display considerable self-direction, which may override or augment the stimulus of external outcomes (Bandura, 2001; Diaz, 2000). People assess their values, beliefs, motivational inducements and the meaning of their life pursuits and choose to perform one action over another, judging the correctness of their operative and predictive thinking on the consequences of their actions from established knowledge (Bandura, 2001). Individual beliefs and attitudes that determine what one regards as wrong or right or bad or good (Avci, 2017) do not transform weekly (Bandura, 2001), evolving over longer periods; their transformation does not necessarily coincide with a change of behaviour (Krosnick, Boninger, Chuang, Berent & Carnot, 1993; Marcinkowski & Reid, 2019). Consequently, practitioners and scholars should investigate and understand technology use inhibitors and facilitators that determine intentions and, ultimately, behaviours (Claudy *et al.,* 2015; Sahu, Padhy & Dhir, 2020).

3.2.1 Global motives

According to Ajzen (2020), determinants of intentions (or global motives) are motivations to engage in a particular behaviour. Perceived behavioural control and subjective norms as sub-constructs of global motives have not established as much consideration as attitude (Sahu *et al.,* 2020). The focus on attitude can be attributed to previous studies having generally proven that the influence of perceived behavioural control and subjective norms on behavioural intention is weaker than the effect of attitude (Ham, Jeger & Frajman Ivković, 2015).

3.2.1.1 Control beliefs

A person's perceived capability to control their actions instead of being controlled by others is perceived as behavioural control, while the confidence in performing those capabilities is self-efficacy (Ajzen, 2015; 2020). According to Ajzen (2020), the ability to influence what happens is referred to as control beliefs emanating from factors that inhibit or foster the execution of the behaviour. Perceived behavioural control is directly proportional to control belief strength and perceived power (Ajzen, 2015; 2020); thus, workers have limited perceived behavioural control. When in control of their behaviour, people can be expected to perform their intentions once the opportunity presents itself, making intention a predictor of behaviour (Ajzen, 2015; 2020). A stronger intention is expected when one has greater control over beliefs (Ajzen, 2015; 2020).

However, most users do not have choices over the technological systems they use at work (Sharp, 2021), which limits their control beliefs. The end-users will consistently use the technology if it is valuable for them to do so (Niemoller, 2019). According to Mushi (2018), employees use the technology provided by their organisation for work when the technology enables them to perform their duties effectively, and they can gain benefits through better performance. Suppliers also contribute to the continuance use of technology by end-users through several touch points such as configuration, maintenance and support (Niemoller, 2019). Users can protest through 'non-use' of the technology when they have negative perceptions of the supplier of the technology (Li, Vincent, Tsai, Kaye & Hecht, 2019) or when the technology has significant shortcomings impeding work performance (Recker, 2016).

3.2.1.2 Subjective norm (social influence)

Putri and Hariyanto (2022) defined subjective norm as the way an individual responds to the social compulsion to perform a specific behaviour. The subjective norm in institutions takes different forms in the post-adoption phase compared to the pre-adoption phase (Karahanna, Straub & Chervany, 1999). Individuals are generally uncomfortable with the unknown (Carleton, 2016), requiring more information before engaging in a new behaviour (Gonçalves & da Silva Gonçalves, 2012), which is acquired through normative

and informational influence (Cho, 2011). Informational influence occurs when colleagues tell others about their evaluation and experience of the technology or when others observe colleagues using it (Beldad & Hegner, 2018). In the pre-adoption phase, informational influence (and normative pressure from superiors) decreases the risk associated with adoption because it indicates the appropriateness of the decision to start using the technology (Karahanna *et al.,* 1999). The degree of uncertainty regresses as employees advance in the technology use cycle, resulting in less reliance on the social network in the post-adoption phases (Karahanna *et al.,* 1999). Some studies (e.g., Chau & Hu, 2002; D'Arcy & Lowry, 2019) found that workers ignore fellow employees' sentiments regarding the organisational actual daily technological policy compliance. Regardless of the technological preferences of the other employees, one will favour the technology that enables the performance of duties effectively (Mushi, 2018). Therefore, subjective norms become less influential on workers' continuance use of technology (Karahanna *et al.*, 1999).

3.2.1.3 Attitude

Authors might define attitude differently, but they agree that attitude has a global evaluative or general perspective dimension influenced by several aspects (Gure, 2015; Fishbein & Ajzen, 1975). Fishbein (1967) defined attitude as a person's acquired predisposition influencing that person's response in favour of or against ideas, objects, opinions and things. Various researchers posit a relationship between the beliefs, values, attitudes, behavioural intentions and actual behaviours of individuals (Gure, 2015). Maio, Haddock and Verplanken (2018) defined attitude in terms of its components as the net or general appraisal of an object based on affective, cognitive and behavioural information. Several human attitude-based theories and models hypothesised the roles of these attitude components (Haddock & Maio, 2019). A person's general attitude can change (Maio *et al.,* 2018), moving from one evaluative stance to another (e.g., dislike to like) (Albarracin & Shavitt, 2018) depending on changes in each of the attitudinal elements.

The cognitive element of an attitude refers to the thoughts, attributes and beliefs that individuals associate with the attitude object (Haddock & Maio, 2019). In most cases,

one's attitude is hinged on the negative and positive aspects that a person links to the attitude object (Haddock & Maio, 2019). The affective element of attitude refers to an individual's emotions or feelings associated with an attitude object (Haddock & Maio, 2019). Most studies focus on the significance of the affective element of attitude because it works concurrently with the cognitive and conative processes (Jain, 2014). Thus, affect shapes the general attitude through the emotions and feelings stimulated in attitudinal responses (Haddock & Maio, 2019), such as enjoyment, interest, fear and anxiety (Cai *et al.,* 2017). The conative (or behavioural) element of attitude refers to how an individual's attitude influences the way that person behaves, responds or acts (Jain, 2014) and vice versa (Haddock & Maio, 2019). Attitudinal responses (which include intentions, commitments and plans to a premeditated behaviour) (Melnikoff, Bargh & Lambert, 2020) are relatively consistent for individuals (Jain, 2014), making behaviour predictable once the attitudinal response is determined (Howe & Krosnick, 2017). Several behavioural theories have been developed and validated using attitudinal responses. However, this study framed a model to address a B2B literature gap by incorporating both relational and technological dimensions of the general attitude in a continuance use intention model.

3.3 Theoretical framework

The theoretical framework serves as the foundation of knowledge construction for a research study (Grant & Osanloo, 2014; Kivunja, 2018). A theoretical framework helps structure and support the problem statement, purpose, and importance of the research study (Grant & Osanloo, 2014) by providing a methodical explanation, prediction and understanding of phenomena by clarifying relationships of variables within specified boundaries and assumptions (Hjørland, 2015; Kivunja, 2018). Appendix D encompasses a summary of popular technology adoption theories and models. Many of these theories are suitable for investigating preadoption constructs in B2C settings (Al-Mamary, Al-nashmi, Hassan & Shamsuddin, 2016; Taherdoost, 2018), while some, like the unified theory of acceptance and use of technology (UTAUT), are complex to use in decision-making (Sadoughi, Khodaveisi & Ahmadi, 2019). In order to best capture factors influencing paperless technology continuance use in B2B settings, theories used to formulate a conceptual framework for this study are discussed next.

3.3.1 The behavioural reasoning theory (BRT)

Westaby (2005) developed the behavioural reasoning theory (BRT), stating that a person's behaviour results from that person's reasoning. The BRT advanced the view that behaviour is predicted by the intention that is influenced by global motives (attitude, perceived control and subjective norm), supporting suggestions by Fishbein and Ajzen (1975) in the theory of reasoned action (TRA) and Ajzen (1991) in the theory of planned behaviour (TPB). Westaby (2005) adapted belief concepts from the TRA and TPB to propose reasons for predicting global motives. The BRT supports suggestions of the TAM by Davis (1986) and UTAUT by Venkatesh, Morris, Davis and Davis (2003) that several factors influence one's behavioural intention. These theories (TAM, TPB, TRA and UTAUT) agree that behavioural intention predicts actual behaviour, an argument ratified by Westaby (2005).

According to the reasons theory proposed by Westaby and Fishbein (1996), reasoning draws a person into having 'reasons against' and 'reasons for' a behaviour, which also influence that person's subjective norms, attitudes and perceived behavioural control. Westaby (2005) argued that the reasons for a specific behaviour and the reasons against it are not exactly opposites, capturing defence and justification mechanisms not apprehended by other technology adoption models. '*Reasons for'* embody a set of positive factors to perform a behaviour, and '*reasons against'* embody a set of negative aspects against performing the behaviour that influence one's motives (Westaby, 2005). A person's motives are determined by dominant reasons (Westaby, 2005).

According to the expectancy-value theory (Fishbein & Azjen, 1975), the theory of explanation-based decision-making (Pennington & Hastie, 1993) and the reasons theory (Westaby & Fishbein, 1996), beliefs or values are the foundations of reasoning. Therefore, the motivations for or against performing a behaviour can also be directly influenced by one's beliefs or values, which can be behavioural, normative or control-based (Westaby, 2005; Ajzen, 1991). Behavioural beliefs directly influence one's attitude, normative beliefs directly influence subjective norms (Fishbein & Ajzen, 1975), and control beliefs directly influence one's perceived behavioural control (Ajzen, 1991).

Based on arguments from the decisional balance theory (Janis & Mann, 1977), the theory of explanation-based decision-making (Pennington & Hastie, 1993) and field theory (Lewin, 1951), one key reason can dominate other reasons to rationalise behaviour tangent to other global evaluations (Westaby, 2005). Reasons do not exist outside people's values and beliefs (Fishbein & Azjen, 1975). In organisations, both individual and organisational values influence a person's reasoning (Agarwal & Karahanna, 1998). After people process their values and beliefs, they develop reasons to justify their behaviour (Westaby, 2005). Figure 3-2 displays how beliefs/values influence reasoning, which impacts global motives that generate intentions, which translate into behaviour. The BRT is rooted in several theories briefly discussed in Table 3-1.

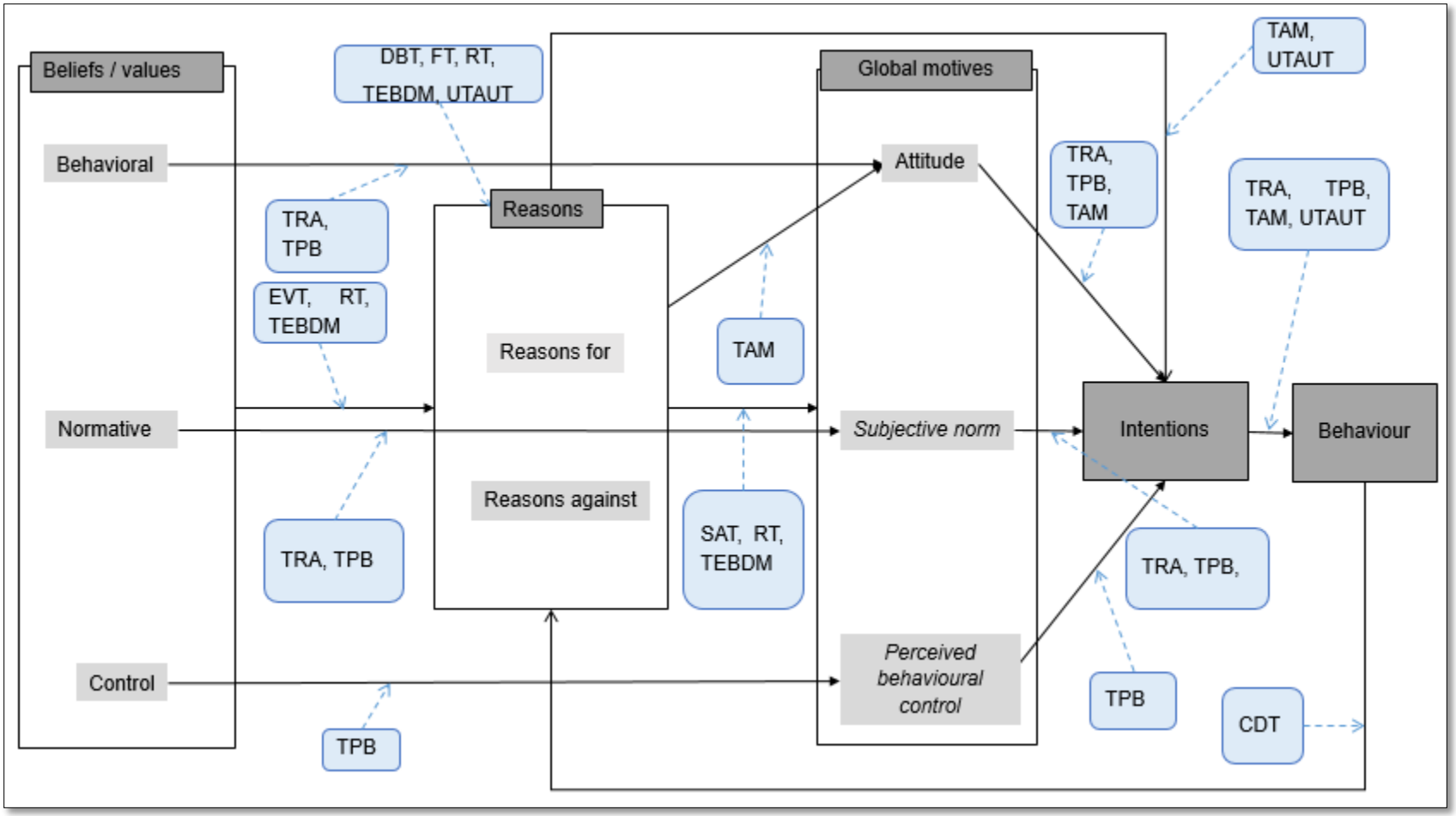

Figure 3-2: *Behavioural reasoning theory*

Sources: Sahu *et al.* (2020:6) and Westaby (2005:106)

CDT=Cognitive dissonance theory, DBT=Decisional balance theory, EVT=Expectancy-value theory, FT=Field theory, TRA=Theory of reasoned action, RT=Reasons theory, SAT=Spreading activation theory, TAM=Technology acceptance model, TEBDM=Theory of explanation-based decision-making, TPB=Theory of planned behaviour, UTAUT=Unified theory of acceptance and use of technology

Table 3-1: Theories supporting the BRT model

Theory - Author(s)	Key arguments / constructs
Field theory (FT) (Lewin, 1951)	Opposite reasons/motivational factors (driving forces and resisting forces) influence behaviour.
Cognitive dissonance theory (CDT) (Festinger, 1957)	Inconsistences between cognitions (e.g., beliefs, understandings) cause dissonance (mental discomfort), resulting in change of at least one of the cognitions.
Spreading activation theory (SAT) (Collins & Loftus, 1975)	Information exists in interconnected networks of cognitive units; thus, reasons (for or against) better explain global motives.
Reasons theory (RT) (Westaby & Fishbein, 1996)	Reasons against or in favour of a behaviour are generated from beliefs, impacting global motives (attitude, norm, control).
Expectancy-value theory (EVT) (Fishbein & Azjen, 1975)	Expected outcomes from performing a behaviour cause (positive or negative) motivation to perform the behaviour.
Decisional balance theory (DBT) (Janis & Mann, 1977)	Decision-making is done by weighing the costs, benefits, disadvantages, and advantages associated with different choices.
Theory of reasoned action (TRA) (Fishbein & Azjen, 1975)	Behavioural intention predicts behaviour, influenced by norms and attitude. Attitude is influenced by beliefs and evaluation of outcomes, while norms are influenced by beliefs and motivation to comply.
Theory of planned behaviour (TPB) (Ajzen, 1991)	Adds perceived behavioural control to the TRA as a factor of attitude and behaviour influenced by control beliefs.
Technology acceptance model (Davis, 1986)	See section 3.3.2.
Unified theory of acceptance and use of technology (UTAUT) (Venkatesh *et al.,* 2003)	Performance expectancy, social influence, facilitating conditions and effort expectancy influence behavioural intention, which predicts behaviour.
Theory of explanation-based decision-making (TEDM) (Pennington & Hastie, 1993)	Decision-making is constructed from a summary of applicable affirmations based on memory. The affirmations/explanations/reasons determine global motives for performing a behaviour.

Sources: Sahu *et al.* (2020:6) and Westaby (2005:106)

The TAM, TPB, TRA, and UTAUT theories that anchor the BRT are prominent in technology adoption and continuance use studies, with the TAM being applied in business studies more than the others (see Appendix B and C). These theories share the notion that attitudes and perceptions are significant predictors of behaviour. Studies have applied the BRT in different technological contexts, such as IoT-based services (Chouk & Mani, 2019; Pillai & Sivathanu, 2018), online teaching (Schneider, Karapanos, Wendeborn, Uhlig & Günther, 2018), energy generation and use (Claudy, Peterson, & O'Driscoll, 2013), mobile wallets (Ajina, Javed, Ali & Zamil, 2023), mobile shopping (Gupta & Arora, 2017) and vending machines (Juliana, Sembel & Malau, 2022). While several studies applying the BRT have examined the adoption of different technologies, some authors have investigated continuance use (e.g., Juliana *et al*., 2022; Mobarak, Dakrory, Elsotouhy, Ghonim & Khashan 2022) and user resistance (e.g., Hajiheydari, Delgosha & Olya, 2021; Vakola, 2016) of the adopted technologies, using the versatile theory as a framework.

The BRT is a flexible theoretical framework robust in predicting, understanding, and evaluating end-user decision-making processes (Sahu *et al.,* 2020). Since its publication in the 'Organisational Behaviour and Human Decision Processes' journal in 2005, the popularity of the BRT has increased as scholars rely on it to predict end-user behaviour by evaluating reasons that influence global motives and intentions (Sahu *et al.,* 2020). Attitude is the most used global motive in BRT-underpinned studies (see Appendix E). Focus on attitude can be attributed to previous studies having generally proven that the effect of subjective norms and perceived control on behavioural intention is weaker than that of attitude (Ham *et al.,* 2015). Venkatesh *et al.* (2003) emphasised that combining theories applicable in a particular context enables a richer analysis of a phenomenon. The BRT was applied in conjunction with the TAM, TOE, and SET to achieve the objectives of this study.

3.3.2 Technology acceptance model (TAM)

In order to address users' acceptance and usage of technology (information system management), Davis (1986) developed the TAM, which replaced the TRA's variables with only three technology acceptance measures (usefulness, attitude toward use and ease

of use), as shown in Figure 3-3. Davis (1986:26) defined perceived usefulness as “the level to which the technology enhances job performance”. “Perceived ease of use is the extent to which a user considers that using a technology is free of mental and physical effort”, as defined by Davis (1986:26). Fishbein (1967) defined attitude as a person’s learned predisposition influencing that person’s response to an idea, object, opinions and so forth. The seminal TAM excluded behavioural intention due to the contextual absence of mental deliberation (Davis, 1986). However, the revised TAM by Venkatesh and Davis (2000) ratified the earlier suggestions that technology use behaviour results from one having the behavioural intention to use that system. According to Venkatesh and Davis (2000), behavioural intention is influenced by the attitude towards using the technology from one’s cognitive perceptions of its usefulness and ease of use. The effect of perceived ease of use on attitude is mediated by one’s perceived usefulness (Davis, 1986) because an individual cannot realise the usefulness of the technology if it is difficult to use. Both perceived usefulness and ease of use are influenced by external variables (Davis, 1986), such as beliefs and values.

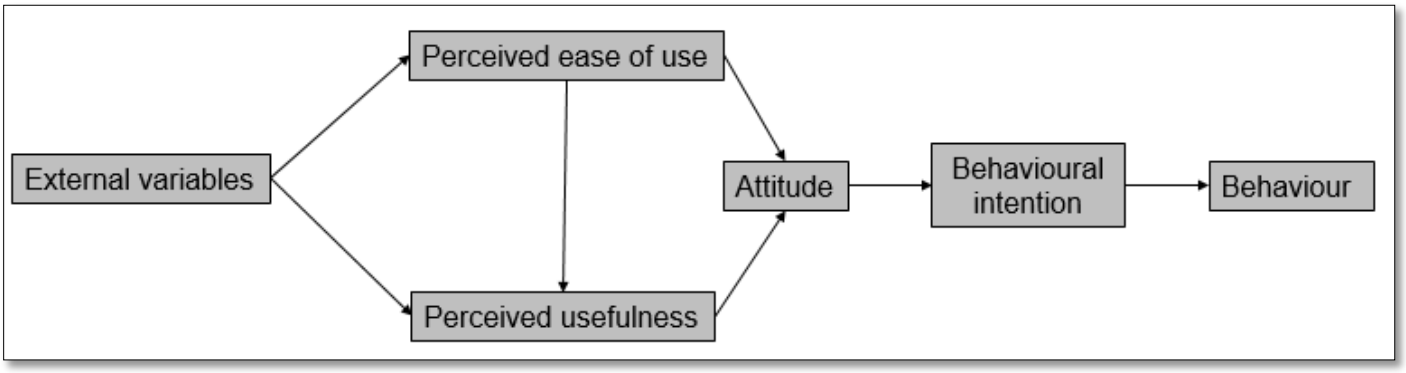

Figure 3-3: Technology Acceptance Model
Source: Davis, Bagozzi and Warshaw (1989:985)

According to Rosli, Saleh, Ali, Abu Bakar and Mohd Tahir (2022), the TAM continues to receive considerable attention from researchers because of its applicability in the adoption and post-adoption phases. The TAM is easier to apply in various contexts. However, it avails rich findings such that empirical results have shown applicability and reliability using different samples and settings (Rosli *et al*., 2022). Many studies in the

business context have applied the TAM to investigate the continuance use of technology (e.g., Hoque & Boateng, 2017; Li, Pillutla, Zhou & Yao, 2015; Thatcher, Wright, Sun, Zagenczyk & Klein, 2018).

Despite several others ratifying the practicality of the TAM, some authors have highlighted its limitations. Joo, So and Kim (2018) argued that the TAM was initially developed to investigate technology acceptance but provided limited explanations in the post-adoption phase. Bhattacherjee (2001) supported the view that perceived ease of use becomes less significant with time. For Ajibade (2018), the TAM does not address emotional needs (intrinsic motivations), focusing only on the achievement of tasks. Also, the TAM does not explicitly include compatibility, a critical construct initially proposed in the diffusion of innovations theory (DOI) by Rogers (1962). Authors such as Hernández-Ortega (2011) and Hussein, Baharudin, Kiumarsi and Kiumarsi (2020) have confirmed compatibility as a critical factor in business end-users' continuance use of technology. As a result, several authors stated that the TAM can be used with other antecedents or theories to improve its explanatory power in the post-adoption phase (Ajibade, 2018). The technology-organisation-environment framework has been applied with the TAM in previous technology use studies to include organisational factors (Bryan & Zuva, 2021).

3.3.3 Technology-organisation-environment (TOE) framework

Depietro, Wiarda and Fleischer (1990), in a publication by Tornatzky and Fleischer (1990), advanced the technology-organisation-environment (TOE) framework, which identifies the environmental, technological and organisational contexts as essential components that influence organisational technology implementation decisions. These three components present organisations with opportunities and constraints related to technological innovation (Depietro *et al.,* 1990), influencing the way businesses search for, view the need for, adopt and continue using novel technology (Baker, 2012; Matikiti, Mpinganjira, & Roberts-Lombard, 2018). Tornatzky, Eveland, Boylan, Hetzner, Johnson, Roitman, and Schneider (1983) emphasised that compatibility connects the three components. Similar to the DOI, Depietro *et al.* (1990) highlighted the significance of individual and organisational (external and internal) characteristics as factors influencing

technology adoption. The TOE framework subsequently added the environmental component, as shown in Figure 3-4.

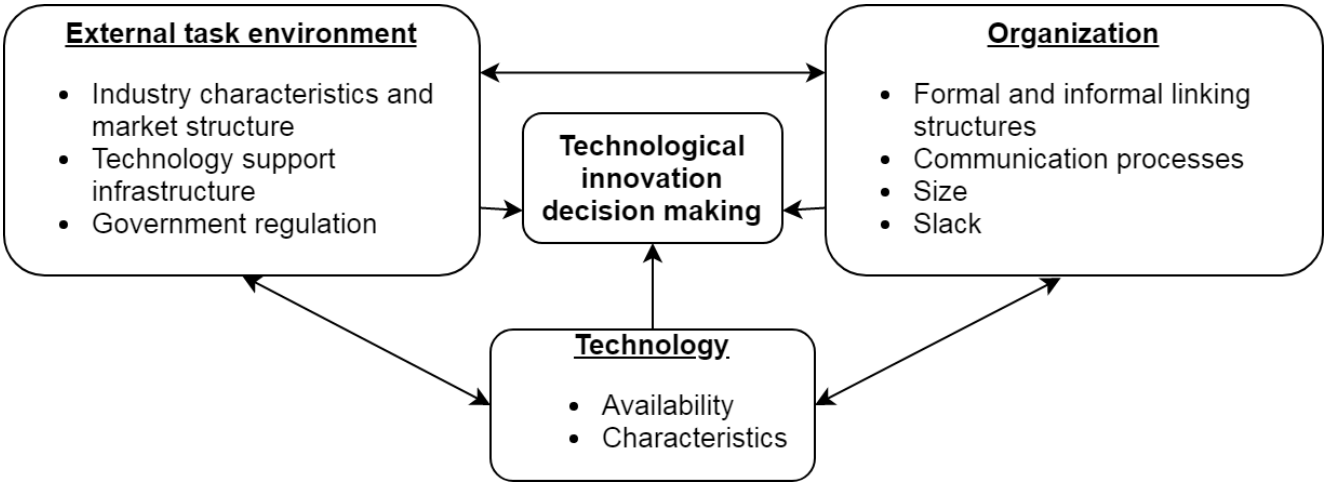

Figure 3-4: TOE framework
Source: Depietro *et al.* (1990:153)

The technology component describes the appropriate or applicable technologies available to the organisations, such as existing technologies and characteristics of technologies available in the market (Chandra & Kumar, 2018; Matikiti *et al.,* 2018). Thus, the innovation's characteristics (such as compatibility, ease of use, reliability, capability and usefulness) are contrasted against current business practices and other existing technologies (Depietro *et al.,* 1990).

The organisational component refers to organisational resources and features such as type of business, size, corporate structure, volume, scope and internal resources (Chandra & Kumar, 2018). Certain types of organisational features are more compatible with differing technology integration levels (Tornatzky *et al.,* 1983). For example, smaller businesses usually have fewer financial resources to purchase software, hardware, and other IT-related means to aid in adopting new technologies (Ocloo, Xu-hua, Akaba, Addai, Worwui-Brown & Spio-Kwofie, 2018), while larger corporates are more resistant to technological change (Lewis, 2019). Some businesses require higher skills than others (Deming & Noray, 2020; Roger & Berwyn, 2018), which can predetermine the end-users' general attitude towards new technology in the respective business industries (Lip-Sam & Hock-Eam, 2011). Workers with advanced skills generally have positive attitudes

towards using novel technologies (Garone, Pynoo, Tondeur, Cocquyt, Vanslambrouck, Bruggeman & Struyven, 2019).

The arena where customers conduct business is their environment (Depietro *et al.,* 1990). The environmental component deals with the contextual influences affecting how firms integrate technologies into their operations, such as industry, consumer preferences, government regulations and competition (Chandra & Kumar, 2018; Matikiti *et al.,* 2018). Walker and Brown (2019) stated that competitive pressure, vendor support, information technology fashion and regulatory requirements are some environmental factors influencing technology use in South African organisations.

The TOE framework has consistent empirical support because it is well-defined, has a solid theoretical basis (Chandra & Kumar, 2018) and can extensively explain intra-firm innovation use (Awa, Ojiabo, & Emecheta, 2015), which has resulted in its wide usage in technology studies within the organisational context (Masood & Egger, 2019). Several studies (e.g., Amade, Oliveira & Painho, 2020; Hussein *et al.*, 2020; Ocloo *et al.,* 2018) have applied the TOE to investigate technology use in business settings. However, a weakness of the TOE framework is that it does not clearly identify major variables and constructs (Wang, Wang, & Yang, 2010), leaving it to the researcher to specify them in each investigation (Mohtaramzadeh, Ramayah & Jun-Hwa, 2018). For example, the TOE does not explicitly consider the behavioural aspects, such as the perceived usefulness of the technology by end-users (Hussein, Baharudin, Jayaraman & Kiumarsi, 2019). Despite its weakness, the TOE framework has numerous consistent empirical support, thus providing a credible structure to analyse organisational technology use (Wang *et al.,* 2010). Awa, Ojiabo and Orokor (2017) and Matikiti *et al.* (2018) suggested that integrating the TOE and the TAM would be beneficial, offering a richer understanding of technology use factors studied in organisational settings.

3.3.4 Social exchange theory (SET)

The SET is an early theory of social behaviour that views any form of interaction between parties (individuals, groups and institutions) as the trade of physical and non-physical resources (Cropanzano & Mitchell, 2005; Cook, Cheshire, Rice & Nakagawa, 2013). The principles of the SET can be traced back to Aristotle's Nicomachean Ethics in the Middle

Ages (1100-1200) (Lambe, Wittmann & Spekman, 2001). Blau (1964) attributed the initial development of the theory that emphasises social behaviour as 'exchange' to Homans (1958). Homans (1958) proposed three key social exchange constructs: stimulus (rewarded actions are emulated), success (rewarding actions are repeated) and deprivation-satiation (repeated/same rewards become less valued). Each party seeks to minimise cost while maximising the benefits from transactions (Blau, 1964; Homans, 1958). Over time, rewarding actions tend to diffuse in a social system, causing more individuals (or organisations) to emulate them while avoiding unrewarding actions (Gewirtz & Stingle, 1968).

When one party assists or serves another in a social exchange relationship, the other party rewards the assistance with esteem, respect, trust or other reciprocal actions (Blau, 1964; Cropanzano & Mitchell, 2005). Thibaut and Kelley (1959) offered significant additions to the SET by explaining how parties evaluate the benefits of the exchange relationship to regulate their commitment to the relationship. Thibaut and Kelley (1959) argued that parties develop interdependence and power within the relationship such that one party can choose specific behaviours to affect the outcome of the relationship and attraction to such relationships.

In the buyer-seller context, Cropanzano and Mitchell (2005) distinguished between social and economic relationships, as well as social and economic exchanges. A purchase is an economic exchange, while the treatment one receives before, during and after is a social exchange (Cropanzano & Mitchell, 2005). Economic relationships are monetary exchanges that require one to provide relatively open-ended support or closeness, while social relationships offer such support and closeness based on non-monetary reciprocity (Cropanzano & Mitchell, 2005). Purely economic relationships are rare because there is some degree of social exchange in economic transactions (Kuwabara, 2011). Combining arguments by Emerson (1962) and Thibaut and Kelley (1959), Cowan *et al. (*2015) described how B2B relationships can be analysed using the SET, whereby organisations control their behaviour and perceptions of other organisations contingent on their situational dependence, the other organisations' perceptions, the power they have and the effects of their actions on the B2B relationship. The resource dependence theory

(based on SET principles) suggests that customers in B2B relationships strive to balance autonomy and external relations with partners who provide needed and valuable resources (Cowan *et al.,* 2015). Tornatzky *et al.* (1983) found that the concept of exchange seems suitable for studying technology adoption and continuance use but requires clarification of the level and unit(s) of analysis. According to Tran, Gorton and Lemke (2022), social exchanges contribute either positively or negatively to the perceptions of the buyers regarding the supplier. The positive or negative perceptions of the supplier influence the overall evaluation of that supplier and the continuance of the B2B relationship.

Owing to its explanatory value, the SET has been applied in diverse areas (Lin, Huang & Chiang, 2018): corporate culture (Slack, Corlett & Morris, 2015), networking (Porter & Woo, 2015), social power (Mentus, 2014), psychological contracts (Bal, Chiaburu & Jansen, 2010), leadership (Wang & Hsieh, 2013) and business relationships (Jeong & Oh, 2017; Morgan & Hunt, 1994). However, the SET has been criticised for being vague (Miller, 2005; West & Turner, 2018). For Cropanzano, Anthony, Daniels and Hall (2017), the SET offers limited and inaccurate behavioural predictions when analysing workplace behaviour because i) overlapping constructs are not clearly distinguished, ii) the hedonic value of various constructs is not clarified, and iii) bipolarity of constructs is assumed. Combining the SET with other relationship-specific models and theories enriches the SET's explanatory and predictive power (Jeong & Oh, 2017). Several studies (e.g., Gefen & Keil, 1998; Gharib, Philpott & Duan, 2017; Kim, Hong, Min & Lee, 2011) have incorporated the SET to study the use of technology by business end-users. The SET is useful for explaining B2B exchanges because it can focus on the relationship quality between the seller and the buyer (Lambe *et al.,* 2001).

3.4 Unpacking the model

The traditional technology adoption and continuance use constructs do not capture the context-specific justifications for technology adoption or rejection, while reasons do (Gupta & Arora, 2017; Westaby, 2005), which are vital constructs of the BRT. The BRT adapts to the context (Westaby, 2005), making it the most appropriate conceptual framework for studying paperless technology adoption and continuance use. However,

the SET, TAM and TOE theories support the BRT framework in this study due to the relational, technological and organisational focus of the study.

Global motives → Continuance use intention

Perceived behavioural control, subjective norms and attitude are the sub-constructs of global motives (Ajzen, 1991; Westaby, 2005). Within organisational settings, perceived control and subjective norms become less influential, especially in the post-adoption phase (Karahanna *et al.,* 1999). Therefore, the current study did not consider perceived control and subjective norms. In organisational contexts, most users do not decide which technology is available to use for work (Ahmed, Qin & Martínez, 2019; Koh, Prybutok, Ryan & Wu, 2010). Often, it is expected that users should use the provided information technology so that the organisation can gain the anticipated benefits (Bhattacherjee, Davis, Connolly & Hikmet, 2018). Due to this study's two-dimensional nature (technological and relational), attitude was investigated in technological and relational dimensions, respectively. Applying principles of the SET (of social and economic exchange), it can be hypothesised that the attitude towards the supplier and attitude towards the technology influences continuance use intention in B2B settings. The end-users' attitude towards the supplier was also hypothesised to positively influence their attitude towards the technology.

Technology factors → Attitude toward the technology

The compatibility of the technology influences the end-users' attitude towards the technology directly in addition to influencing other technological factors ('reasons for' and 'reasons against') influencing the end-users' attitude towards the technology. The technological 'reasons for' and 'reasons against' influence attitudes towards technology positively and negatively, respectively. Additionally, perceived ease of use positively influences perceived usefulness, as shown in Figure 3-5.

B2B relationship factors → Attitude toward the supplier

In this study, goal congruence was advanced as a belief (or value) that influences relational "reasons for" and "reasons against" attitude towards the supplier and influences the attitude towards the supplier directly. Similar to the technological dimension, relational reasons (for or against) influence the attitude towards the supplier (positively and

negatively). Additionally, trust positively influences commitment. This study incorporated both technological and B2B relational factors to evaluate end-users' continuance use intention of office paperless technology in the post-adoption phase.

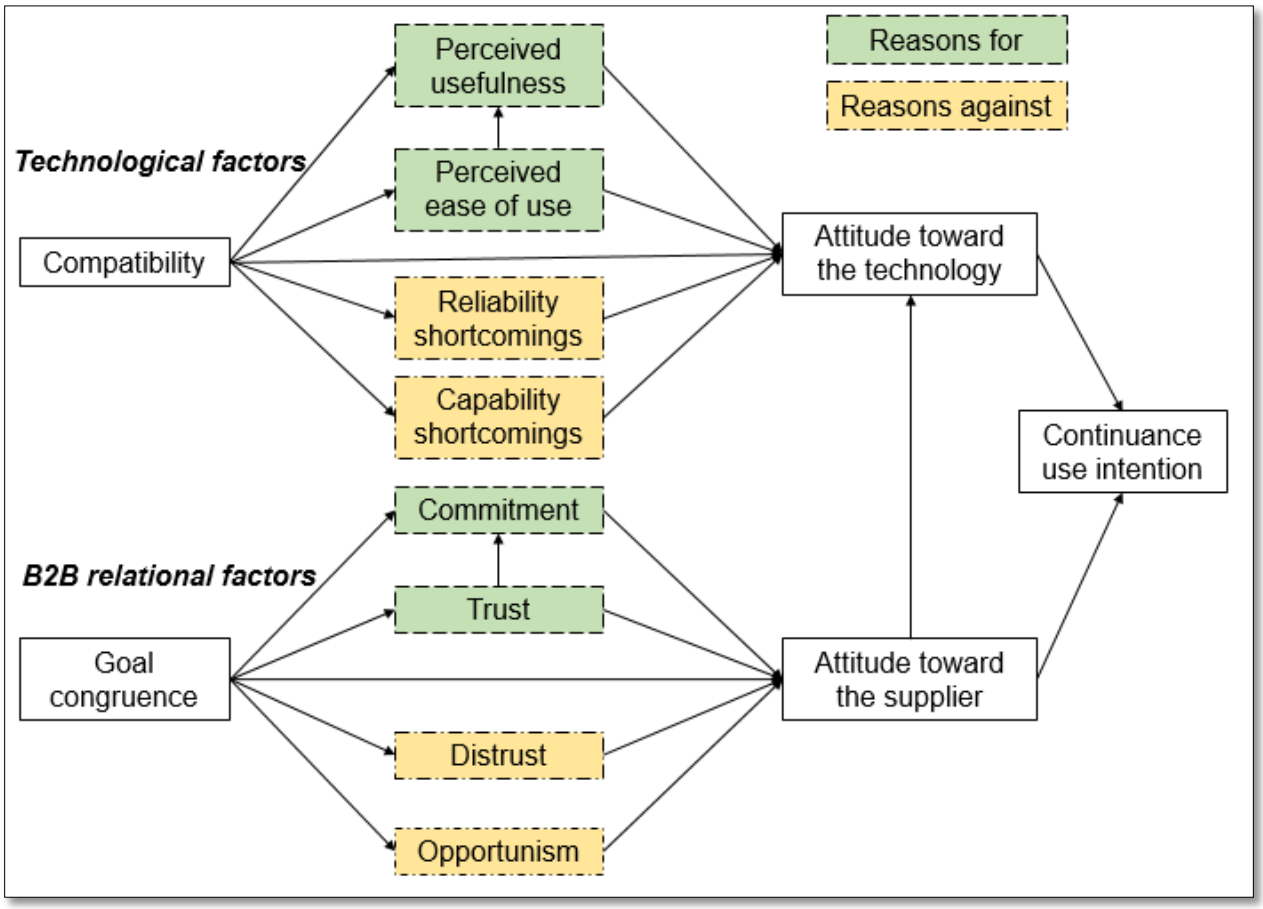

Figure 3-5: *Conceptual model of the study*

3.5 Paperless technology continuance use intention

Intention is a concept that has proven valuable for academics in studying and predicting behaviour in various organisational settings (Sheeran & Webb, 2016). Intention focuses on plans of action (Bandura, 2001), which can be goal-based or behavioural (Sheeran & Webb, 2016). Goal intentions are self-instructions specifying one's desired outcomes to be achieved (Fuchs, Seelig, Göhner, Schlatterer & Ntoumanis, 2017), while behavioural intentions are self-instructions towards performing specific actions to attain results (Pinder, Vermeulen, Cowan & Beale, 2018). Ajzen (1991) defined behavioural intention as the intensity of an individual's willingness to carry out a certain behaviour. Many

technology use studies focus on behavioural intention (see Appendix B), which predicts behaviour (Kwon & Silva, 2019). The current study centred on business end-users' continuance use intention of paperless technology.

In the context of this study, continuance use intention refers to future use commitment after a user has used paperless technology, similar to the definition by Abdullatif and Velázquez-Iturbide (2020). Being a proactive commitment to perform specific actions, behavioural intention is grounded in self-motivators influencing the likelihood of these actions in the future (Bandura, 2001; Venkatesh *et al.*, 2003). Researchers commonly investigate a few key antecedents influencing continuance use intention; it would involve complex omniscience to anticipate every contextual detail (Bandura, 2001). Initial partial behavioural intentions are substituted (by stronger or weaker intentions) after realising new data during the execution of the intention (Bandura, 2001). Consequently, the business end-users' intention to use office paperless technology predicts their continuance use behaviour of the technology (Ajzen, 2020).

As shown in Appendix B and C, continuance use intention was the dependent variable for several B2B technology use investigations such as electronic commerce (Hussein *et al.*, 2020) data exchange systems (McKnight, Lankton, Nicolaou & Price, 2017; Nicolaou, Ibrahim & Van Heck, 2013) and personalised business modes (Zhao, Fang & Jin, 2018). Similarly, some technology use investigations underpinned by the BRT, such as the use of vending machines (Juliana *et al.*, 2022) and artificial intelligence chatbots (Myin & Watchravesringkan, 2020), had continuance use intention as the dependent variable. However, an investigation of how business-end users' perceptions of paperless technology and buyer-supplier relationships influence their continuance use intention of paperless technology was still lacking. The current study filled this gap.

Technological factors

The impact of technical elements on the continued use of technology in work environments has been studied using a variety of theories (see Appendix B, C and D). While some factors increase its usage, others negatively impact the continuance use of technology in institutions. This study advanced attitude towards technology as the

technological factor (global motive) influencing end-users' continuance use intention of paperless technology directly. Attitude towards technology is influenced by compatibility, the technological reasons for and reasons against, as discussed below.

3.6 Attitude towards paperless technology as a factor influencing continuance use intention

In this study, attitude towards paperless technology refers to an end-user's acquired predisposition regarding office paperless technology influencing that end-user's response in favour of or against office paperless technology, as adapted from Fishbein (1967). Elements of attitude related to technology usage, for example, personal enjoyment and interest, emotions and feelings towards the technology (e.g., anxiety and comfort), personal beliefs regarding the technology (e.g., ease of use, usefulness, social impact) and personal self-confidence have been conceptualised by different authors to represent attitude (Cai *et al.,* 2017). An individual may have a favourable belief about the usefulness of technology and social impact but have discomfort in utilising technology (Cai *et al.,* 2017), whereby attitude will be determined by the dominating element (Westaby, 2005). Thus, depending on the context, some facets of attitude towards technology are more influential than others. This study focused on the key applicable facets in the B2B context.

In post-adoption phases, end-users form cognitive attitudes (evaluations and new beliefs) towards the technology after using it that evolve into affective (emotions and feelings) and turn into conative (actions and responses) attitudinal responses (Lee, Rhee & Dunham, 2009). Technology use studies have investigated attitudes towards technology in various settings, applying different theories and approaches. Several studies (e.g., Alsharo *et al.,* 2020; Hernández-Ortega, 2011; Iranmanesh, Zailani & Nikbin, 2017; Ramayah, Ling, Taghizadeh & Rahman, 2016) investigating the continuance use of different technologies by business end-users have examined attitude towards the technology for its role on influencing behaviour.

Individuals within institutions develop positive attitudes toward technology when they believe it enhances their ability to accomplish their work (Davis *et al.,* 1989; Lee *et al.,* 2009) because their job performance is linked to various desired rewards. Similarly, employees who perceive that technology does not enhance their work performance will

develop a negative attitude towards the technology (Ho, 2010). Users can protest through 'non-use' of the technology when the technology has significant shortcomings impeding work performance (Recker, 2016). Studies such as Ajjan, Hartshorne, Cao and Rodriguez (2014), Matikiti *et al.* (2018) and Zhao *et al.* (2018) found that attitude toward technology positively influences the business end-users' continuance use intention. Thus, end-users' attitudes towards paperless technology can be expected to positively influence their continuance use intention.

3.7 'Reasons for' influencing attitude towards paperless technology

In the context of this study, technological 'reasons for' attitude towards paperless technology included positive perceptions of paperless technology from the end-user's view. According to Mahmood, Hall and Swanberg (2001), the utilisation level of technology in organisations is significantly influenced by how beneficial (usefulness) and simple (ease of use) the technology is. Longitudinal research by Venkatesh and Davis (2000) has shown that, although perceived ease of use diminishes over time, both utility and ease of use significantly influence the continued use of technology.

3.7.1 Perceived usefulness

In the perspective of this study, perceived usefulness (or perceived utility) refers to the level to which paperless technology enhances the job performance of business end-users. Davis (1986) theorised that user perceptions of technology's utility positively influence the user's attitude towards the technology. Several authors (e.g., Alsharo *et al.*, 2020; Low, Ullah, Shirowzhan, Sepasgozar & Lee, 2020; Zhao *et al*., 2018) also confirmed through empirical research that perceived utility positively influences the attitude of end-users toward the technology. For Venkatesh *et al.* (2003), concepts analogous to perceived usefulness include extrinsic motivation, relative advantage, job fit and outcome expectations. Thus, perceived usefulness also reflects the benefit that is viewed by end-users of technology in enhancing their work execution (Yeh & Teng, 2012).

The value of technology lies in the degree to which it benefits individuals and the organisation at large (DeLone & McLean, 2003). The vital dimensions of usefulness are efficiency (carrying out the activities well) and effectiveness (helpfulness of the activities) (Yeh & Teng, 2012). When technology is efficient, it decreases the cost (money and time)

of performing a job while increasing the output (Yeh & Teng, 2012). When technology is effective, it enables the user to get the correct things done (Yeh & Teng, 2012). Therefore, the core task of technology is to support the end-user's business processes (Walther, Sedera, Urbach, Eymann, Otto & Sarker, 2018).

Paperless technology is generally perceived as being superior to paper technology (Orantes-Jiménez *et al.,* 2015; Wantania, Hidayanto, Ruldeviyani & Kurni, 2021). Users who perceive technology as useful will have positive attitudes towards it (Davis, 1986). The advantages of paperless technology, which include improving the efficiency of services and processes, reduced expenses, less physical space, fewer filing errors and compatibility with flexible work schedules (Dhumne, 2017; Zunic *et al.,* 2016) positively influence the end-users' overall evaluation of the technology. Therefore, the perception that paperless technology is useful can be expected to positively influence the end-users' attitude towards paperless technology.

3.7.2 Perceived ease of use

Derived from Davis (1986), the current study defined perceived ease of use as the gradation to which business end-users consider that using paperless technology is free of effort. The TAM posits that a user's ease of use perceptions of technology influence that user's attitude towards that technology (Davis, 1986). Some authors investigated concepts similar to perceived ease of use that influence the end-users' attitude towards technology, such as simplicity, effort expectancy and complexity (Venkatesh *et al.,* 2003). Obendorf (2009) argued that technology simplicity could be in the form of reduction (navigational complexity reduced to its essentials), organisation (technology structure), integration (coherent framework) and prioritisation (optimisation of essential tasks). This study applied the "perceived ease of use" view of Davis (1986) in the TAM due to its empirical validation by several authors, despite some studies (e.g., Bhattacherjee, 2001; Szajna, 1996) arguing that perceived ease of use becomes less significant with increasing user experience.

Several authors have ratified that perceived ease of use positively influences business end-users' attitudes towards the technology in various continuance use settings such as health information systems (Alsharo *et al.,* 2020), e-invoicing (Hernández-Ortega, 2011),

radio-frequency identification (Iranmanesh *et al.,* 2017), social media marketing (Matikiti *et al.,* 2018) and information systems technology (Yu & Tao, 2009). Thus, it can be hypothesised that the perception that paperless technology is easy to use positively influences business end-users' attitudes toward paperless technology.

3.7.3 Perceived ease of use as a factor influencing usefulness

When technology is easier to use than other alternatives, users will view it as more useful (Davis *et al.,* 1989). The use of office paperless technology simplifies the query of data (Widiantoro, 2018), eases access to data (Tiwari *et al.,* 2017), simplifies the storage of documents (Obeidat, 2015; Prabhu, 2019) and eases the distribution of documents (Balu *et al.*, 2020). Therefore, workers can be expected to perceive it as useful (Dube, Van Eck & Zuva, 2020). Parts of a worker's job involve using technology to achieve desired results. Thus, ease of use of the technology improves that worker's overall productivity (Davis, 1986). Several studies (e.g., Faqih & Jaradat, 2015; Warganegara & Babolian Hendijani, 2022) have confirmed that ease of use perceptions positively influence one's perceptions of the usefulness of the technology. Accordingly, perceptions that paperless technology is easy to use can be expected to positively influence business end-users' perceptions that paperless technology is useful.

3.8 'Reasons against' influencing attitude towards paperless technology

In the context of this study, technological 'reasons against' influencing attitude towards paperless technology included negative perceptions of paperless technology by the end-users. Furneaux and Wade (2011) developed the information systems discontinuance framework, positing that technology performance factors negatively affecting its continuance use are its reliability and capability shortcomings. Thus, paperless technology reliability and capability shortcomings were the technological 'reasons against' in the current study.

3.8.1 Reliability shortcomings

For purposes of this study, reliability shortcomings are the gradation to which end-users perceive that paperless technology cannot be relied upon to accomplish the intended tasks for work purposes, as adapted from Furneaux and Wade (2011). Initially, technology will be perceived as reliable. However, over time, users may perceive it as

unreliable, leading to negative attitudes (Furneaux & Wade, 2011). The use of technology that is becoming unreliable poses risks to businesses (Furneaux & Wade, 2011). Users who view paperless technology as reliable will likely have positive attitudes towards it, while users who perceive paperless technology as unreliable will likely have negative attitudes toward it.

Users will likely develop negative perceptions after experiencing technical challenges while using technology (Cho, 2015). Reliability shortcomings such as lack of security (Hubert, Blut, Brock, Zhang, Koch & Riedl, 2019; Hussein & Baharudin, 2016), work impediment (Recker, 2016), lack of channel assurance (trust, risk, safeguards, robustness) (Richard & Purnell, 2017) and upgrade disruptions (Pentland *et al.,* 2020), could outweigh the technology's perceived positive outcomes (Furneaux & Wade, 2011). A paucity of studies have examined the influence of reliability shortcomings on attitudes towards the technology. Wu and Zhang (2014) found that technology reliability was a significant antecedent that indirectly influenced business end-users' attitudes toward the technology positively, with perceived ease of use and perceived usefulness as mediators. Hajiheydari *et al.* (2021) applied the BRT framework. They found that reliability negatively influenced scepticism, a variable analogous to a negative attitude toward technology. Therefore, reliability shortcomings can be hypothesised as inversely influencing users' attitudes towards the technology because technology with reliability shortcomings would be less valuable to continue using. Thus, reliability shortcomings of office paperless technology can be expected to negatively influence business end-users' attitudes towards paperless technology.

3.8.2 Capability shortcomings

In the context of this study, capability shortcomings included limitations in the functionality of paperless technology that undermine its aptitude to fulfil institutional requirements for end-users, as adapted from Furneaux and Wade (2011). Perceived shortcomings of technology are interrelated to a user or institution's needs for the technology (Furneaux & Wade, 2011). Changes in end-user expectations and preferences make the capability of the technology a very dynamic parameter (Rahman, Redwanuzzaman, Masud-Ul-Hasan & Rahman, 2014). According to Nambi *et al.* (2018), ideal capabilities of paperless

office technology include unrestricted product choices, practice allowance, efficient integration with pre-existing data, adaptation to institutional growth, fast data query, capacity to be upgraded, and the ability to produce automatic information.

Satisfaction with a product's capabilities is critical in forming and maintaining B2B relationships (Fleming, Lynch & Kelliher, 2016). Users who perceive technology as not capable of fulfilling institutional and personal work requirements will have negative attitudes toward it (Ilias & Shamsudin, 2020). Even if the initial adoption of paperless technology is laborious (Nambi *et al.,* 2018), when it can enhance the end-users' work, they will have positive attitudes toward it. A paucity of studies have examined the relationship between capability shortcomings and attitudes towards technology. When paperless technology cannot meet institutional and personal requirements, end-users will likely develop negative attitudes towards it because it would be less valuable to continue using. Thus, the capability shortcomings of paperless technology can be expected to inversely influence end-users' attitudes towards it.

3.9 Compatibility as a factor influencing attitude toward paperless technology

Rogers (2003) defined compatibility as the gradation to which an innovation suits the present principles and experiences, end-user's requirements, and present socio-cultural beliefs and values. In the context of this study, compatibility refers to the degree to which end-users deem paperless technology suitable for their institutional processes and job responsibilities. According to Agarwal and Karahanna (1998), compatibility is revealed in conformity of the technology with i) current work practices (or pre-existing technologies), ii) preferred or desired working style, iii) prior experience, and iv) values. For Sellen and Harper (2003), the compatibility of paperless technology is a key factor in the realisation of paperless offices. Sellen and Harper (2003) argued that work practices had to be reorganised, and paperless technologies had to be better designed and offer better affordances than paper for paperless technology to be used more in offices. Paperless technology has advanced and addresses most compatibility requirements to the extent that many organisations have implemented paperless workflows (Briscoe, 2022).

Previous organisational studies proved that the compatibility of technology positively influences the end-users' overall perceptions of that technology. Hussein *et al.* (2020)

showed that the compatibility of technology contributes to the continuance use of technology by directly influencing the business end-users' continuance use intention. Amade *et al.* (2020) found that compatibility positively influenced technology usage. However, it did not affect the intention to increase the level of usage. The studies by Chatterjee, Rana, Khorana, Mikalef and Sharma (2021) and Kanchanatanee, Suwanno and Jarernvongrayab (2014) empirically validated the positive relationship between technology compatibility and attitude towards that technology. These findings suggest that when novel technology is compatible with individual and organisational requirements, users will have positive attitudes toward it. Therefore, the compatibility of paperless technology can be expected to positively influence the end-users' attitudes toward it.

3.9.1 Compatibility as a factor influencing technological 'reasons for'

It is critical to note that performance perceptions of a technology result from the fit between one's existing practices, preferred style and the technology (Karahanna, Agarwal & Angst, 2006). Technology is highly compatible with one's work when one can use it with few or no changes to existing routines and practices while achieving improved performance (Chan, Thong, Venkatesh, Brown, Hu & Tam, 2010). To maintain cognitive consonance, 'reasons for' attitude towards the technology can be expected to be positively influenced by compatibility.

Compatibility→Ease of use

Moore and Benbasat (1991) and Wu and Wang (2005) supported the view that compatibility is a vital belief that positively affects perceived characteristics of the technology (usefulness, ease of use). Substantial incompatibility requires significant service and process changes (Rogers, 2003), necessitating considerable upskilling for end-users (Bhargava, Bester & Bolton, 2020), who will likely perceive the technology as not easy to use. The compatibility of technology can be expected to positively influence its ease of use perceptions by end-users (Raza, Umer & Shah, 2017), as empirically validated by authors such as Crespo, de los Salmones and del Bosque (2013) and Patwardhan, Pandey and Dhume (2017).

Compatibility→Usefulness

Matching the technology characteristics to users' skills and requirements is an important compatibility indicator (Sebetci, 2018). Technology compatibility directly influences perceived usefulness through the dimensions of 'preferred work style' and 'prior experience' (Agarwal & Karahanna, 1998). End-users' perceived usefulness captures positive performance beliefs, while negative consequences and disadvantages of using the technology capture negative performance beliefs (Recker, 2016). Kanchanatanee *et al.* (2014) and Sugandini, Purwoko, Pambudi, Resmi, Reniati, Muafi and Adhyka Kusumawati (2018) found that compatibility of technology positively influences the end-users perceptions of its usefulness. Therefore, it can be hypothesised that the compatibility of paperless technology positively affects the end-users' usefulness perceptions of the technology.

3.9.2 Compatibility as a factor influencing technological 'reasons against'

Technology compatibility manifests in its reliability and capability in that compatible technology has few shortcomings (Furneaux & Wade, 2011). Shortcomings of technology are perceived as detrimental to work performance (Recker, 2016). In order to maintain cognitive consonance, the technological 'reasons against' attitude towards the technology can be expected to be negatively influenced by compatibility.

Compatibility → Reliability shortcomings

Technology is adopted through executives' decisions in most businesses, assuming the technology will be reliable and aligned with strategy (Catlin, Scanlan & Willmott, 2015; Furneaux & Wade, 2011). Technology is unreliable when it is slow (Recker, 2016), unavailable (Claudy *et al.,* 2015), risky (Jayashankar, Nilakanta, Johnston, Gill & Burres, 2018), inaccurate (Recker, 2016), has many errors (Lacka & Chong, 2016) and has many barriers (Gorla *et al.,* 2017). Because unreliable technology is detrimental to work performance, workers do not prefer it (Agarwal & Karahanna 1998). To maintain cognitive consonance, perceptions of technology compatibility were expected to negatively influence the end-users' perceptions of the technology's reliability shortcomings.

Compatibility → Capability shortcomings

Strong perceptions of technology shortcomings cause elevated perceptions of continuance use as a work impediment (Recker, 2016), such as productivity losses, inconvenience, and additional effort (Venkatesh, Thong & Xu, 2012). Perceived capability shortcomings of technology are closely related to each organisation's requirements for the technology (Furneaux & Wade, 2011). Greater intensities of non-routine tasks will likely make the end-user more conscious of potential technology shortcomings (Goodhue & Thompson, 1995). In a study by Furneaux and Wade (2017), technologies with a stronger reflection of institutionalised norms (analogous to technology compatibility) exhibited fewer capability shortcomings. Therefore, perceptions of compatibility can be expected to reduce perceptions of paperless technology capability shortcomings to maintain cognitive consonance.

B2B relational factors

Human and social aspects are important when investigating technology use (Legris, Ingham & Collerette, 2003) because of the motivational effect of cognitive consistency. From principles of the SET, B2B relationships have been investigated using theories such as the resource-based view, network perspective theory, resource dependence theory, strategic choice theory, learning theory, stakeholder theory, systems theory, institutional theory, agency theory, and transaction cost theory, (Hitt, Xu & Carnes, 2016; Miri-Lavassani, Movahedi & Kumar, 2009). The commonality among B2B exchange theories is the focus on motivations for forming or maintaining the relationship, such as gaining desired benefits, reducing costs, and achieving long-term goals (Cowan *et al.,* 2015). However, B2B studies have not examined the contribution of attitude towards the supplier to the continuance use of the technology being supplied. The current study advanced the notion that attitude towards the supplier influences the end-users' attitude towards the technology and their continuance use intention.

3.10 Attitude towards the supplier as a factor influencing attitude towards paperless technology

In this study, attitude towards the supplier is an end-user's acquired predisposition regarding the supplier of office paperless technology influencing that end-user's response in favour of or against the service provider, as adapted from Fishbein (1967). Previous

studies on the continuance use of technology in B2B settings have scarcely included attitudes towards the supplier, but some have considered relationship satisfaction. Satisfaction or gratification is a temporary emotion that is experience-specific, while attitude is more long-term, transcending previous experiences entirely (Oliver, 1980). According to Sales-Vivó, Gil-Saura and Gallarza (2020), the direction of causality between social satisfaction (evaluation of the relational exchange) and economic satisfaction (evaluation of the economic exchange) is not always apparent. Høgevold, Svensson and Roberts-Lombard (2020) argued that social exchange is established on psychosocial elements of the B2B relationship. Thus, non-economic satisfaction influences economic satisfaction more in established relationships. Although relationships are formed on economic principles, social satisfaction is the antecedent of economic satisfaction in established relationships (Jyh-Liang, Lee, Roberts-Lombard, Svensson & Høgevold, 2022). Studies such as Jyh-Liang *et al.* (2022) and Sales-Vivó *et al.* (2020) found that social satisfaction positively influences economic satisfaction in B2B relationships. Therefore, it can be hypothesised that the attitude toward the supplier positively influences the attitude toward the technology. Thus, the end-users' attitude toward the supplier can be expected to positively influence their attitude toward paperless technology.

3.11 Attitude towards the supplier as a factor influencing continuance use intention

Understanding the influence of attitudes toward the supplier is important because negative attitudes towards the supplier make it problematic to synchronise supplier and buyer resources (Yang, Kull, Nahm & Li, 2017). Based on the psychological processes of cognitive consistency, attitudes towards a supplier influence buyers' intra-firm activities (Yang *et al.,* 2017), especially those cognitions based on shared beliefs with the strongest motivational power (Rossignac-Milon & Tory Higgins, 2018). Claybaugh *et al.* (2022) established that relationship satisfaction positively influenced loyalty (the continuance use of a supplier's CRM software). Chen *et al.* (2013) found that relationship quality positively influences the end-users' continuance use intention of a technological system. Although the relationship between attitude towards the supplier and continuance use intention has been scarcely examined, the technology use studies by Chen *et al.* (2013) and Claybaugh

et al. (2022) showed that the evaluation of the relational exchange positively influences the end-users' intention to continue using the technology being supplied. Therefore, attitude towards the supplier can be expected to positively influence the end-users' intentions to continue using paperless technology.

3.12 'Reasons for' influencing attitude towards the supplier

The relational 'reasons for' influencing attitude toward the supplier in the perspective of this study included favourable perceptions of the supplier arising from end-user impressions of the B2B relationship. Paperless servitisation likely creates closer B2B relationships characterised by greater investment, co-creation logic and long-term commitment (Kamalaldin *et al.*, 2020). Almomani (2019), Chowdhury (2012), Morgan and Hunt (1994) and Zhang, Watson, Palmatier and Dant (2016) believe that relationship commitment and trust are the salient factors determining the attitudinal responses towards the supplier. In terms of temporal characteristics, commitment changes slowly while the change in trust is quicker, comparatively (Jap & Ganesan, 2000). These antecedents of attitude in B2B relationships (trust and commitment) are established through exchanges between the members of the respective organisations (Lee, Huynh & Hirschheim, 2008).

3.12.1 Trust

In the milieu of this study, trust entails the level to which end-users consider with confidence that the supplier has characteristics beneficial for their organisation (McKnight, Choudhury & Kacmar, 2002). Trust can also be defined as the preparedness to be susceptible to the activities of someone or an entity, with the prolepsis that the entity will execute a particular action (Mayer, Davis & Schoorman, 1995). Trust is a key part of social exchange, which can be divided into trusting beliefs (competence, benevolence, predictability, and honesty), trusting behaviours, trusting intentions, disposition to trust, and institution-based trust (Vidotto, Massidda, Noventa & Vicentini, 2012). Disposition to trust is the degree to which an individual exhibits consistent tendencies to be keen to rely on other individuals or institutions in various situations (Mcknight, Cummings & Chervany, 1998). Trusting beliefs means the level to which one considers, with confidence, that the other individual or institution has characteristics beneficial to him/her (McKnight *et al.*,

2002). Institution-based trust is when one believes with confidence that positive circumstances are prepared that are favourable to situational success in an uncertain aspect/situation (Luhmann, 1979). Trusting intentions means that one is keen to rely on another individual or institution with certainty despite lacking control over the individual or institution, although negative consequences are probable (Mcknight *et al.,* 1998). The current study focused on trust as the end-users trust the beliefs of the supplier.

B2B researchers such as Dwyer, Schurr and Oh *(*1987), Kale, Singh and Perlmutter (2000), Morgan and Hunt (1994) and Wilson (1995) concur with SET authors like Blau (1964) and Homans (1958), that trust is the most critical factor in business relational exchange. Because trust indicates conviction in the other entity's dependability and honour (Morgan & Hunt, 1994), it is the most investigated B2B relationship construct (Zhang *et al.,* 2016). Trust expresses the accrued knowledge regarding another party (Dirks & Ferrin, 2001) and changes contingent on the outcomes of previous actions, experiences, and interactions taking place over time within the B2B relationships (Dwyer *et al.,* 1987; Huang & Wilkinson, 2013).

Positive perceptions of the B2B relationship result in positive attitudinal responses of the business end-users' attitudes towards the supplier (Siemieniako & Urban, 2011). Establishing trust in B2B relationships ensures increased satisfaction, resulting in the long-term continuation of the relationship and stronger coordination (Roberts-Lombard, Mpinganjira & Svensson, 2017; Zafari, Biggemann & Garry, 2020). Consequently, the development of trust influences end-users' attitudes towards the supplier. In previous studies, the impact of trust on attitude towards the supplier has not been extensively explored. However, Akman and Yörür (2012), Park and Park (2013) and Roberts-Lombard, Mpinganjira and Svensson (2019) found that trust positively influences relationship satisfaction (which is analogous to a positive attitude toward the supplier (Saleh & Ali, 2009)). Thus, the trust of the supplier by end-users can be expected to positively influence their attitude towards the supplier.

3.12.2 Commitment

For purposes of this study, commitment refers to the desire of customers in B2B relationships to maintain a long-term valued partnership with the supplier (Morgan & Hunt,

1994). Fair reciprocated exchange is anticipated in relationships like buyer-supplier relations for them to continue (Blau, 1964). When both partners perceive the B2B relationship as beneficial, bilateral commitment and dependence on the relationship increase (Morgan & Hunt, 1994). In business relationships, commitment can be classified into calculative (economic and rational), normative (perceived obligation) and affective (social and emotional) (Ozkan-Tektas, 2014; Padgett, Hopkins & Williams, 2020). Similar to Morgan and Hunt (1994), this study investigated general commitment, which neutrally assessed commitment. From a SET viewpoint, customer commitment is determined by the degree of economic and social benefits received in the B2B relationship (Lambe *et al.,* 2001; Ozkan-Tektas, 2014).

End-users who perceive benefiting from a B2B relationship will likely view that relationship as imperative to maintain (Lambe *et al.,* 2001). Commitment is a strategic component of B2B relationships in various industries (Theron, Terblanche & Boshoff, 2013). Competitors' offerings do not sway committed customers; they are prepared to pay more for products or services (Menidjel, Benhabib & Bilgihan, 2017). The relationship between commitment and attitude towards the supplier has been scarcely examined. Mpinganjira, Roberts-Lombard and Svensson (2017), Park and Park (2013) and Roberts-Lombard *et al.* (2019) established that commitment positively influences relationship satisfaction. Thus, the commitment of business end-users can be expected to positively influence their attitude towards the supplier of paperless technology.

3.12.3 Trust as a factor influencing commitment

Over time, B2B relations evolve into trust and loyalty-based commitments that influence the attitudes of stakeholders (Morgan & Hunt, 1994). Trust has a pivotal role in enabling B2B transactions, as exchange partners act without fear of the other party abusing their power, thereby assisting in maintaining effective long-term committed and cooperative relationships (Zafari *et al*., 2020). For Yang *et al.* (2017), trust in B2B relationships primarily affects the perceived risk in the relationship, resulting in changed levels of willingness to continue with the relationship. Establishing trust in B2B relationships ensures increased satisfaction, resulting in the long-term continuation of the relationship and stronger coordination (Roberts-Lombard *et al.* 2017). Saleh, Ali and Mavondo (2014)

and Wu, Chen and Chen (2015) have found that trust in B2B relationships is positively associated with commitment. Consequently, trust can be expected to positively influence commitment.

3.13 'Reasons against' influencing attitude towards the supplier

In the context of the current study, "reasons against" attitude towards the supplier included negative perceptions of the supplier emanating from the end-users' perceptions of the B2B relationship. Negative perceptions of the B2B relationship result in negative attitudes of the business end-users' attitudes toward the supplier. Perceptions of supplier opportunism and distrust are advanced as the vital factors negatively influencing the end-users' attitudes toward the supplier.

3.13.1 Supplier opportunism

For this study, opportunism is the gradation to which end-users perceive that the supplier exploits situations (Williamson, 1975). Opportunism includes breach of contract, cutting corners, cover-ups, withholding information, false promises and threats, misrepresenting data and confusing transactions (Williamson, 2005). Kelly, Wagner and Ramsay (2018) classified opportunism into overt opportunism (e.g., increasing prices without providing any justification) and opportunism with guile (e.g., increasing prices based on falsified information). Such opportunistic behaviour by the supplier will cause customers to end the B2B relationship and seek alternative solutions (Pathak, Ashok & Tan, 2020). End-users will likely perceive opportunism as a betrayal of trust invested in the B2B relationship, causing deterioration of the relationship and negative reactions (Ganesan, Brown, Mariadoss & Ho, 2010).

Customers can be opportunistic (Hawkins, Pohlen & Prybutok, 2013), but this study focused on the influence of supplier opportunism on attitude towards the supplier. Despite the shortage of studies exploring the influence of opportunism on attitude towards the supplier, supplier opportunism is postulated to have a detrimental influence on B2B relational constructs analogous to attitude towards the supplier. Opportunism was found to have a negative influence on relationship strength (Ozkan-Tektas, 2014), non-economic satisfaction (Høgevold *et al.*, 2020) and relationship satisfaction (Jeong & Oh, 2017; Wang & Yang, 2013). Limited studies have concluded that opportunism had an

insignificant influence on the evaluation of the B2B relationship, for example, Jyh-Liang *et al.* (2022). Therefore, perceptions of supplier opportunism can be expected to negatively impact the end-users' attitudes toward the supplier of paperless technology.

3.13.2 Distrust

In this study, distrust is the level to which end-users consider with confidence that the supplier does not have characteristics beneficial to their organisation, as adapted from McKnight *et al*. (2002). Although distrust and trust are opposite words, neuroscience shows that the concepts of distrust and trust involve distinct cognitions (Lee, Ahn, Song & Ahn, 2018). Distrust is related to suspicion, fear of loss, scepticism, wariness, cynicism, vigilance, and watchfulness, in addition to the absence of trust (Kramer, 1999). Along with relationship discontinuance intentions, distrust causes customers to monitor the activities of the supplier and apply contractual governance, which can be costly and time-consuming (Huang & Wilkinson, 2013; Oomsels, Callens, Vanschoenwinkel & Bouckaert, 2019).

The future behaviour of the supplier in B2B relationships can be anticipated based on previous actions (Pinnington & Scanlon, 2009). Incompetence, the supply of services and products that are incongruent with the end-user needs, causes the end-user to distrust the supplier, questioning their agenda, integrity, and capabilities (Lee *et al.,* 2018). The consequences of distrust are usually negative in organisational settings (Guo, Lumineau & Lewicki, 2017; Seppanen & Blomqvist, 2006). Unresolved conflicts that cause distrust can evolve into negative attitudes towards the supplier. A study in a B2C context by So, Oh and Min (2018) found that distrust negatively influences and predicts overall attitude toward the supplier. Thus, it can be hypothesised that distrust will negatively affect the end-users' attitudes toward the supplier.

3.14 Goal congruence as a factor influencing attitude toward the supplier

For purposes of this study, goal congruence is the gradation to which end-users believe that the service provider has shared beliefs with their organisation, about what goals and behaviours are correct, important and appropriate (Homans, 1958). Values (or beliefs) include a person's subjective probability judgements or cognitive patterns that result in appropriate anticipated behaviour (Fishbein & Ajzen, 1975; Wang, Li, Ross & Craighead,

2013). Belief systems are critical in guiding an individual's information processing, judgement, evaluation, social coordination and behaviour (Gries, Mueller & Jost, 2022). In the B2B context, goal congruence is the commonality of interests between the selling firm and the buying company (Koponen, Julkunen & Asai, 2019). The congruence of goals requires mutual understanding, vision and approach to accomplishing goals (Cuevas, Julkunen & Gabrielsson, 2015).

The congruence of values influences B2B relationships positively (Morgan & Hunt, 1994). However, there is a scarcity of studies examining the influence of goal congruence on attitude towards the supplier. When the end-user perceives that a supplier shares a common interest, he/she will conceivably develop a favourable attitude towards that supplier. Akman and Yörür (2012) found that cooperation to achieve common goals positively influences relationship satisfaction. Vieira, Winklhofer and Ennew (2014) also established that mutual goals positively influence satisfaction in B2B relationships. Yen and Barnes (2011) concluded that coordination to achieve mutual goals positively impacted satisfaction in B2B relationships. Therefore, perceptions of goal congruence by business end-users of the B2B relationship can be expected to positively influence their attitude towards the supplier.

3.14.1 Goal congruence as a factor influencing 'reasons for' attitude towards the supplier

'Reasons for' attitude towards the supplier can be expected to be positively influenced by goal congruence. This means that goal congruence in B2B relationships positively influences commitment and trust. A favourable atmosphere guides B2B relationships to beneficial and high levels of trust and commitment (Zafari *et al.,* 2020), which are higher-order factors of B2B relationship quality (Roberts-Lombard *et al.,* 2019).

Goal congruence → trust

Goal congruence is a prerequisite for establishing trust (Cuevas *et al.,* 2015). Doney and Cannon (1997) added that trust in B2B relationships is developed through i) transference processes (one party to another), ii) intentionality processes (determination of intentions), iii) capability processes (credibility determination), iv) prediction processes (predicting

behaviour), and v) calculative processes (cost-benefit analysis). Changes in trust are contingent on the outcomes of previous actions, experiences and interactions taking place over time within the B2B relationships (Dwyer *et al.,* 1987; Huang & Wilkinson, 2013; Zafari *et al.,* 2020). Perceptions that a supplier has common interests (e.g., intentions, capability, predictability, benefits) are positive congruency perceptions that evolve into trust (Morgan & Hunt, 1994; Schoorman, Mayer & Davis, 2007). Chen, Wu, Chien and Shiah (2014), Hessling, Åsberg and Roxenhall (2018) and Vieira *et al.* (2014) found that shared values were positively correlated to trust in B2B relationships. Therefore, perceptions of goal congruence can be expected to positively influence perceptions of trust.

Goal congruence → Commitment

Perceptions of goal congruence can lead to committing resources to develop and maintain the B2B relationship as interactions go beyond contractual agreements (Lages Lancastre & Lages, 2008). For Dwyer *et al.* (1987), commitment resembles the highest status of B2B relationship closeness. From the principles of the SET, goal congruence directs the activities of businesses in compatible directions, thereby increasing mutual commitment in the B2B relationship (Tran *et al.*, 2022). Eren Erdoğmuş, Yalçın and Bopieva (2012), Morgan and Hunt (1994) and Theron, Terblanche and Boshoff (2008) found that shared values increase commitment in B2B relationships. Thus, perceptions of goal congruence can be expected to positively influence the end-users' commitment to the B2B relationship.

3.14.2 Goal congruence as a factor influencing 'reasons against' attitude towards the supplier

Goal congruence can be expected to inversely influence the 'reasons against' attitude towards the supplier for the end-users to maintain cognitive consonance. Shared values are inversely related to supplier misbehaviour (Wang *et al.*, 2013). Therefore, perceptions of goal congruence can be expected to reduce distrust and perceptions of opportunism.

Goal congruence → opportunism

Goal congruence facilitates cooperative behaviour and reduces deceptive behaviour (Villena, Revilla & Choi, 2011). Once goal congruence is achieved, ex-post opportunism is low (Jap & Anderson, 2003; Villena *et al.,* 2011; Wang *et al.,* 2013). Although supplier opportunism can be managed through careful selection of partners, socialisation, legal agreements, incentivising, and monitoring (Wathne & Heide, 2000), opportunism management can be costly (Huang & Wilkinson, 2013; Oomsels *et al.,* 2019). Yen and Barnes (2011) established that coordination to achieve mutual goals negatively impacted opportunism in B2B relationships. Tran *et al.* (2022) found that goal congruence reduces opportunism. Therefore, perceptions of goal congruence can be expected to be inversely related to perceptions of supplier opportunism.

Goal congruence → distrust

Differing goals and views in the B2B dyad create underlying tensions in the relationships (Murfield & Esper, 2016), causing supplier distrust. Therefore, distrust symbolises the absence of goal congruence (Sitkin & Roth, 1993; McKnight *et al.,* 2002). For example, the supply of incongruent solutions by the vendor (Cowan *et al.,* 2015) indicates the absence of goal congruence, which causes distrust. Hsiao (2003) stated that value congruence negatively impacts distrust. Suk-Joo, Ahn, Song and Ahn (2018) found that structural assurance (guarantees put in place to ensure the achievement of goals in the relationship) negatively impacts distrust in an intermediary supplier. In a study by McKnight *et al.* (2017), service outcome quality (an assessment of the fulfillment of strategic goals) was found to negatively influence distrusting beliefs. Therefore, perceptions of goal congruence by business end-users can be expected to negatively influence their distrust of the supplier.

3.15 Implied mediations

Mediation is when a dependent variable Y is indirectly affected by an independent variable X through another variable or several other variables (Demming, Jahn, & Boztuğ, 2017; Sarstedt, Hair, Nitzl, Ringle & Howard, 2020). Although not the focus of this study, there were some implied mediations in the proposed model. Firstly, attitude towards the technology mediates the effect of attitude towards the supplier on continuance use intention. The proposed model also showed that the influence of values (goal congruence,

technology compatibility) on their respective attitudinal dimensions is mediated by relational and technological reasons, respectively. Lastly, the 'reasons for' have relationships to the extent where commitment mediates the influence of trust on attitude towards the supplier, while the influence of perceived ease of use on attitude towards the technology is mediated by perceived usefulness.

3.16 Summary of hypothesised paths and implied mediations

Table 3-2 summarises the hypothesised paths from the literature review and the implied mediations. As discussed in the preceding sections, 23 direct influences were hypothesised and 13 mediations were implied.

Table 3-2: Summary of hypothesised paths and mediations

Hypothesised paths
Attitude towards technology positively influences continuance use intention.
Perceived ease of use positively influences attitudes toward technology.
Perceived usefulness positively influences attitudes toward technology.
Perceived ease of use positively influences perceived usefulness.
Reliability shortcomings negatively influence attitudes toward technology.
Capability shortcomings negatively influence attitudes toward technology.
Compatibility positively influences attitudes toward technology.
Compatibility positively influences perceived ease of use.
Compatibility positively influences perceived usefulness.
Compatibility negatively influences reliability shortcomings.
Compatibility negatively influences capability shortcomings.
Attitude towards suppliers positively influences continuance use intention.
Attitude towards the supplier positively influences attitude towards the technology.
Trust positively influences attitudes toward the supplier.
Trust positively influences commitment.
Commitment positively influences the attitude toward the supplier.
Distrust negatively influences attitudes toward the supplier.
Opportunism negatively influences attitudes toward the supplier.

Goal congruence positively influences attitudes toward the supplier.
Goal congruence positively influences trust.
Goal congruence positively influences commitment.
Goal congruence negatively influences distrust.
Goal congruence negatively influences opportunism.
Implied mediations on the hypothesised paths
Attitudes toward the technology mediate the influence of attitudes toward the supplier on continuance use intention.
Commitment mediates the influence of goal congruence on attitudes toward the supplier.
Distrust mediates the influence of goal congruence on attitude towards the supplier.
Opportunism mediates the influence of goal congruence on attitudes toward the supplier.
Trust mediates the influence of goal congruence on attitudes toward the supplier.
Commitment mediates the influence of trust on attitudes toward the supplier.
Capability shortcomings mediate the influence of compatibility on attitudes toward the technology.
Perceived ease of use mediates the influence of compatibility on attitudes toward the technology.
Perceived usefulness mediates the influence of compatibility on attitudes toward the technology.
Reliability shortcomings mediate the influence of compatibility on attitudes toward the technology.
Perceived usefulness mediates the influence of perceived ease of use on attitudes toward the technology.

3.17 Conclusion

Chapter 3 identified theories from the literature that can be used to investigate business end-users' continuance use of paperless technology. The theories were used to develop

a conceptual model of business end-users' paperless technology continuance use intention. Attitude towards the supplier and attitude towards the technology were proposed as direct factors influencing the end-users' continuance use intention. The key technological and B2B relational antecedents of both attitudinal dimensions were discussed in line with the identified theories. A summary of the hypothesised paths and implied mediations was also provided in this chapter. The next chapter describes the research method that was used within the context of the study.

4 Chapter 4: Methodology

4.1 Introduction

Research methodology refers to the selection of rules or methods by which a specific study is conducted, including the principles, values and theories underpinning it (Willis, 2007; Somekh & Lewin, 2011). Research methods are tools or procedures used for collecting and analysing data (Rahi, 2017). Data collection and analysis techniques determine how a research methodology is categorised (Daniel, 2022). From several research approaches that can be applied to fulfil research objectives, this study applied the quantitative cross-sectional design to assess the developed model and achieve the objectives of this study. This chapter describes and discusses the adopted research design, target population, sampling methods and sample size, data collection, data analysis, ethical considerations and limitations of the methodology.

The 'research onion' developed by Saunders, Lewis and Thornhill (2019) is widely used as a guideline for designing the research methodology of studies in different disciplines (Alturki, 2021). For Zolfagharian, Walrave, Raven and Romme (2019), the research onion provides a systematic procedure for developing a justifiable and coherent research design. Thus, researchers peel the 'research onion' to its centre, revealing layers of implication which enable them to understand any phenomenon they investigate (Saunders *et al.*, 2019). The different 'onion layers' indicate which aspects must be addressed sequentially, starting from the outer layer (Mardiana, 2020; Melnikovas, 2018; Saunders *et al.*, 2019), as described and discussed below.

4.2 Layers of research

According to Saunders *et al.* (2019), the 'layers' of research are philosophy, approach, methodical choice, strategy(ies), time, techniques and procedures, as displayed in Figure 4-1. Research studies increase knowledge on an issue or topic through a systematic truth-seeking process of collecting and analysing data (Hair, Page & Brunsveld, 2020). The philosophy of a research study describes a system of assumptions and beliefs about the expansion of knowledge (Saunders *et al.,* 2019).

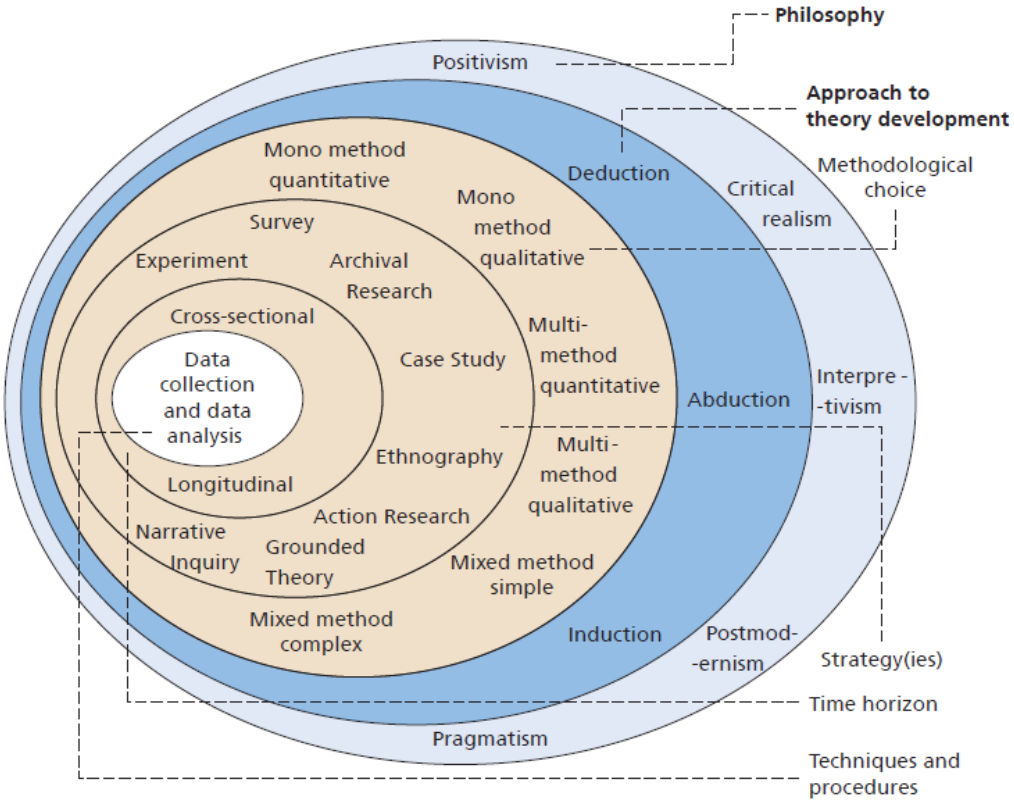

Figure 4-1: *The layers (onion) of research*

Source: Saunders *et al.* (2019:130)

Academics continuously improve on what is knowledge (ontology), how knowledge is attained (epistemology), and the research processes used (methodology) (Allmark & Machaczek, 2018; Baškarada & Koronios, 2018; McGregor, 2018). Besides ontological and epistemological assumptions, Saunders *et al.* (2019) found that axiological assumptions (researcher values) also influence the research process. Research designs can be either empirical (systematic collection and analysis of original data) or non-empirical (Dan, 2018; Fidelis, 2017), depending on the philosophy applied.

4.2.1 Research philosophies

Rationalism and empiricism have been the dominant research philosophies, with some contemporary researchers combining these two fundamental philosophies (Khaldi, 2017). Empiricists (inductivists) use a constructivist epistemological approach, and rationalists (deductivists) use a positivist epistemological approach (McGregor, 2018). Mixed-method researchers use a pragmatist epistemological approach (McGregor, 2018). Thus, the

main empirical research philosophies are positivism, constructivism (interpretivism) and pragmatism (Niraula, 2019; Rahi, 2017).

Positivism values objectivity, and establishing relationship(s) is based on empiricism, asserting that knowledge is gained scientifically (Niraula, 2019; Rahi, 2017; Ryan, 2018). Positivists believe in the existence of external knowledge and that reality can be understood deductively (McGregor, 2018; Ryan, 2018). Positivistic designs are quantitative, collecting data numerically, which requires large samples to be valid (Mohajan, 2020; Ryan, 2018).

Constructivism (interpretivism) applies the interpretive paradigm, which values a profound understanding of concepts while exploring the world in which one lives (Antwi & Hamza, 2015; Bogna, Raineri & Dell, 2020). Interpretivists believe that reality comprises subjective personal experiences of one's external world; thus, reality is constructed socially (Antwi & Hamza, 2015). The interpretive paradigm is qualitative and generally requires smaller sample sizes (Boddy, 2016). Data collection is usually done through purposive interviews that are discontinued when data saturation is reached (Mwita, 2022). The qualitative paradigm is usually questioned in terms of its replicability, subjectivity, generalisability, and transparency (Plano Clark & Creswell, 2015).

Pragmatists amalgamate principles of constructivism and positivism (Venkatesh, Brown & Sullivan, 2016). Pragmatism (also referred to as the abductive approach) allows the researcher flexibility by not being limited to a specific paradigm or philosophy (Brierley, 2017; Mitchell, 2018). Rather than deduction (operating from theory to data) or induction (operating from data to theory), pragmatism moves either way, thereby combining induction and deduction (Mitchell, 2018). This mixed-method research approach requires at least two phases of research, expansion of research skills, more effort, time and money (Regnault, Willgoss & Barbic, 2018).

While academics increasingly recognised postmodernism in the 1950s (Huyssen, 1986), critical realism was developed in the 1980s (Bhaskar, 2015; Fletcher, 2017). Critical realism involves retroductive, detailed, historically positioned analysis of emerging agencies and pre-existing structures, using a wide range of data types and methods

depending on the phenomenon being investigated (Saunders *et al.,* 2019). Postmodernism is characteristically deconstructive, assigning value to multiple meanings, using detailed investigations of absences, silences, and anomalies from a wide range of data types and usually applying qualitative analysis methods (Saunders *et al.,* 2019).

This study was empirical to ensure that data collected from respondents (Dan, 2018; Fidelis, 2017) could be used to achieve the primary objective of this study. As specified in the prologue, the primary objective of this study was to identify how business end-users' perceptions of office paperless technology and the buyer-supplier relationship influence their continuance use of paperless technology. A realist ontology was used (i.e., the existence of an objective and real-world was assumed, whereby knowledge is real, complex and acquirable) (Antwi & Hamza, 2015). A deductive approach was employed in this research; thus, the theory was tested in the study (Mitchell, 2018). An objectivist epistemological orientation was used, thereby applying a rationalism (positivistic) philosophical stance (Saunders *et al.,* 2019) to achieve the objective of this study.

4.2.2 Methodical choices

As discussed above, empirical studies mainly employ quantitative, qualitative or mixed methods. Each method has specific advantages and disadvantages (Counsell & Harlow 2017). This study applied the quantitative method to assess the statistical significance of the theoretical paths in the developed conceptual model. The quantitative method was chosen because it can be used to statistically determine the significance of the theoretical paths of the developed conceptual model (Counsell & Harlow 2017).

4.2.2.1 Quantitative methods

Quantitative research quantifies and analyses variables numerically to obtain results (Apuke, 2017; Mohajan, 2020). Quantitative studies can be mono (applying a single approach) or multi (applying more than a single approach within the quantitative paradigm) (Salmons, 2015). Data analysis in quantitative studies is done numerically using particular statistical techniques to provide answers to how much, who, where, what, when, how and how many (Apuke, 2017; Mohajan, 2020). Studies applying quantitative methods can be classified into experimental research, descriptive research, causal-comparative research, survey research, and correlational research (Taherdoost, 2022).

Quantitative research can be advantageous in that it enables generalisation of results (Eyisi, 2016), validation of theories (Haig, 2018), replicability (Maarouf, 2019), testing of hypotheses (Haig, 2018), highlighting of differences and changes (Basias & Pollalis, 2018), use of study groups and control groups (Eyisi, 2016) and quantitative prediction (Queirós *et al.*, 2017). Regarding axiology, quantitative results are comparatively independent of the research conductor biases (Saunders *et al.,* 2019). While able to accommodate substantial numbers of populations and samples (Queirós *et al.,* 2017), quantitative methods require fewer resources (e.g., recorders and transcribers required in some qualitative studies) and time in the processes of data collection and analysis (Eyisi, 2016). Shortcomings of quantitative methods are that the focus on testing theories is prone to confirmation bias (Eyisi, 2016), results are limited to pre-determined constructs, theories and categories (Khaldi, 2017), social reality may be disregarded (Hair *et al.,* 2020) and settings are controlled while experiences of respondents can be overlooked (Khaldi, 2017). Despite the key limitations, Basias and Pollalis (2018) believe that quantitative methods are more suitable when i) testing theory and/or verifying hypotheses, ii) processing and analysing large amounts of quantitative data, iii) there is no uncertainty regarding the phenomena being investigated, iv) the investigation can be conducted using quantifiable instruments like questionnaires (simplified questions and short answers).

4.2.2.2 Qualitative methods

Although medieval philosophers of scholasticism had distinguished *quanta* (the quantities) from *qualia* (qualities of things) decades ago (Brinkmann, Jacobsen & Kristiansen, 2014), psychologists like Paul Felix Lazars Feld advanced modern understandings of qualitative methods in the 1920s and 1930s (Bailey, 2014). Contemporary qualitative researchers seek a deeper understanding of phenomena from individuals' personal accounts, activities and observed behaviours (Mohajan, 2018). Some qualitative research studies can be historical, based on secondary data and verification of the facts (Witkowski & Jones, 2006). Qualitative studies can also be mono (applying a single approach) or multi (applying more than a single approach within the quantitative paradigm) (Salmons, 2015). Researchers applying the qualitative methods

use an interpretive paradigm and tend to be unobtrusive, non-manipulative and non-controlling (Antwi & Hamza, 2015).

Qualitative research can be advantageous in that it enables a detailed understanding of a new or complex topic from participants' perceptions (Denzin & Lincoln, 2018), formulation of theories and hypotheses (e.g., grounded theory) (Antwi & Hamza, 2015), the initial identification of the effects and causes of specific phenomena (Denzin & Lincoln, 2018) and validation of results from investigating limited units (Bengtsson, 2016). Shortcomings of quantitative methods are that results are not suitable for forecasting, collection and analysis of data (primary and secondary) are laborious and time-consuming (Rahman, 2017), theories or hypotheses cannot be tested (Basias & Pollalis, 2018), and credibility of results is comparatively lower (Rahman, 2017). Guenther and Falk (2019) argue that generalisation in qualitative can be achieved through rigorous and defensible research design (such as a procedure of generalisation cycles). However, many authors (e.g., Plano Clark & Creswell, 2015; Saunders *et al.,* 2019, Denzin & Lincoln, 2018) found that the results of qualitative studies cannot be generalised. According to Saunders *et al.* (2019), researcher bias can influence qualitative results due to active participation in the data collection, interpretation and analysis. Despite the key limitations, Basias and Pollalis (2018) believe that qualitative methods are more suitable when i) seeking an interpretation, ii) investigating relatively new phenomena, iii) seeking deeper answers (how, what, when, where), and iv) there is uncertainty regarding the phenomena being investigated.

4.2.2.3 Mixed methods

Mixed methods are the third key methodological paradigm, following quantitative and qualitative methods (Tashakkori, Johnson & Teddlie, 2020). Attributed to the work of academics such as Campbell and Fiske (1959), mixed methods were formed in the 1950s (Creswell & Plano Clark, 2011) and popularised in the 1980s (Maxwell, 2016; Molina-Azorin, 2016). Researchers applying this methodical choice combine principles of quantitative and qualitative methods (Molina-Azorin, 2016). According to Venkatesh, Brown and Bala (2013), additional considerations of mixed methods in research, which are not present in quantitative or qualitative studies, include the following:

1. Development of multiple-research instruments.
2. Specification of mixing strategies.
3. Specification of purpose(s) of each research method (diversity, complementarity, developmental, expansion, corroboration, confirmation, compensation, completeness).
4. Multiple strands/phases of research.
5. Time orientation (sequential or concurrent).
6. The priority assigned to each methodological approach (qualitative-dominant, quantitative-dominant, or equivalent status).
7. Development of multiple sampling methods.
8. Development of multiple data collection strategies.
9. Use of multiple data analysis strategies.
10. Additional validity issues (inference quality).

The mixed-methods approach enables synergistic utilisation of data (Taherdoost, 2022) if it is suitable to investigate a particular phenomenon (Almalki, 2016). However, some authors argue that it is not appropriate to combine different methods that are based on fundamentally dissimilar paradigmatic assumptions (Denzin & Lincoln, 2018). Key advantages of using mixed methods are that more accurate inferences are provided, as methods complement each other (Maarouf, 2019), researchers can flexibly answer diversely formulated research questions within a single study (Schoonenboom & Johnson, 2017), contextual hypotheses can be developed and tested within a single study (Creswell & Plano Clark, 2011). Moreover, predictions can be made by uncovering relationships between variables, and underlying explanations are availed in mixed-methods studies (Hurmerinta-Peltomäki & Nummela, 2006; Schoonenboom & Johnson, 2017). Key disadvantages of using mixed methods are that they require considerable expertise and effort (Almalki, 2016; Regnault *et al*., 2018), they are time-consuming and more expensive (Creswell & Plano Clark, 2011; Molina-Azorin, 2016), results from the two methods are frequently challenging to integrate (Almalki, 2016) and researchers may become rigid and disregard other methods (Molina-Azorin, 2016). Additionally, many

researchers do not have adequate training to apply the mixed-methods approach (McKim, 2017).

4.2.3 Research designs (strategies)

Research designs can be descriptive, observational, longitudinal, historical, exploratory, experimental, cross-sectional, cohort, causal and case studies (Pawar, 2020). Descriptive designs describe the conditions or variables of a phenomenon to obtain information on its characteristics and existing status (Nassaji, 2015). The observational design is used when researchers observe participants' behaviour in a natural setting without influencing the setting (Thiese, 2014). Longitudinal studies make repeated observations by studying the same sample over time (Caruana, Roman, Hernandez-Sanchez & Solli, 2015). Historical research designs defend or refute a hypothesis by collecting, verifying and synthesising historical data (Buckley, 2016). When there are few or no prior studies to draw on, a research problem is investigated using an exploratory design (Kumar, 2019) in order to clarify the nature of a new phenomenon, gaining familiarity and insight for further investigation (Sekaran & Bougie, 2019; Singh, 2021). In-depth data gathered from numerous sources is used in the case study approach to examine contemporary bounded phenomena and detail the case description(s) and case theme(s) (Rashid, Rashid, Warraich, Sabir & Waseem, 2019). Cross-sectional designs are characterised by gathering and analysing applicable data at a particular time or within a certain short period of time (Kesmodel, 2018). Cohort designs are specific longitudinal designs that investigate a cohort (individuals with a characteristic in common), conducting cross-sectional evaluations at different intervals (Wang & Kattan, 2020). Causal studies analyse phenomena to identify causality between variables (Hair *et al.,* 2020). Experimental designs are specific forms of causal designs with an experimental group and a control group evaluated on the identical dependent variable (Plano Clark & Creswell, 2015).

4.2.4 Current study research design

This study applied a quantitative and cross-sectional research design. Business research aims to improve decision-making (Hair *et al.,* 2020). Because quantitative methodologies are replicable and objective (Maarouf, 2019), they can provide meaningful solutions to specific business problems (Hair *et al.,* 2020; Verma & Sharma, 2017). Quantitative methods are powerful when testing hypotheses (Barroga & Matanguihan, 2022). Thus, the quantitative method was utilised to gauge the significance of the hypothesised paths in the developed conceptual model (Counsell & Harlow 2017).

There is limited data on data on the transformation towards digital technologies (Alloghani *et al.,* 2022; Šuleř & Machová, 2020), such as the continuance use of paperless technology by business end-users. Due to the shortage of empirical data on the continuance use of paperless technology by business end-users, a survey was most appropriate for this study (Basias & Pollalis, 2018; Dubey, Kothari & Awari, 2017). Surveys enable the collection of quantifiable primary data (Taherdoost, 2021). According to Kim, Smith, Park and Koch (2006), surveys have been useful in social science research for investigating aspects such as attitude, values, intention and behaviour. Surveys can also produce quantifiable data from large populations suitable for hypothesis testing (Nardi, 2018).

4.2.5 Time scopes and techniques

Time scopes (or horizons) outline the duration of the research study (Saunders *et al.,* 2019). Data collection at a particular point in time can be referred to as short-term or cross-sectional studies (Melnikovas, 2018; Saunders *et al.,* 2019). Collecting data repetitively over extended periods to compare data is referred to as longitudinal studies (Melnikovas, 2018; Saunders *et al.,* 2019). Due to time constraints, this study was cross-sectional. In the context of the ‘research onion’, procedures and techniques refer to various choices made by the researcher, such as the type of data collected (empirical or secondary), sampling techniques, data collection procedures and data analysis methods (Melnikovas, 2018; Saunders *et al.,* 2019).

4.3 Population and sampling

The whole set of cases, individuals or objects from which the research conductor is focusing the scientific query forms the population of the respective study (Bhardwaj, 2019; Divisi, Di Leonardo, Zaccagna & Crisci, 2017; Kumar, 2019). In some cases, researchers lack the resources or time to study the whole population, resulting in selecting fewer objects to examine (referred to as sampling), decreasing the initially targeted number of objects (Bhardwaj, 2019; Kumar, 2019). The population and sampling techniques for this study are discussed below.

4.3.1 Population

A service company that is a business unit of an office automation organisation in South Africa provided permission to have its customers surveyed. The office automation organisation has more than 50 branches nationally. The population for this study comprised all the MFP end-users with email addresses registered with the organisation (total number 24667), as displayed in Table 4-1.

Table 4-1: *Population of the study*

Region	MFP end-users whose email addresses are registered	MFP end-users whose email addresses are not registered
Eastern Cape	1712	67
Free State	385	0
Gauteng (includes North West)	12601	432
Kwazulu-Natal	4188	0
Limpopo	487	23
Mpumalanga	646	34
Western Cape (includes Northern Cape)	4648	173
Total	24667	729

4.3.2 Sampling

Sampling methods can be broadly classified as random (probabilistic) and non-random (non-probabilistic) (Hair *et al.,* 2020; McGivern, 2013; Saunders *et al.,* 2019). When applying probability sampling, all population members have an identical likelihood of being chosen (Bhardwaj, 2019; Etikan & Bala, 2017). In non-probability sampling, the

sample is selected from the population by non-random means (Bhardwaj, 2019; Etikan & Bala, 2017). Assumptions of sampling for quantitative research are concerned with statistical power and distribution, while those for qualitative research are concerned with specific and rich information (Davoudi, Nayeri, Raiesifar, Poortaghi & Ahmadian, 2017).

Qualitative studies mainly apply non-probability sampling methods, classified as purposive, convenience, quota, snowball and theoretical sampling (Etikan & Bala 2017). Purposive (or judgement) sampling prioritises the qualities of the informant, convenience sampling prioritises accessibility, snowball sampling recruits future participants from information provided by existing participants, and quota sampling prioritises stratification (Bhardwaj, 2019). Theoretical sampling is used in grounded theory studies whereby data is collected and analysed simultaneously to generate a theory, determining the sample in the process (Davoudi *et al.,* 2017).

Quantitative designs mostly employ probability sampling techniques (Nardi, 2018). Simple random, cluster (multistages), stratified (subgroups), and systematic (interval) sampling are the main probability sampling techniques (Etikan & Bala, 2017; Omair, 2014). Probability sampling improves the representativeness of the population, though it is not perfect (Bhardwaj, 2019; Etikan & Bala, 2017). A census studies the entire reference population (Martinez-Mesa *et al.,* 2016). When all information is easily accessible and available, conducting a census rather than studying a sample would be better (Martinez-Mesa *et al.,* 2016). Besides being challenging to collect data from the whole population, it can cost more and consume more time to collect than a sample (Sekaran & Bougie, 2019). The current study's design made it possible to quickly and inexpensively gather data online, and even as data volume increases, quantitative data analysis is still simple (Hazra, 2017; Sekaran & Bougie, 2019). Consequently, the whole population (excluding less than 5% of the MFP end-users whose email addresses were not registered with the supplier organisation) was targeted in this study.

Scholars such as Hazra (2017) and Kock and Hadaya (2018) have proposed different required sample sizes based on several conditions. This study applied structural equation modelling (SEM) to analyse the data (see Section 4.5). The minimum required sample was determined by the data analysis method. Although several studies have suggested

different minimum sample sizes, the proportion of the required sample (N) to the greatest amount of structural paths linked to a variable (*q*) is commonly used in SEM (Deng, Yang & Marcoulides, 2018). A minimum ratio of 10:1 is acceptable (Collier, 2020), but ratios above 20:1 are recommended (Kline, 2016). In the conceptual model of this study, *q* was 6; thus, using the recommendation of Kline (2016), the smallest necessary sample size to apply PLS-SEM is 120, which can, however, be susceptible to sampling and non-sampling errors.

4.3.2.1 Sampling errors

Sampling errors are the statistical inconsistency that arises when a part of the population is surveyed, causing the results not to be representative of the entire population (Dillman, Smyth & Christian, 2014). A census has no sampling errors, enabling benchmark data to be obtained for prospective investigations and availing information about the population's sub-groups (Khanal, 2017). This study conducted a census (all end-users whose email addresses were registered with the supplier organisation were targeted). Therefore, sampling error was of low concern in the study.

4.3.2.2 Non-sampling errors

According to Dillman *et al.* (2014) and Phung, Hardeweg, Praneetvatakul and Waibel (2015), the key categories of non-sampling errors include non-response, measurement and coverage. The coverage error occurs when the sampling structure (where the sample is drawn) fails to properly cover the population (Amaya, Biemer & Kinyon, 2020; Phung *et al.,* 2015). Under-coverage errors fail to include essential sampling units, while over-coverage includes untargeted respondents in the sample Phung *et al. (*2015). Thus, coverage errors occur during the sampling design stage due to inadequate information regarding the possibility of including a unit or subject in the sample (Vicente & Reis, 2013). Respondents in this study had access to the Internet (more than 95% had emails) and were contacted using emails in a service provider's database. Consequently, the coverage error was minimal (Dillman *et al.,* 2014).

Measurement errors occur when the collected data are incorrect or different from the real values of the sample units caused by a lack of experienced and trained field enumerators, inappropriate survey instruments and errors in the processing of data (Phung *et al*., 2015). Processing errors comprise coding, data entry, imputation and editing errors (Amaya *et al*., 2020), which are minimal in statistical analysis, especially when survey websites and statistical analysis software are used (de Leeuw, Hox & Dillman, 2008; Saleh & Bista, 2017). Section 4.7 details how instrument validity and reliability were assessed. The QuestionPro website was used to collect the data in this research, and SPSS and SmartPLS software were used to analyse the data gathered (see section 4.5). Therefore, measurement errors were minimal (Dillman *et al.,* 2014).

Non-response errors occur when the presence of non-respondents causes poor representativeness because respondents (final sample) have significant differences from the population (Assael & Keon, 1982; Devi, Azfar, & Tanwar, 2018), resulting in biased estimates (Khanal, 2017). Non-response errors can also be induced by a subject's failure to respond to a certain survey item (Devi *et al*., 2018; Khanal, 2017). Although non-response errors are challenging to eliminate (Dillman *et al.,* 2014), methods that improve response rates were used in this study, which includes a short and concise questionnaire, close-ended questions, communication to the customer (end-users) through the supplier, assurance of anonymity and confidentiality, provision of research information and two reminders (Saleh & Bista, 2017). In terms of communication, an invitation, pre-notification and reminders (three) were sent using emails, as Sammut, Griscti and Norman (2021) recommended. Response rates are contextual (type of study, respondent type, organisational hierarchy), and low or high rates do not indicate biased or unbiased responses, respectively (Anseel, Lievens, Schollaert & Choragwicka, 2010). Response rates above 35% are considered good, but responses as low as 1% are common in business studies (Mellahi & Harris, 2016).

4.4 Data collection

Data collection in this study could have been done using the Internet (online/email), postal mail, telephone or mixed-mode surveys (Dillman *et al.,* 2014). An online data cumulation method was utilised for its advantages like promptness and cost efficiency (Lefever, Dal

& Matthiasdottir, 2007), although criticised for low response rates (Saleh & Bista, 2017). A link generated on a survey website (QuestionPro) was sent to the respondents. QuestionPro has a free service option with ready-made templates and pro-account upgrades (QuestionPro, 2022). According to Luaran (2014), the QuestionPro online survey tools are social media-friendly, with a customisable interface and various survey-sharing options (e.g., emails). More than 95% of the population have email addresses, making it convenient and less expensive to use the online method (Helms, Gardner & Mcinnes, 2017).

A questionnaire is a set of questions aimed at collecting data from respondents (Singh, 2017). Most questionnaires for quantitative research use scales to assess latent constructs (Mellinger & Hanson, 2020). Scales used to collect quantitative data might be nominal, ordinal, interval or ratio (Kumar, 2019). The most popular scale construction approach is the Likert method, owing to its simplicity and development of relatively dependable attitude measurement procedures (Gure, 2015; Mehra, 2017). The Likert scale (used for latent variable items in this study) is also frequently used and fundamental in social sciences and marketing research (Awang, Afthanorhan & Mamat, 2016; Joshi, Kale, Chandel & Pal, 2015).

In Likert scales, the respondents respond to each item statement by agreeing or disagreeing (Likert, 1932). For favourable statements, a weight of 1 is given to ‘strongly disagree’, 2 to ‘disagree’, 3 to ‘neutral/ undecided’, 4 to ‘agree’, and 5 to ‘strongly agree’ (Likert, 1932). For unfavourable statements, the data is re-coded after collection, and the direction of the weight is reversed (Józsa & Morgan, 2017). Some Likert scales can have as many as eleven points (Taherdoost, 2019). However, this study used the 5-point Likert scale because of its simplicity and comparative ease of use (Chen, Yu & Yu, 2015; Preston & Colman, 2000).

Demographic information was collected to demonstrate the representativeness of the population (Bozkurt, Cahan, Seneviratne, Sun, Lossio-Ventura, Ioannidis & Hernandez-Boussard, 2020). Open-response questions were used to acquire the respondents’ age, experience (years of using office paperless technology), and other demographic

information. Nominal scales were used for the gender, type of industry and organisation size demographic information. Thus, user gender, user age, user experience, type of industry and organisation size comprise the demographic information obtained from the business end-users.

4.4.1 Measures

Valid and reliable instruments are derived from the literature using measurements other researchers in that field of study use (Hagan, 2014). Consequently, construct evaluation questions were adapted from relationship marketing and technology adoption literature. Respondent perceptions were captured using a 5-point Likert scale scoring system to determine if the respondents agreed with the statements relating to the factors in the conceptual model. The close-ended questionnaire assisted in eliminating researcher bias by keeping the question context similar for all respondents (Hyman & Sierra, 2016). Table 4-2 contains the definitions of constructs investigated in this study.

Table 4-2: Definitions of constructs measured

Variable	Definition in the context of this study
Continuance use intention (CUI)	Future use commitment after an end-user has used paperless technology (adapted from Ajzen, 1991).
Attitude towards paperless technology (ATT)	An end-user's acquired predisposition regarding office paperless technology, influencing that end-user's response in favour of or against office paperless technology (adapted from Fishbein, 1967).
Attitude towards the supplier (ASP)	An end-user's acquired predisposition regarding the supplier of office paperless technology, influencing that end-user's response in favour of or against the service provider (adapted from Fishbein, 1967).
Compatibility (COMP)	The degree to which end-users believe that paperless technology is compatible with their organisational processes and job responsibilities (adapted from Rogers, 2003).
Perceived usefulness (PU)	The level to which paperless technology enhances the job performance of business end-users (adapted from Davis, 1986).

Perceived ease of use (PEOU)	The extent to which end-users consider that using paperless technology is free of effort (adapted from Davis, 1986).
Reliability shortcomings (RS)	The degree to which end-users perceive that paperless technology cannot be relied upon to accomplish the intended tasks for work purposes (adapted from Furneaux & Wade, 2011).
Capability shortcomings (CS)	Limitations in the functionality of paperless technology that undermine its ability to fulfil organisational requirements for end-users (adapted from Furneaux & Wade, 2011).
Goal congruence (GC)	The extent to which end-users believe that the service provider has shared beliefs with their organisation about what goals and behaviours are correct, important and appropriate (adapted from Homans, 1958).
Trust (TR)	The level end-users consider with confidence that the supplier has characteristics beneficial to their organisation (adapted from McKnight *et al*., 2002).
Commitment (CM)	The desire of end-users to maintain a long-term valued partnership with the supplier (adapted from Morgan & Hunt, 1994).
Distrust (DT)	The level end-users consider with confidence that the supplier does not have characteristics beneficial to their organisation (adapted from McKnight *et al*., 2002).
Opportunism (OP)	The extent to which end-users believe that the supplier exploits situations (adapted from Williamson, 1975).

The items that measured the constructs are shown in Table 4-3 and were adapted from other empirical studies that measured the same constructs. To ensure the anonymity of the office automation organisation whose customers were the end-users and respondents in this study, ‘organisation A’ was used in the items below instead of the actual organisation’s name in the questionnaire. The adapted combination of reverse and positively worded items reduced response bias (Suárez-Álvarez, Pedrosa & Lozano, 2018), although this practice could have reduced the reliability and validity of the survey instruments (Chyung, Barkin & Shamsy, 2018).

Table 4-3: Items used to measure constructs

Questionnaire section B (technological factors)		
Construct	Items	Adapted from
Continuance use intention (CUI)	**CUI1**: I intend to continue using a multi-function printer for paperless work rather than discontinue its use for paperless work. **CUI2**: My intentions are to continue using a multi-function printer for paperless work rather than paper-based work (printing documents). **CUI3**: If I could, I would like to discontinue the use of a multi-function printer for paperless work - (*reversed*).	(Bhattacherjee, 2001)
Attitude towards the technology (ATT)	**ATT1**: Generally, I have positive feelings towards using a multi-function printer for paperless work. **ATT2**: Using a multi-function printer for paperless work is a good idea. **ATT3**: Using a multi-function printer for paperless work is worthwhile. **ATT4**: The thought of using a multi-function printer for paperless work is appealing (attractive).	(Matikiti *et al.*, 2018)
Technology compatibility (COMP)	**COMP1**: Using a multi-function printer for paperless work is compatible with all aspects of my work. **COMP2**: Using a multi-function printer for paperless work is compatible with my ways of doing business. **COMP3**: Using a multi-function printer for paperless work is compatible with the way I like to work. **COMP4**: Using a multi-function printer for paperless work is compatible with my work style.	(Hussein *et al.*, 2020)

	COMP5: Using a multi-function printer for paperless work is compatible with existing information technology in my organisation. **COMP6**: Using a multi-function printer for paperless work is compatible with my organisation's values.	
Perceived usefulness (PU)	**PU1**: Using a multi-function printer for paperless work improves my job performance. **PU2**: Using a multi-function printer for paperless work increases my productivity at work. **PU3**: Using a multi-function printer for paperless work enhances my effectiveness at work. **PU4**: Generally, using a multi-function printer for paperless work is useful in performing my duties at work.	(Davis *et al.,* 1989; Venkatesh & Davis, 2000)
Perceived ease of use (PEOU)	**PEOU1**: Generally, I believe that using a multi-function printer for paperless work is easy. **PEOU2**: Learning to use a multi-function printer for paperless work is easy. **PEOU3**: It is easy to become skilful at using a multi-function printer for paperless work. **PEOU4**: It is easy to perform the steps required to use a multi-function printer for paperless work.	(Davis *et al.,* 1989)
Reliability shortcomings (RS)	**RS1**: I consider a multi-function printer to be reliable for paperless work - *(reversed*). **RS2**: A multi-function printer is dependable for paperless work - (*reversed*). **RS3**: A multi-function printer cannot be counted on to perform paperless work as needed.	(Furneaux & Wade, 2011)
Capability shortcomings (CS)	**CS1**: The performance and functionality of a multi-function printer is highly inadequate for paperless work. **CS2**: There are notable limitations in the ability of a multi-function printer to meet my paperless work needs.	(Furneaux & Wade, 2011)

	CS3: I would like to have many paperless capabilities for work purposes that are not supported by a multi-function printer.	
Questionnaire section C (relational factors)		
Attitude towards the supplier (ASP)	**ASP1**: Generally, I have positive feelings toward 'Organisation A' (the supplier of the multi-function printer I use). **ASP2**: Having 'Organisation A' as the supplier of the multi-function printer I use is a good idea. **ASP3**: Having 'Organisation A' as the supplier of the multi-function printer I use is worthwhile. **ASP4**: The thought of having 'Organisation A' as the supplier of the multi-function printer I use is appealing.	(Matikiti *et al.*, 2018)
Goal congruence (GC)	**GC1**: My organisation and 'Organisation A' (the supplier of the multi-function printer I use) support each other's objectives in the relationship. **GC2**: My organisation and 'Organisation A' (the supplier of the multi-function printer I use) have compatible goals in the relationship. **GC3**: My organisation and 'Organisation A' (the supplier of the multi-function printer I use) share the same goals in the relationship. **GC4**: My organisation and 'Organisation A' (the supplier of the multi-function printer I use) have different goals in the relationship - (*reversed*).	(Jap & Anderson, 2003)
Commitment (CM)	**CM1**: The relationship that my organisation has with 'Organisation A' (the supplier of the multi-function printer I use) is something we are very committed to.	(McKnight *et al.,* 2017)

	CM2: I expect my organisation's relationship with 'Organisation A' (the supplier of the multi-function printer I use) to last a long time. **CM3**: The relationship that my organisation has with 'Organisation A' (the supplier of the multi-function printer I use) deserves maximum effort to maintain. **CM4**: My organisation intends to maintain the relationship it has with 'Organisation A' (the supplier of the multi-function printer I use) indefinitely (forever).	
Trust (TR)	**TR1**. If I required help, 'Organisation A' (the supplier of the multi-function printer I use) would do its best to help me. **TR2**. 'Organisation A' (the supplier of the multi-function printer I use) is interested in my well-being, not just its own. **TR3**. I would characterise 'Organisation A' (the supplier of the multi-function printer I use) as honest. **TR4**. 'Organisation A' (the supplier of the multi-function printer I use) keeps its commitments. **TR5**. 'Organisation A' (the supplier of the multi-function printer I use) provides office paperless technology very well. **TR6**. Generally, 'Organisation A' (the supplier of the multi-function printer I use) is a capable and proficient office paperless technology provider.	(McKnight *et al.,* 2017)
Opportunism (OPP)	**OPP1**: Sometimes, 'Organisation A' (the supplier of the multi-function printer I use) changes the facts slightly to accomplish their own objectives. **OPP2**: Sometimes, 'Organisation A' (the supplier of the multi-function printer I use) promises to do things without actually doing them later. **OPP3**: Given the chance, 'Organisation A' (the supplier of the multi-function printer I use) might try to take unfair advantage of my organisation.	(Barnes, Leonidou, Siu & Leonidou, 2010; Morgan, Kaleka & Gooner, 2007)

	OPP4: I can depend on 'Organisation A' (the supplier of the multi-function printer I use) to always treat my organisation fairly - (*reversed*).	
Distrust (DT)	**DT1**: I am not sure that 'Organisation A' (the supplier of the multi-function printer I use) would act in my organisation's best interest. **DT2**: I suspect that 'Organisation A' (the supplier of the multi-function printer I use) is interested in just its own well-being, not in my organisation's well-being. **DT3**: I am worried about whether 'Organisation A' (the supplier of the multi-function printer I use) would be truthful in its dealings with our organisation. **DT4**: It is uncertain whether 'Organisation A' (the supplier of the multi-function printer I use) would keep its commitments. **DT5**: I am sceptical (doubtful) about whether 'Organisation A' (the supplier of the multi-function printer I use) is competent and effective concerning the use of multi-function printers for paperless work. **DT6**: I feel nervous (worried) about how knowledgeable 'Organisation A' (the supplier of the multi-function printer I use) is regarding the use of multi-function printers for paperless work.	(McKnight *et al.,* 2017)

4.5 Analysis of data

This research applied the statistical analysis steps proposed by Guetterman (2019). According to Guetterman (2019), these steps are (i) selection of an appropriate statistical test, (ii) preparation of data for analysis, (iii) compilation of descriptive statistics, (iv) running the analysis, (v) evaluation of threats to validity of the statistical analysis, (vi) examination of the statistical model, and (vii) reporting the results. A popular statistical technique in business and social sciences is structural equation modelling (SEM)

because of its capacity to model latent variables using different measurement errors (Henseler, Hubona & Ray, 2016). SEM can be variance-based (also known as partial least squares - PLS) and covariance-based (Henseler *et al*., 2016; Mohamad, Afthanorhan, Awang & Mohammad, 2019). In order to assess the proposed conceptual model, this study applied the PLS-SEM statistical technique.

The PLS-SEM estimates model parameters using proxies (initially generated) as linear combinations of the observed variables, making it suitable for analysing models containing composites (Henseler *et al*., 2016). PLS-SEM is also opportune when the objective is to develop theory and predict phenomena (Mohamad *et al.,* 2019). In contrast, the covariance-based SEM uses the empirical variance-covariance matrix to estimate model parameters (Henseler *et al*., 2016), making it suitable for theory testing (Mohamad *et al.,* 2019). PLS-SEM, which can model both factors and composites, is more suitable for new technology research (Henseler *et al*., 2016). The PLS-SEM method enables researchers to appraise models with multiple constructs, structural paths and variables without strict assumptions regarding the data distributions (Hair *et al.,* 2020). Importantly, PLS-SEM is causal-predictive, providing causal explanations (Sarstedt, Ringle, & Hair, 2017). By bridging the gap between prediction and delineation, the PLS-SEM method enables researchers to formulate managerial recommendations (Guenther, Guenther, Ringle, Zaefarian & Cartwright, 2023).

The ability of PLS-SEM to produce accurate and robust results (with minimal differences from covariance-based SEM) while using smaller sample sizes and without requiring normality assumptions has made it popular, particularly in business research (Puteh & Azman Ong, 2017). Complex models with multiple relationships and many indicators can be estimated using PLS-SEM (Hair, Sarstedt, Ringle & Gudergan, 2018; Puteh & Azman Ong, 2017), including indirect effects, direct effects, moderation effects and assessment of conceptual models (Henseler & Schuberth, 2020). If the data is coded correctly, PLS-SEM can also provide solutions from that data even when it has minimal (less than 5% per construct) missing values (Hair, Hult, Ringle & Sarstedt, 2021). Moreover, statistical software used for SEM analysis (e.g., SmartPLS and WarpPLS) is user-friendly with clearly presented outputs (Puteh & Azman Ong, 2017).

4.5.1 Software

The data collected from the QuestionPro website can be downloaded in Microsoft Excel format (QuestionPro, 2022), which is compatible with other statistical software. Puteh and Azman Ong (2017) recommended the SmartPLS software when using PLS-SEM analysis. This software (SmartPLS, version 4) was used for data analysis owing to its wide usage in quantitative business studies (Henseler *et al*., 2016; Puteh & Azman Ong, 2017). SmartPLS software has a highly intuitive graphical user interface, enabling quick specification and estimation of path models while providing results that can be saved in HyperText Markup Language (HTML) and Excel formats (Ringle *et al.*, 2022; Sarstedt, & Cheah, 2019). The Statistical Package for Social Sciences (SPSS, version 29) software (IBM, 2021) was used to screen the data. The Microsoft Excel software (Microsoft, 2022) was used for primary screening (identification and removal of terminated and disengaged responses), uploading, downloading and storing data. The SPSS software was used for secondary data screening before conducting the PLS-SEM analysis. Data screening can be done using SPSS to determine data normality (Stephen, 2016), and to determine if non-response bias is of concern (Pallant, 2020).

4.5.2 Analysis of descriptive data

Statistical results can be descriptive or inferential (Healey, 2016; McGivern, 2013). Descriptive statistics apply statistical methods to describe the data set, whereas inferential statistics enable the determination of relationships among variables (Healey, 2016; McGivern, 2013). According to Mertler and Vannatta (2017), examining the frequency distribution for each variable is a standard step in analysing quantitative data. The results of the frequency distribution analysis are descriptive and were presented in percentages, frequency tables, bar charts and pie charts (Healey, 2016) of the data collected in Section A of the questionnaire. A measure of central tendency (averages) and measures of variability (ranges, frequencies) (Guetterman, 2019) were used to describe the respondents' demography. The respondents' perceptions relating to each statement measuring the factors in the conceptual model were described using averages and ranges.

4.6 Model evaluation

Confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) are the main factor analysis techniques applied in quantitative studies (Tabachnick & Fidell, 2019). When creating new measures, EFA enables refinement, confirmation and reconstruction of variable structures with a common variance (Knekta, Runyon, & Eddy, 2019; Sakaluk & Short, 2017). CFA enables testing relationships between empirically derived indicator (or measured) variables and their principal latent constructs (Prudon, 2015). Therefore, theoretical relationships between a set of indicators (or measured) variables and constructs (latent variables) are assessed using CFA (Kim, Sturman & Kim, 2015). Only CFA was carried out because the questions used in this study were derived from literature.

Diverse empirical research fields apply PLS-SEM when evaluating models (Schamberger, Schuberth, Henseler & Dijkstra, 2020). Covariance-based SEM uses several goodness-of-fit (GoF) indexes to determine the error between the inferred and measured covariance matrices, such as the Goodness-of-Fit Index (GFI) and Normed Chi-Square (Mohamad *et al.,* 2019). The goodness-of-fit tests are used in covariance-based SEM to validate the closeness of the empirical distribution function to the theoretical distribution function (Singla, Jain & Sharma, 2016). The usage of fit indices has declined after the advancement of PLS-SEM, which focuses on the interaction between theory testing and prediction (Hair, Risher, Sarstedt & Ringle, 2019).

Table 4-4: *PLS-SEM model assessment phases*

PLS-SEM model assessment, phase 1		PLS-SEM model assessment, phase 2	
	Reflective models	I.	Collinearity
I.	Indicator reliability	II.	Significance and relevance of path coefficients
II.	Internal consistency reliability	III.	R^2, explanation of endogenous latent variables
III.	Convergent validity	IV.	Q^2, predictive relevance
IV.	Discriminant validity	V.	f^2, effect size of path coefficients
	Formative models		
V.	Convergent validity		
VI.	Collinearity		
VII.	Significance and relevance of indicator weights		

Source: Sarstedt *et al.* (2017)

The PLS-SEM method uses a two-phase approach displayed in Table 4-4. The two-step PLS-SEM model assessment involves a) measurement (outer) model assessment and b) structural (inner) model assessment (Henseler *et al.*, 2009). Measurement model assessment examines the validity and reliability of constructs, while structural model assessment examines the direction and strength of the relationships among constructs (Fauzi, 2022). Table 4-4 shows the PLS-SEM assessment steps for models with both reflective and formative constructs. This study had reflective constructs; thus, only the first four steps of the first phase were conducted before proceeding to the second phase.

4.7 Validity and reliability

Validity and reliability are vital in assessing measurement instruments for any research study (Hair *et al.,* 2020; Kumar, 2019; Mohajan, 2017; Saunders *et al.,* 2019). Validity assesses if an instrument is measuring what was expected to measure and to what extent it did (Kumar, 2019; Mohajan, 2017). Reliability assesses the gradation to which the assessment mechanism is providing consistent and stable results (Kumar, 2019; Mohajan, 2017). Quantitative studies have some measures that can confirm the validity and reliability of the research (Hayashi, Abib & Hoppen, 2019). The subsequent sections detail how validity and reliability were addressed and measured in this study.

4.7.1 Validity

Validity in quantitative studies refers to the appropriateness of the processes, tools and data (Sürücü & Maslakci, 2020). Such appropriateness checks include examining if the research questions, methodology, design, sampling, data analysis, and results are applicable to the objectives (Sürücü & Maslakçi, A., 2020). The broad categories of validity are internal and external (Venkatesh *et al.,* 2013). External validity assesses whether the study results can be extrapolated or generalised, while internal validity assesses the appropriateness of the measuring instruments used (Ursachi, Horodnic & Zait, 2015). The narrower sub-categories of validity are construct, content, criterion and face validity (Bolarinwa, 2015; Taherdoost, 2016), as displayed in Figure 4-2. Content, criterion and face validity can be ascertained by adapting questions from previous studies that included the construct (McMann, Pemstein, Seim, Teorell & Lindberg, 2022; Tsang, Royse & Terkawi, 2017). In addition to avoiding question testing, adapting questions from literature saves time and money (Hyman, Lamb & Bulmer, 2006). Construct validity can be measured using statistical software (see Section 4.7.1.4).

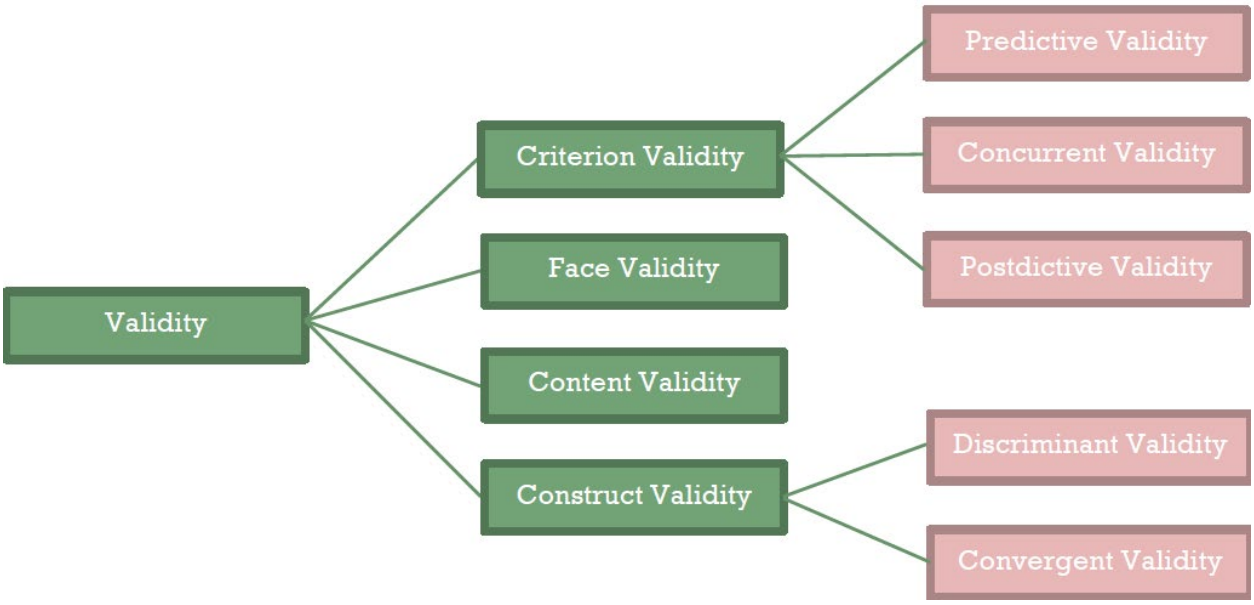

Figure 4-2: *Subtypes of validity*

Source: Taherdoost (2016:29)

4.7.1.1 Face validity

The constructs for the current study were made up of items or measures (statements that the respondents would indicate their level of agreement with). As shown in Section 4.4.1, the measures were adapted from previous studies that measured the same constructs. Face validity can be described as the magnitude to which a measure is logically connected to the construct (Taherdoost, 2016; Ursachi *et al.,* 2015). Measuring instruments have face validity when the researcher has a positive subjective assessment of the respective instrument's sensibility, relevance and presentation (Oluwatayo, 2012). Thus, a construct has face validity when it is relevant to the investigation, which can be achieved by enhancing the questionnaire's readability, consistency of formatting and style, feasibility, and language clarity (Taherdoost, 2016). Experts in the relevant field can assist by confirming the face validity of instruments (Heale & Twycross, 2015) and adapting questions from literature (Sürücü & Maslakçi, 2020). To ensure face validity, measures for this study were adapted from the literature and reviewed by supervisors.

4.7.1.2 Content validity

According to Heale and Twycross (2015), content validity can be described as the magnitude that an instrument adequately assesses all facets of a variable. Rigorous literature reviews can extract the items related to the construct (Taherdoost, 2016). Some authors use measures such as the content validity ratio (Lawshe, 1975) to assess content validity, especially when developing new constructs (Taherdoost, 2016). As done in this study, adapting constructs from literature and reviews by experts in the respective field of research can enhance the content validity of research instruments (Taherdoost, 2016).

4.7.1.3 Criterion validity

Concrete or criterion validity refers to the gradation to which an instrument relates to other instruments measuring a construct, which deals with the relationship between some specific, measurable criterion and scale scores (Mohajan, 2017). It assesses how meaningful is the selected research criteria compared to other possible criteria (Ursachi *et al.,* 2015) and how well a measure forecasts an outcome in similar settings (future, present or past) (Taherdoost, 2016). Subtypes of criterion validity are concurrent, postdictive, and predictive (Taherdoost, 2016). Predictive validity assesses an

instrument's accuracy of forecasts, postdictive validity assesses how a construct can accurately predict the value of a previously established criterion, and concurrent validity assesses how results correspond to previously administered measurements (Taherdoost, 2016). Adapting constructs from literature (done in this study) can also enhance the concrete validity of research instruments (Taherdoost, 2016).

4.7.1.4 Construct validity

Grobler and Joubert (2018) and Johnston, Dixon, Hart, Glidewell, Schröder and Pollard (2014) argued that construct validity is the magnitude to which an instrument measures the desired variable. Construct validity depends on content validity and examines if the measure of a variable operates as anticipated by theory (Johnston *et al.,* 2014). Consequently, construct validity is evaluated in two dimensions: discriminant and convergent validity (Taherdoost, 2016). Researchers commonly use statistical methods such as confirmatory factor analysis (CFA), multitrait-multimethod matrix (MTMM), principal components analysis (PCA) and Q-sorting in quantitative studies to determine both discriminant and convergent validity (Taherdoost, 2016). CFA, which can be done using the SmartPLS software (Puteh & Azman Ong, 2017; Ramayah, Cheah, Chuah, Ting & Memon, 2018), was conducted to determine both discriminant and convergent validity of constructs in this study.

4.7.1.4.1 Convergent validity

According to Khadka, Ratcliffe, Hutchinson, Cleland, Mulhern, Lancsar and Milte (2022), convergent validity is the magnitude to which measures (items) of an instrument correlate to other measures that purportedly measure that variable. Convergent validity tests that items that are anticipated to be interrelated are related (Taherdoost, 2016). Factor loadings can be used to determine convergent validity, with a minimum of 0.40 recommended for factor loadings (Hair *et al.,* 2021; Taherdoost, 2016). The desirable threshold of outer (factor) loadings is 0.708, indicating that the construct explains above half of the indicator's variance (Hair *et al.,* 2021). Outer (item) loadings below 0.708 but higher than 0.4 can be retained when the latent variables show adequate convergent validity and internal consistency reliability (Hair *et al.,* 2021). According to Amora (2021) and Hair, Black, Babin and Anderson (2014), the item loadings must be statistically

significant, meaning that the *p*-values (probability of making type I error – see Section 4.9) of the loadings must be below 0.05 (two-tailed). Another index used to assess convergent validity in this study was the average variance extracted (Fornell & Larcker, 1981). The average variance extracted (AVE) is the mean percentage of variation explained by the items of a construct (Fauzi, 2022; Hair *et al.,* 2020). The minimum threshold of the AVE is 0.5 (Fauzi, 2022; Hair *et al.,* 2020), while values above 0.7 are considered good (Fornell & Larcker, 1981).

4.7.1.4.2 Discriminant validity

Rönkkö and Cho (2022) and Ursachi *et al.* (2015) described discriminant validity (also referred to as divergent validity) as the magnitude to which a test measures a particular variable and not other unrelated variables. In essence, discriminant validity assesses if constructs that ought to have no relation do not have a relationship (Taherdoost, 2016; Ursachi *et al.,* 2015). Several approaches can be used to determine discriminant validity, such as using ratios or comparing factor loadings and highest cross-loadings. Discriminant validity is primarily implied when factor (item) loadings are greater than cross-loadings (correlation of the respective variable with unconnected factors) (Ibrahim, Shiratuddin & Wong, 2015; Hair, Hult, Ringle & Sarstedt, 2017). Fornell and Larcker (1981) proposed that the square root of the average variance extracted of each variable (construct) must be greater than the variable's maximum correlation with any of the other variables (Hair *et al.*, 2014). Thus, discriminant validity in this study was established when the latent variables account for less variance with other constructs than their associated indicators (Fornell & Larcker, 1981). Hair *et al.* (2019) recommended the HTMT (heterotrait–monotrait) ratio developed by Henseler, Ringle and Sarstedt (2015) to determine discriminant validity in PLS-SEM. The assessment criterion by Fornell and Larcker (1981) does not perform well when there are small differences in loadings on a variable (Henseler *et al.*, 2015). Accordingly, the HTMT criterion was also used in this study. Discriminant validity was assumed if the HTMT was smaller than 0.85 for conceptually distinct variables or smaller than 0.9 for conceptually similar variables (Henseler *et al.*, 2015).

4.7.2 Reliability

Reliability in quantitative studies relates to the instrument's accuracy and consistency of a measure (Chan & Idris, 2017; Venkatesh *et al.,* 2013). Attributes of instrument reliability include equivalence (or inter-rater), stability (or test-retest), internal consistency (or homogeneity) (Merom & John, 2018; Shodiya & Adekunle, 2022) and item reliability (Sarstedt, Hair, Pick, Liengaard, Radomir & Ringle, 2022). Stability is the consistency of outcomes when using an instrument repeatedly (Heale & Twycross, 2015) on two different occasions in the same sample (Merom & John, 2018). Equivalence is the consistency among different forms of an instrument or amongst responses of several instrument users (Heale & Twycross, 2015). Equivalence and stability did not apply to this study. Therefore, item reliability and internal consistency reliability were the reliability attributes addressed in this study.

4.7.2.1 Item reliability

Item reliability reflects the level at which the related latent variable explains an item's variance (Hair *et al*., 2021). Indicators (items) with low loadings (<0.5) or statistically nonsignificant loadings (p > 0.05) should be considered for removal from the measurement model (Sarstedt *et al*., 2022). As mentioned in Section 4.7.1.4.1, the desirable threshold of loadings is 0.708 (Hair *et al.*, 2021). According to Hulland (1999), it is common for researchers in social science studies to obtain weak item loadings (<0.708) for measurement models. However, loadings above 0.40 may be retained, provided that the latent variables exceed the threshold values of internal consistency reliability and convergent validity (Hair *et al.,* 2021).

4.7.2.2 Internal consistency reliability

Internal consistency reliability is the degree to which entire items on the scale measure a construct (Heale & Twycross, 2015). In SEM models, Cronbach's alpha (α) coefficient advanced by Cronbach (1951) and composite reliability (CR) values are the frequently applied internal consistency reliability estimators (Hair *et al.*, 2014). Despite the availability of other tests such as split-half reliability, Kuder-Richardson coefficient and item-to-total correlation (Edavalath & Bharathan, 2021), internal consistency reliability is generally determined using α and CR (Hair *et al.*, 2014; Taherdoost, 2016). Value*s* of α

and CR range from 0 to 1, with those greater than 0.7 generally deemed acceptable (Cronbach, 1951; Heale & Twycross, 2015).

Cronbach's alpha (*α*) is the lower limit of internal consistency reliability, while composite reliability (CR) is regarded as the upper limit (Hair *et al*., 2021). The *α* value is a conservative approach that estimates the internal consistency reliability based on unweighted items (McNeish, 2018). The CR value is a liberal approach whereby the items are weighted based on the variable items' loadings (McNeish, 2018). Accordingly, Cronbach's *α* test and CR values were used to ascertain the reliability of instruments in this study. SmartPLS was used to determine statistical values, such as AVE, HTMT Cronbach's *α* and CR (Ringle *et al.*, 2022).

4.8 Assessment of the measurement model

Table 4-5 summarises how the measurement model was assessed using statistical values. The statistical values can be determined using the SmartPLS software (Ramayah *et al*., 2018; Ringle *et al.*, 2022). The recommended and commonly used indexes in PLS-SEM and their threshold values are displayed below.

Table 4-5: *Assessment of the measurement model*

Measure	Index	Threshold value(s)
Internal consistency reliability[1]	Cronbach's alpha, *α*	*α* > 0.7 acceptable (Cronbach, 1951; Nunnally & Bernstein, 1994)
Internal consistency reliability[2]	Composite reliability (CR)	CR > 0.7 acceptable for adapted instruments (Nunnally & Bernstein, 1994)
Item reliability[1]	Item loading	Loading > 0.708 good; Loading > 0.4 acceptable when the latent variable exceeds threshold values of internal consistency reliability and convergent validity (Hair *et al.,* 2021)

Item reliability[2]	*p*-values	$p < 0.05$ strong significance, acceptable (Sarstedt *et al*., 2022)
Convergent validity	Average variance extracted (AVE)	AVE > 0.7 good; AVE ≥ 0.5 acceptable (Fornell & Larcker, 1981).
Discriminant validity[1]	HTMT criteria	HTMT < 0.85 good; HTMT < 0.90 acceptable (Henseler *et al.*, 2015).
Discriminant validity[2]	Fornell and Larcker's method	Factor AVE > variance between the latent variable and other variables, acceptable (Fornell & Larcker, 1981)

4.9 Assessing structural model results

Table 4-6 summarises how the structural model was assessed. Hair *et al*. (2019), Henseler and Schuberth (2020) and Samani (2016) recommended that assessment of the structural model using PLS-SEM be done by evaluating i) the significance of path coefficients, ii) the structural model collinearity, iii) the effect size, iv) the variance explained, and v) the predictive relevance. PLS-SEM does not presume normal data distribution (Hair, Ringle & Sarstedt, 2011; Wong, 2019) but uses a bootstrap technique to make statistical inferences (Streukens & Leroi-Werelds, 2016). In order to obtain standard errors, bootstrapping repeatedly random samples a 'bootstrap' (with replacement) from the final sample (Streukens & Leroi-Werelds, 2016). Therefore, bootstrapping (typically done using 5,000 samples) derives standard error estimates of model parameters, facilitating significance testing (Hair *et al.,* 2017; Streukens & Leroi-Werelds, 2016), which was done using SmartPLS in this study. SmartPLS uses bootstrapping to determine parameters such as path coefficients, significance levels and confidence intervals (Ringle *et al.*, 2022).

Hypothesis testing is used to derive real-world conclusions based on the results of particular statistical tests (Banerjee, Chitnis, Jadhav, Bhawalkar & Chaudhury, 2009; El-gohary, 2019). Errors can be made in accepting or rejecting a hypothesis, with false-positive and false-negative referred to as type I and type II errors, respectively (Banerjee *et al.*, 2009; El-gohary, 2019). The probabilities of making type II or type I errors can be

statistically determined and are referred to as the levels of statistical significance (El-gohary, 2019). The probability of making type I errors is commonly used in quantitative studies to make conclusions using a set statistical significance level, referred to as the *p*-value (El-gohary, 2019). The *p*-value maximum threshold of 0.10 indicates weak significance, 0.05 indicates strong significance, and 0.01 indicates very strong significance (Fisher, 1992). Additionally, a confidence interval (CI) is an estimate statistically calculated from the observed measurements, which advises the range of acceptable values for a parameter, with a probability stated in advance (du Prel, Hommel, Röhrig & Blettner, 2009). A CI of 95% is commonly used (du Prel *et al.,* 2009; Hazra, 2017), although academics may use CIs at other levels, such as 90% or 99% (Hazra, 2017). This study applied a CI of 95% (two-tailed); thus, path coefficients were considered significant if 0 was not within the 95% CI (Hair *et al*., 2021; Kock, 2016; Sarstedt *et al.*, 2017).

The path coefficients (*β)* indicate how strongly an independent variable predicts the dependent factor, with values ranging from −1 to +1 (Wright, 1921). Path coefficients close to 0 indicate weak prediction, and those close to -1 and +1 indicate a strong negative or positive prediction of the dependent factor, respectively (Wright, 1921). For example, a path coefficient of -0.8 indicates that if the independent or indicator variable increases by 1 standard deviation unit, the dependent or response variable will decrease by 0.8 (Sarstedt *et al.*, 2017). Path coefficient values less than -1 or greater than +1 may occur, but at critical levels of collinearity (Sarstedt *et al.*, 2017).

Collinearity is the level to which the latent constructs are correlated, with high correlations regarded as problematic due to undesirable effects such as distorting the size and changing the sign of beta coefficients (Henseler & Schuberth, 2020). Collinearity in PLS-SEM is commonly determined by the variance inflation factor (VIF) proposed by Becker, Ringle, Sarstedt and Völckner (2015), with values below 3 deemed good and those below 5 deemed acceptable (Hair *et al.,* 2019). When latent variables are highly correlated, one of the latent variables can be removed from the model (Feng, Park, Liang, Pandey & Papeş, 2019)

A model's ability to predict, referred to as *predictive relevance* (Q^2), is generally determined by Stone-Geisser's method (Geisser, 1975; Stone, 1974), which can be evaluated using PLS-SEM (Purwanto, 2021). Q^2 values above 0 indicate predictive relevance, with values above 0.25 and 0.50 considered moderate and strong, respectively (Hair *et al.,* 2021). Q^2 can also indicate the predictive power of a model's out-of-sample prediction (Hair *et al.,* 2021).

The proportion of a latent variable's variance explained by the model's independent variables is referred to as R^2 (Rights & Sterba, 2019). Variance explained (R^2) values of 0.25, 0.50 and 0.75 are considered weak, moderate and substantial, respectively (Henseler *et al.,* 2009). The value of R^2 is higher when the number of predictor variables (constructs) increases (Hair *et al.,* 2021).

Cohen (1988) referred to the extent to which the null hypothesis is false as ***effect size***, f^2. Effect size (f^2) estimates the predictive ability of separate independent constructs in the model, which can be done by SmartPLS (Hair *et al.,* 2021). F-squared values below 0.02 are regarded as weak, and those up to 0.15, 0.35 and above 0.35 are considered small, medium and large effects, respectively (Cohen, 1988; Hair *et al.,* 2021).

Table 4-6: *Assessment of structural model results*

Measure	Index	Threshold value(s) and authors
Collinearity	VIF	VIF < 3.00 good, VIF < 5.00 acceptable (Becker *et al.,* 2015)
Path significance[1]	*p*-value	p < 0.05 strong significance (acceptable) (Fisher, 1992; Kock, 2016)
Path significance[2]	CI (two-tailed)	CI ≥ 95% strong significance and 0 is not within the 95% CI (Kock, 2016; Sarstedt *et al.*, 2017)
Effect size	f^2	f^2 < 0.02 weak, 0.02 < f^2 < 0.15 small, 0.15 < f^2 < 0.35 medium, f^2 > 0.35 large (Cohen, 1988)
Predictive relevance	Q^2	Q^2 >0 acceptable, Q^2>0.25 moderate, Q^2 > 0.50 strong (Geisser, 1975; Stone, 1974)
Variance explained	R^2	0.25 ≈ weak, 0.50 ≈ moderate, 0.75 ≈ substantial (Henseler *et al.,* 2009).

4.10 Mediator analysis

Mediation is when a variable or multiple variables/mediator(s) intercede between two other correlated constructs (Agler & De Boeck, 2017; Hair *et al.*, 2021). According to Baron and Kenny (1986), mediation is implied when i) the independent variable influences the dependent variable, ii) the independent variable influences the mediating variable(s), iii) the mediator(s) influence the dependent variable, and iv) the mediation effect reduces the significance of the direct influence. According to Carrión, Nitzl and Roldán (2017), mediation can be i) full (direct influence is statistically not significant while indirect influences are statistically significant), ii) partial (both direct and indirect influences are statistically significant), iii) non-significant (indirect influence is statistically not significant), or iv) multiple (involves multiple relationships). A contemporary method of evaluating mediation (with fewer errors) is assessing indirect effects (Kock, 2014). In SmartPLS, bootstrapping (see Section 4.9) is also used to determine statistical parameters of indirect effects (at once), such as path coefficients, confidence intervals and significance levels, including multiple mediation effects where the mediating variables are more than one in a path (Ringle *et al.*, 2022). The total effect between two variables is the sum of the direct effect and all the indirect effects between those two variables in the structural model (Hair *et al.*, 2021; Hair, Ringle & Sarstedt, 2013). Total and indirect effects were considered significant if the *p*-value was less than 0.05 and 0.00 was not within the 95% CI (Hair *et al*., 2021; Kock, 2016; Sarstedt *et al.*, 2017).

4.11 Ethical considerations

Research studies generally apply the principle of beneficence, whereby researchers seek to maximise benefits and minimise harm (Anabo, Elexpuru-Albizuri & Villardón-Gallego, 2019). Ethical values considered to minimise harm in this study included permission, informed consent, confidentiality and non-disclosure, anonymity, harm and danger, justice, privacy, conflict of interest and ethical data management (Quinlan *et al.*, 2019). Additionally, an institutional (University of The Free State) ethical clearance procedure was followed to obtain an ethical clearance that approved data collection.

4.11.1 Ethical clearance

Since the 1990s, social sciences and educational research have been subjected to ethics review procedures of ethical review boards, instigating universities to require all researchers to obtain ethical clearance before conducting academic research (Head, 2020). Although criticised for being unnecessarily bureaucratic (Velardo & Elliot, 2018), paradoxically unethical in some cases (Schrag, 2011) and obstructive (Parsell, Ambler & Jacenyik-Trawoger, 2014), many authors (e.g., Davies, 2020; Grady, 2015; Page & Nyeboer, 2017) agree that ethical review boards ensure compliance with ethical policies, rules and regulations.

In research, ethics are intersubjective assessments of what is just, right or good for all, which become norms of conduct, determining unacceptable and acceptable behaviour (Resnik, 2011). Ethical clearance by ethical review boards is a reliable way of proving ethical compliance (Davies, 2020; Grady, 2015; Page & Nyeboer, 2017), ensuring that none of the activities can harm any stakeholders (researchers, respondents, participants, institutions, organisations) during and after conducting the research (Gupta, 2017). In accordance with the establishment of ethical review boards globally (Head, 2020), the University of The Free State (UFS) has a Research Ethics policy. Researchers are required to complete an ethical clearance application (to be approved) before collecting data. The application was submitted with an ethical risk assessment and document checklist. The following additional documents were required:

i. Summarised curriculum vitae of all contributing researchers and assistants.
ii. The informed consent form and information leaflet of the study (see Appendix G).
iii. The questionnaire (see Appendix G).
iv. The proposal (general information of the study).
v. An ethical risk assessment form.
vi. Permission (obtained from the office automation organisation).

Ethical clearance (UFS-HSD2021/1602/21; see Appendix A) was issued after the applicable considerations had been addressed. Central principles to research ethics include i) beneficence and non-maleficence (benefits of the research ought to be greater

than the potential harm), ii) disruptive justice (equally balanced benefits and risks to respondents, role-players and the broader society), and iii) respect for persons (dignity and autonomy) (Das & Sil, 2017; Pietilä, Nurmi, Halkoaho & Kyngäs, 2020). The key considerations addressing research ethics principles in this study are discussed next.

4.11.2 Permission

Written permission was granted by the office automation organisation in South Africa, where information (email addresses) of the population of the study (business end-users) was registered. Thus, the South African data protection laws were complied with, like the Protection of Personal Information Act, nr 4 of 2013; thus, the office automation organisation communicated with the respondents.

4.11.3 Informed consent

Consent must be informed (Resnik, 2018; Sugiura, Wiles & Pope, 2016), which was ensured by using an online consent form that detailed the study's purpose and the respondents' rights before the respondents could proceed to the survey section. Elements of consent include competence (legal capacity to make a decision), information (its appropriateness for one to make a responsible decision), voluntariness, comprehension (understandable information), and authorisation (indication of agreement) (Resnik, 2018). Competence is commonly determined by age, and people under 18 are legal minors in South Africa (Strode, Slack & Essack, 2010), according to the Children's Act nr 38 of 2005. Thus, acknowledging being older than 18, understanding the information about the research and voluntarily responding indicate agreement (informed consent) (Resnik, 2018).

4.11.4 Privacy and confidentiality

Privacy is the freedom from undesirable invasion of someone's private affairs, while confidentiality (also referred to as non-disclosure) is the protection of private data (Resnik, 2018; Vanclay, Baines & Taylor, 2013). Questionnaire development focused on achieving the objectives of this research only, and no unique personal data were collected (Vanclay *et al.,* 2013). A QuestionPro password was used to ensure the safety of the collected data, and a password-protected computer was used to store the data, as proposed by Gupta (2017), to prohibit unauthorised access.

4.11.5 Anonymity

Anonymity refers to ensuring that data that might identify an individual (identifiers) is not collected (Hoft, 2021). The questionnaire development and data collection ensured that there were no identifiers (Eyarefe & Sanusi, 2019; Gupta, 2017); data were treated as anonymous, guaranteeing stakeholders (respondents, researcher and the office automation organisation) no harm (Gupta, 2017). Additionally, only data pertinent to achieving the objectives of this study were collected (Vanclay *et al.,* 2013).

4.11.6 Harm and danger

The key sources of harm and danger in scientific research are multifaceted. They can be classified as physical, social, psychological, economic, confidentiality breach and legal (Weinbaum, Landree, Blumenthal, Piquado & Gutierrez, 2018). Some research designs can require considerations of community harm and environmental harm, for example (Weinbaum *et al.,* 2018). A physical risk exposes the subjects to physical harm such as physical pain, discomfort, illness or injury (Dixon & Quirke, 2018). Psychological harm results in negative affective conditions such as depression, anxiety, loss of self-esteem, shock, guilt and change of behaviour (Williams, Burnap, Sloan, Jessop & Lepps, 2017). Social harm happens when the subject's or stakeholder's relationships with others are altered in a way detrimental to the respective subject (e.g., loss of respect and embarrassment) (Dixon & Quirke, 2018). Economic harm emanates from financial costs during the research or loss of income because of responding or participating in the research (Anwar, 2016), such as harm to employability. Legal harm happens when the stakeholders in the research study violate the law (Resnik, 2018). Breach of confidentiality occurs when sensitive or private information is accessed by unauthorised persons, resulting in other forms of harm, as discussed above (Anwar, 2016). It is critical to note that when vital ethical principles (anonymity, privacy, confidentiality, informed consent, ethical data management) are addressed, survey subjects must be assured of no harm (Anabo *et al.,* 2019; Gupta, 2017). For example, anonymity protects the respondents from harm whether they decide to respond or not (Vanclay *et al.,* 2013). The office automation organisation was not named in the final draft of this study to protect the organisation from harm (social and economic).

4.11.7 Justice

According to Carr (1981) and Resnik (2015), justice is the concept that all respondents (or participants in qualitative studies) must receive noble, fair and equal treatment. Conducting a census enables transparency and justice when selecting respondents (Gupta, 2017; Resnik, 2018), which was used in this study. In order to minimise deception by the respondents, there were no benefits for responding (Lynch *et al.,* 2019). A standardised email and questionnaire were used, ensuring equal treatment of respondents.

4.11.8 Ethical data management

Ethical data management addresses how data is acquired, managed, shared and owned (Horner & Minifie, 2011; Pimple, 2002). Data was securely stored on a password-protected computer after collection through a password-protected website (Resnik, 2018). Additionally, the data can only be used to achieve the objectives of this study (Resnik, 2018). In accordance with the permission granted, the data can only be shared and used by other parties with the consent of the office automation organisation.

4.11.9 Conflicts of interest

Conflicts of interest emanate from conditions imposed by organisations such as institutions, employers and funders (de Koning, Meyer, Moors & Pels, 2019). However, conditions imposed by the focal office automation organisation (anonymity, no harm, confidentiality, ethical data management) were addressed already in this study.

4.12 Limitations of methodology

There are several limitations of quantitative methods (Eyisi, 2016). The adopted quantitative method does not capture underlying meanings and understandings (Denzin, 1989), snapshots dynamic phenomena (Rahman, 2017), disregards social reality (Hair *et al.,* 2020) and controls settings while overlooking the experiences of respondents (Khaldi, 2017). Furthermore, flexibility is restricted when collecting data, resulting in limited outcomes (Queirós *et al.,* 2017) as settings are controlled, limiting results to pre-determined constructs, theories and categories (Khaldi, 2017). The focus on testing theories is criticised as prone to confirmation bias (Eyisi, 2016), tending to disregard some critical variables and not showing the local social understanding (Maarouf, 2019). Having

multiple influences, attitude is complex and intangible; thus, a person's behaviour can sometimes be tangent to attitude (Mehra, 2017). Although the available attitude scales provided useful information (Howe & Krosnick, 2017), every instrument had a margin of error (Mehra, 2017).

4.13 Conclusion

This chapter briefly discussed the 'research onion' and outlined the adopted research design, target population, selection of respondents, data collection methods, data analysis methods, ethical considerations and limitations of the methodology. Information on how reliability and validity concerns were addressed was also provided, validating the quantitative approach and conducting a census as the appropriate method for this study. The next section provides the findings of this study. It identifies how business end-users' perceptions of paperless technology and buyer-supplier relationships influence their continuance use of paperless technology.

5 Chapter 5: Results

5.1 Introduction

This chapter presents the results from the statistical analysis of the responses. The chapter reports what was discovered in the data analysis in relation to the problem, as Faryadi (2019) and Wisker (2017) recommended. From the statistical analysis of the collected data, this chapter presents the findings on the continuance use of office paperless technology among B2B end-users in South Africa.

The results of the data analysis first screened the collected data, followed by a description of the data, demographic profiling of the respondents and checking the adequacy of the final sample for PLS-SEM analysis. Results of the evaluation of the measurement model for validity and reliability are presented before the results of the hypothesis testing, which is the two-phase PLS-SEM approach cited by Sarstedt *et al.* (2017). Lastly, the assessment results of the hypothesised paths and an ad hoc analysis of the mediators in the conceptual model are presented.

5.2 Screening of data

The quantitative data that were gathered through an online survey questionnaire on the QuestionPro website was analysed using Microsoft Excel software (Microsoft, 2022), the SPSS software (version 29) (IBM, 2021) and the SmartPLS software (version 4) (Ringle *et al.*, 2022). Microsoft Excel captured the responses in a document format that can be imported into SPSS and SmartPLS. Before conducting statistical analysis to test the hypothesis, data screening is fundamental to ensure the validity, usability, and reliability of the data (Tabachnick & Fidell, 2019). The data was screened using SPSS to assess normality, non-response bias and missing values (IBM, 2021) before conducting the PLS-SEM analysis using the SmartPLS software (Ringle *et al.*, 2022).

5.2.1 Data type and coding

The data exported from the QuestionPro survey website was numerical, with additional steps and coding in Microsoft Excel done for the following purposes:

i. To remove the information and consent pages so that only the raw required data remains.

ii. To code experience into four groups (1-4 years, 5-9 years, 10-14 years, 15 years and above).
iii. To code age into four groups (18-29 years, 30-39 years, 40-49 years, 50 years and above).
iv. To replace questions with a survey item code.
v. To rectify the reversed coded items (item codes CUI3, RS1, RS2, GC4, OP4).
vi. To remove the terminated responses and a disengaged response identified where the same response 'agree' was entered for all the items.

5.2.2 Response rate

From the survey dashboard (Appendix H), 313 responses were received out of a possible 2962 that viewed the information page. The population comprised 24667 end-users; thus, the viewing rate was 12,01%, with the overall response rate at 1,27%. Respondents took an average of 17 minutes to complete the survey. The completion rate was 95.27%, and 15 responses were terminated because two respondents did not understand the information provided, four did not consent to participate, and nine indicated that they do not use MFPs for office paperless functions. For further data analysis, 298 responses were used.

5.2.3 Non-response bias

Non-response bias is the inaccuracy in estimating a population aspect from surveying a sample caused by non-response or missing values, such that there is an under-representation of certain types of respondents (Zahl-Thanem, Burton & Vik, 2021). Estimates of a survey can be biased if there are notable inconsistencies between non-respondents and respondents (Rindfuss, Choe, Tsuya, Bumpass & Tamaki, 2015). Non-response bias is commonly assessed using the wave approach in email surveys by contrasting the early and late responses (Armstrong & Overton, 1977; Fauth, Hattrup, Mueller & Roberts, 2013). The wave approach hypothesises that the respondents (early responders) are similar to non-respondents (late responders), then statistically analyse the variance to compare the mean values of early and late responders for demographic variables (Armstrong & Overton, 1977; Duszynski, Fadel, Dixon, Yiannoutsos, Halverson & Menachemi, 2022).

The *t*-test (independent samples) is commonly used to assess if there is a statistically significant difference between the mean scores of two groups (Gerald, 2018). It hypothesises that the means of the two samples are equal at a specific level of significance (Gerald, 2018). Using SPSS, the *t*-test (two-tailed) was conducted to determine statistical differences between the early (the first 50 respondents) and late (the last 50 respondents) responders. Based on Levene's test for equality of variances, equal variances were assumed between the sub-sample of early responders and the sub-sample of the late responders. As shown in Table 5-1, both continuous demographic variables (age and experience before coding) had *p*-values higher than 0.05, implying the absence of statistically significant differences between the late and early responders on these demographic variables. Therefore, it can be concluded that non-response bias is of low concern in this study.

Table 5-1: Non-response bias assessment

Continuous variable	Equal variances assumed	Levene's test for equality of variances		*t*-test for equality of means						
		F statistic	Sig,	*t*	df	*p*-value	Mean Difference	Std, Error Difference	95% CI	
EXP	Yes	0,769	0,383	-1,103	98	0,273	-1,120	1,016	-3,135	0,895
	No			-1,103	96,553	0,273	-1,120	1,016	-3,136	0,896
AGE	Yes	0,133	0,716	-1,285	98	0,202	-2,400	1,867	-6,106	1,306
	No			-1,285	97,414	0,202	-2,400	1,867	-6,106	1,306

5.2.4 Missing values

Missing data is commonly handled by completely or partially excluding responses with missing data or substituting the missing data with statistical values (Kwak & Kim, 2017). None of the completed responses (n = 298) in this study had missing data because the QuestionPro survey website has the option to force responses before a respondent completes each section, which was applied in this study.

5.2.5 Outliers

Outliers are observations that deviate significantly from most of the observed data, usually lower than 5% (Domingues, Filippone, Michiardi & Zouaoui, 2018). Both systematic (structured, for example, sub-population observations) and unsystematic (unstructured) outliers are dealt with using i) robust estimators or ii) exclusion criteria (Schamberger *et al.*, 2020). However, Pollet and van der Meij (2017) found that bootstrapping (used in the current study for data analysis) assigns less weight to outliers. Thus, a small portion of outliers will have a negligible effect on the results. According to Schamberger *et al.* (2020), PLS-SEM can address outlier portions of less than 50% without distorting the results significantly. Removing outliers is not advisable unless caused by a mistake in the research methodology (Altman & Krzywinski, 2016) or unengaged responses whereby the same response is entered for all survey items (Soland, Wise & Gao, 2019). Removing outliers can cause a loss of useful information and a reduction of statistical power (Schamberger *et al.*, 2020). Therefore, responses were retained subject to being engaged responses.

5.2.6 Disengaged Responses

Awang, Aji and Osman (2018) and Panda, Mishra and Behera (2021) stated that disengaged responses (or careless responses) occur when the same response is entered for all survey items, which produces a standard deviation equal to 0.000 for that respondent. Microsoft Excel was used to identify responses with standard deviations of 0.000; one such response was found (see Appendix I). Accordingly, one unengaged response was excluded from the analysis, as recommended by Panda *et al.* (2021) and Soland *et al.* (2019), because the same response (agree) was selected for all survey items. A total of 297 responses were used for further analysis, including normality, sample adequacy, demographic profiles and model evaluation.

5.2.7 Normality

The kurtosis and skewness are commonly assessed to determine the normality of distributions in quantitative studies (Hair *et al.,* 2021). Kurtosis measures the peakedness of the distribution, while skewness measures the symmetry (positive or negative) of the distribution (Eberl & Klar, 2023). When the samples are large (n>300), absolute values

greater than 7.0 for the kurtosis measure and absolute values greater than 2.0 for the skewness measure can be used to indicate substantial non-normality (Kim, 2013). Kim (2013) recommended the use of additional statistical tests of normality on medium (300 > n > 50) and small samples (n < 50). The Shapiro-Wilk (SW) test and the Kolmogorov-Smirnov (KS) test are statistical tests that can be determined using the SPSS software to ascertain whether a distribution is normal (Kwak & Park, 2019). The alternative hypothesis for the KS and the SW test is that the data is not normally distributed ($p \leq 0.05$) (Kwak & Park, 2019; Stephen, 2016). SPSS was used to determine the normality of the continuous demographic data in the study (age and experience), and the *p*-values were below 0.05, as displayed in Table 5-2, indicating that the data distribution was non-normal. However, PLS-SEM statistical analysis can be conducted using non-normal data (Puteh & Azman Ong, 2017).

Table 5-2: Normality assessment

	KS test		SW test	
	Statistic	*p*-value	Statistic	*p*-value
Experience (raw)	0.137	0.000	0.948	0.000
Age (raw)	0.067	0.003	0.984	0.002

5.3 Description of data

A 5-point Likert scale was used, as discussed in Section 4.4. A latent variable with an average score greater than the neutral point (3) implied that the respondents positively agreed on that indicator or item, and scores below the neutral point implied disagreement. Averages are regularly used to interpret the distribution of data (Tariq, Yousuf & Ajmal, 2021). Nielsen and Levy (1994) and Tariq *et al.* (2021) suggested using adjusted ranges for a generalised interpretation of the average scores in 5-point scales. According to their suggestions, the ranges of average scores can be interpreted (see Table 5-3).

Table 5-3: Interpretation of the average scores

Average score range	Inference
1–1.80	Strong disagreement
1.81–2.60	Disagreement
2.61–3.40	Neutrality
3.41–4.20	Agreement
4.21–5.00	Strong agreement

Source: Tariq *et al.* (2021)

Table 5-4 displays the item average scores of latent variables in this study. The subsequent section describes the average scores using the suggestions by Nielsen and Levy (1994) and Tariq *et al.* (2021) above.

Table 5-4: Item average scores

Latent variable	Item	Average
Continuance use intention	CUI1	3.970
	CUI2	3.781
	CUI3	3.811
Attitude towards the technology	ATT1	3.976
	ATT2	4.125
	ATT3	4.003
	ATT4	3.798
Compatibility	COMP1	3.593
	COMP2	3.714
	COMP3	3.980
	COMP4	3.825
	COMP5	3.734
	COMP6	3.751
Perceived usefulness	PU1	3.862
	PU2	3.801

	PU3	3.906
	PU4	3.916
Perceived ease of use	PEOU1	3.939
	PEOU2	3.754
	PEOU3	3.875
	PEOU4	3.795
Reliability shortcomings	RS1	2.108
	RS2	2.162
	RS3	2.246
Capability shortcomings	CS1	2.209
	CS2	2.394
	CS3	2.525
Attitude towards the supplier	ASP1	3.929
	ASP2	4.020
	ASP3	3.923
	ASP4	3.754
Goal congruence	GC1	3.872
	GC2	3.724
	GC3	3.754
	GC4	3.488
Trust	TR1	4.000
	TR2	3.785
	TR3	3.892
	TR4	3.875
	TR5	3.737
	TR6	3.673
Commitment	CM1	3.724
	CM2	3.835
	CM3	3.717
	CM4	3.418
Opportunism	OP1	2.529

	OP2	2.441
	OP3	2.488
	OP4	2.370
Distrust	DT1	2.340
	DT2	2.306
	DT3	2.259
	DT4	2.239
	DT5	2.178
	DT6	2.172

a. Continuance use intention

The mean scores for continuance use intention items ranged between 3.781 and 3.970, reflecting the respondents' positive intention toward using office paperless technology.

b. Attitude towards the technology

The respondents had a positive attitude towards paperless technology, reflected by mean scores for attitude towards paperless technology items that ranged between 3.798 and 4.125.

c. Compatibility

The mean scores for compatibility items ranged between 3.593 and 3.980, which denotes that respondents agreed on the compatibility of paperless technology to their job performance, preferred working style, existing organisation technology and organisational values.

d. Perceived ease of use

The respondents agreed that paperless technology is easy to use, as shown by mean scores for perceived ease of use, ranging between 3.754 and 3.939.

e. Perceived usefulness

The mean scores for perceived usefulness items ranged between 3.781 and 3.970, reflecting a positive perception of the usefulness of paperless technology by the respondents.

f. Reliability shortcomings

The items for reliability shortcomings had mean scores that ranged between 2.108 and 2.246, which depicts a negative perception of the unreliability of paperless technology by the respondents.

g. Capability shortcomings

Capability shortcomings items had mean scores that ranged between 2.209 and 2.525, which shows a positive perception of the ability of multi-function printers to meet the paperless work needs of the respondents rather than incapability.

h. Attitude towards the supplier

The respondents had a positive attitude towards the supplier, reflected by mean scores for attitude towards the supplier items that ranged between 3.418 and 4.020.

i. Goal congruence

The items for goal congruence had average scores ranging between 3.488 and 3.872, which depicts a positive perception of the respondents' commonality of interests in the B2B relationship.

j. Trust

The respondents had positive trusting beliefs of the supplier, reflected by mean scores for trust items that ranged between 3.673 and 4.000.

k. Commitment

Commitment items had mean scores ranging between 3.717 and 3.835, showing the respondents' desire to maintain a long-term partnership between the supplier and their organisation.

l. Distrust

The respondents had negative distrusting beliefs of the supplier, reflected by mean scores for trust items that ranged between 2.172 and 2.340.

m. Opportunism

The opportunism items had average scores ranging between 2.370 and 2.529, which depicts a negative perception of the respondents' exploitation of situations in the B2B relationship.

5.4 Sample adequacy

According to Ranatunga, Priyanath and Megama (2020), the generally used sample adequacy assessment methods in PLS-SEM are the N(q), inverse square root, and minimum *R*-squared methods. As discussed in Section 4.3, when applying the recommendation by Kline (2016), the sample-to-variable or N(q) method emphasises that the sample must be more than 20 times the highest number of outer or inner model connections directed at any variable in the model.

Table 5-5: Minimum R^2 method

Highest total of variable connections	Lowest R^2			
	0.10	.25	0.50	0.75
2	90	33	14	8
3	103	37	16	9
4	113	41	18	11
5	122	45	20	12
6	130	48	21	13
7	137	51	23	14
8	144	54	24	15
9	150	56	26	16
10	156	59	27	18

Source: Hair *et al.* (2017)

Cohen (1992) proposed the minimum *R*-squared method, which assumes a frequently used statistical power of 80% and uses the complexity of the model (highest total of outer or inner model connections directed at any construct in the conceptual model), the significance level and the minimum variance explained (R^2) to estimate the minimum required sample. Hair *et al.* (2017) used the suggestions by Cohen (1992) to tabulate the minimum required samples using the minimum *R*-squared method, as illustrated in Table 5-5 for *p*-values of 0.05.

Kock and Hadaya (2018) suggested the inverse square root criteria, which use the *p*-value and the path coefficient values to estimate the minimum required sample for both non-normal and normal data. Table 5-6 shows the simplified calculation of the minimum sample required using the inverse square root method, where $|\beta|$ is the modulus of the model's smallest statistically significant path coefficient.

Table 5-6: Inverse square root criteria

p-value	*Minimum sample required*
0.01	$\left(\frac{3.168}{\lvert\beta\rvert}\right)^2$
0.05	$\left(\frac{2.486}{\lvert\beta\rvert}\right)^2$
0.10	$\left(\frac{2.123}{\lvert\beta\rvert}\right)^2$

Source: Kock and Hadaya (2018)

In Section 5.6.2, the lowest variance explained (R^2) was 0.129 and the modulus of the lowest statistically significant path coefficient (β) was 0.158, while the highest total of connections pointed to a variable in the model is 6 (indicator items loading onto the trust, compatibility and distrust). Table 5-7 shows that the minimum sample required for PLS-SEM analysis in this study according to the inverse square root, sample-to-variable and minimum *R*-squared methods were 248, 120 and 130, respectively. Thus, this study's final sample (n=297) was adequate for PLS-SEM analysis.

Table 5-7: Sampling adequacy assessment

Method	Approximate sample required	Authors
N x q rule, where N=20 *(q = highest total of paths linked to a variable)*	20 X 6 = 120	Kline (2016)
Minimum R-squared *(R^2 > 0.10 and max connected paths = 6)*	130	Cohen (1992) and Hair *et al.* (2017)
Inverse square root *(p-value = 0.05 and $\lvert\beta\rvert$ > 0.158)*	$(2.486/0.158)^2 \approx 248$	Kock and Hadaya (2018)

5.4.1 Common method bias assessment

In self-reported surveys, common method bias occurs when the instrument creates disparities in responses instead of the respondents' actual perceptions (Tehseen, Ramayah, & Sajilan, 2017). Key procedural controls cited by authors such as Kock, Berbekova and Assaf (2021) were used to minimise common method bias, as displayed in Table 5-8 below.

Table 5-8: Common bias procedural controls

Procedural controls	How controls were applied in this study
Methodological separation of variables	Demographic, technological and relational factors were separated on the questionnaire.
The clear design of the collecting instrument	Anonymity, clear instructions, simple terms used, concise survey.
Use of different sources	Many end-users responded from various demographic profiles; however, only primary data was collected.
Psychological separation of variables	The causal link between variables was masked.
Use of longitudinal methods	Not applicable.

Source: Kock *et al.* (2021)

Kock (2015) proposed the full collinearity test to identify common method bias when using PLS-SEM, whereby inner models with VIF values above 3.3 signify that the model is tainted by common method bias. The collinearity test is subject to the model passing the standard discriminant and convergent validity assessment (Kock, 2015). Table 5-12 in Section 5.6 shows that all VIF values in the inner model were less than 3.3, and Section 5.6 shows that the model passed the standard discriminant and convergent validity assessment. Thus, common method bias was of low concern in this study.

5.5 Demographic profiling

Profiling demographic information in research studies demonstrates the representativeness of the population (Bozkurt *et al.*, 2020). Demographic profiles can also assist in interpreting the data analysis results, such as unexpected results and comparisons with other studies (Hammer, 2011). The demographic information collected was age, experience using office paperless technology, gender, institution size and the industry in which the institution operates. The summarised demographic profile of the respondents is displayed in Table 5-9, followed by a brief discussion of the demographic information.

Table 5-9: Demographic profiling

Demography	Classification	Frequency	Percentage
Age	18 - 29 years	40	13%
	30 - 39 years	109	37%
	40 - 49 years	95	32%
	Above 49 years	53	18%
Gender	Male	146	49%
	Female	151	51%
Experience	1 - 4 years	69	23%
	5 - 9 years	91	31%
	10 - 14 years	81	27%
	15 or more years	56	19%
Industry	Agriculture / Food	19	6%

	Construction / Transport / Property	33	11%
	Education	27	9%
	Energy / Mining	17	6%
	Entertainment / Media / Marketing	22	7%
	Healthcare / Hospitality	25	8%
	Manufacturing / Trade / Retail	51	17%
	Technological / Communications / Finance	57	19%
	Government services (general)	21	7%
	Other	25	8%
Institution size	Microenterprise (1-10 employees)	44	15%
	Small enterprise (11-50 employees)	76	26%
	Medium enterprise (51-250 employees)	75	25%
	Large enterprise (251 or more employees)	102	34%

5.5.1 Age

Figure 5-1 shows that almost a third of the respondents (n=109) were aged 30 to 39 years, followed by those aged 40 to 49 (n=95). Respondents aged 18 to 29 years were less represented in the sample (n=40), while the age group 50 and above also had fewer respondents (n=53).

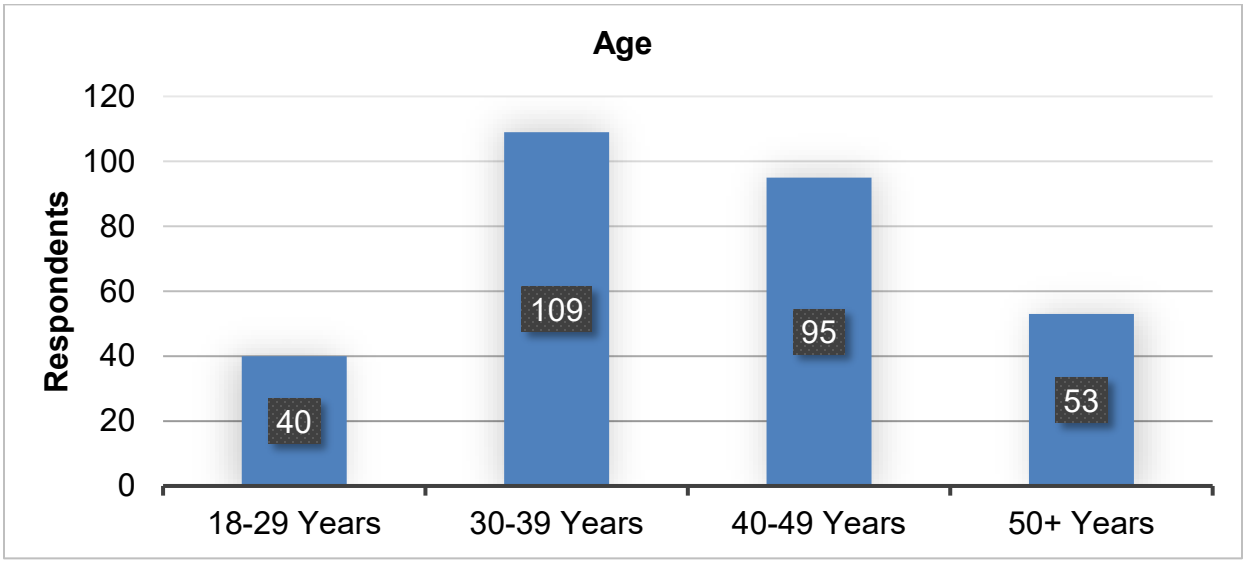

Figure 5-1: Age of the respondents

5.5.2 Gender

The number of female respondents was slightly higher compared to male respondents; females accounted for 50,84% (n=151), and males accounted for 49,16% (n=146) of the sample, as illustrated in Figure 5-2.

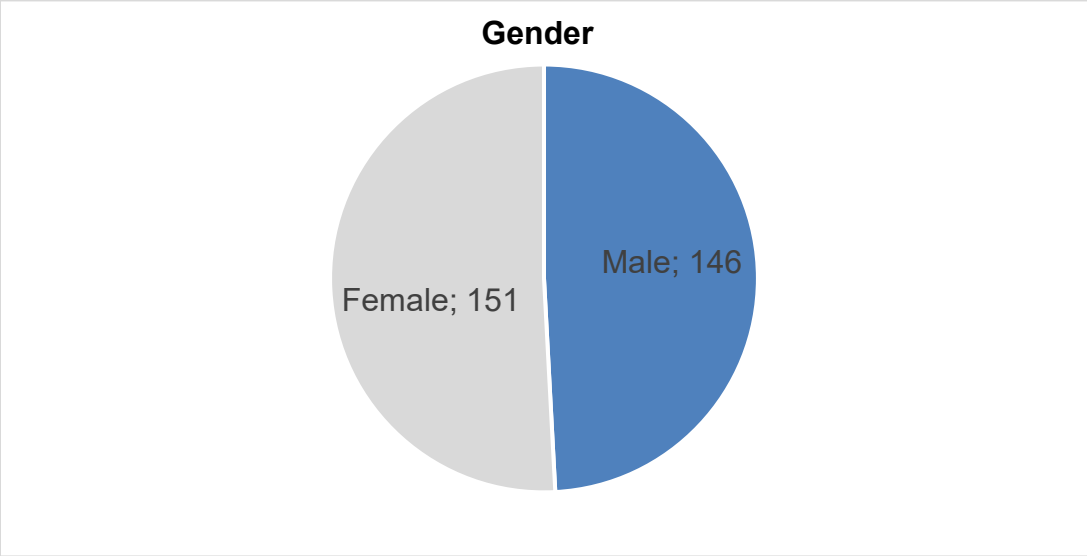

Figure 5-2: Gender of the respondents

5.5.3 Experience

Experience was measured as the length of time respondents had (in years) of using a multi-function printer (MFP) to scan, store and share digital documents for work. Figure 5-3 shows that most of the respondents (n=91) had an experience of 5 to 9 years, followed by the range between 10 and 14 years (n=81). The respondents with experience of 1 to 4 years were 69, while those with experience of more than 15 years were 56.

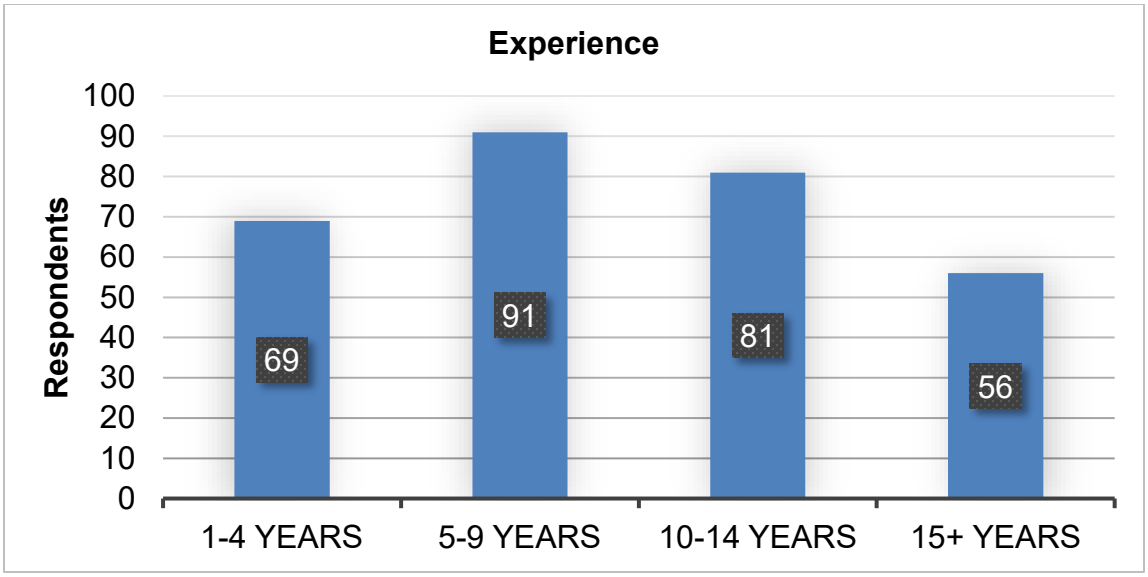

Figure 5-3: Experience of the respondents

5.5.4 Institution size

The institution size with the highest proportion of respondents was the large institutions (n=102), followed by the small and medium institutions, with 76 and 75 respondents, respectively. Respondents from micro institutions were the least number of respondents in the sample (n=44), as displayed in Figure 5-4.

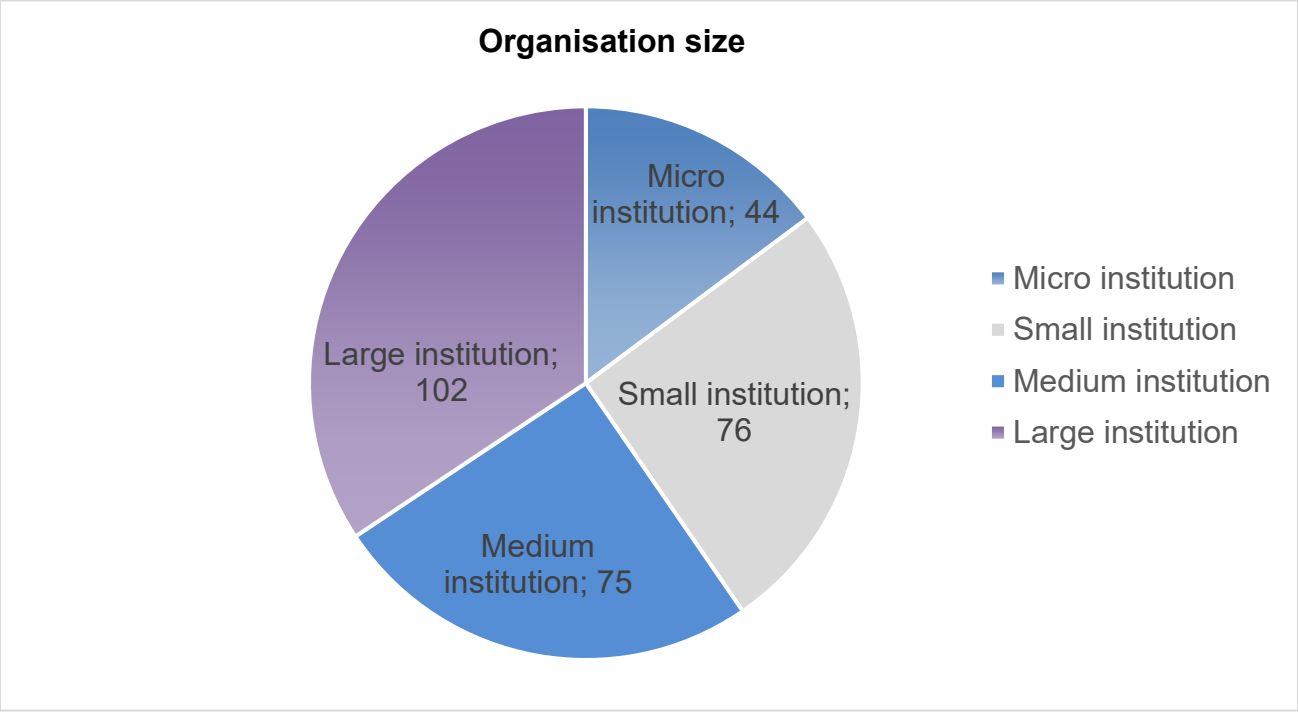

Figure 5-4: Organisation size of the respondents

5.5.5 Industry

Figure 5-5 shows that most respondents indicated that their institutions were in the technological, communications and finance sectors (n=57), followed by those in the manufacturing, trade and retail sectors (n=51). The construction, transport and property sectors had 33 respondents, while the education sector had 27 respondents. Institutions whose sectors were not specified for selection on the questionnaire had 25 respondents, a total similar to those who indicated that their institutions were in the healthcare and hospitality sectors. The entertainment, media and marketing sectors had 22 respondents, while the government services sector had 21 respondents. Respondents who indicated that their institutions are in the agriculture and food sectors were few (n=19), while those who selected the energy and mining sectors were less (n=17).

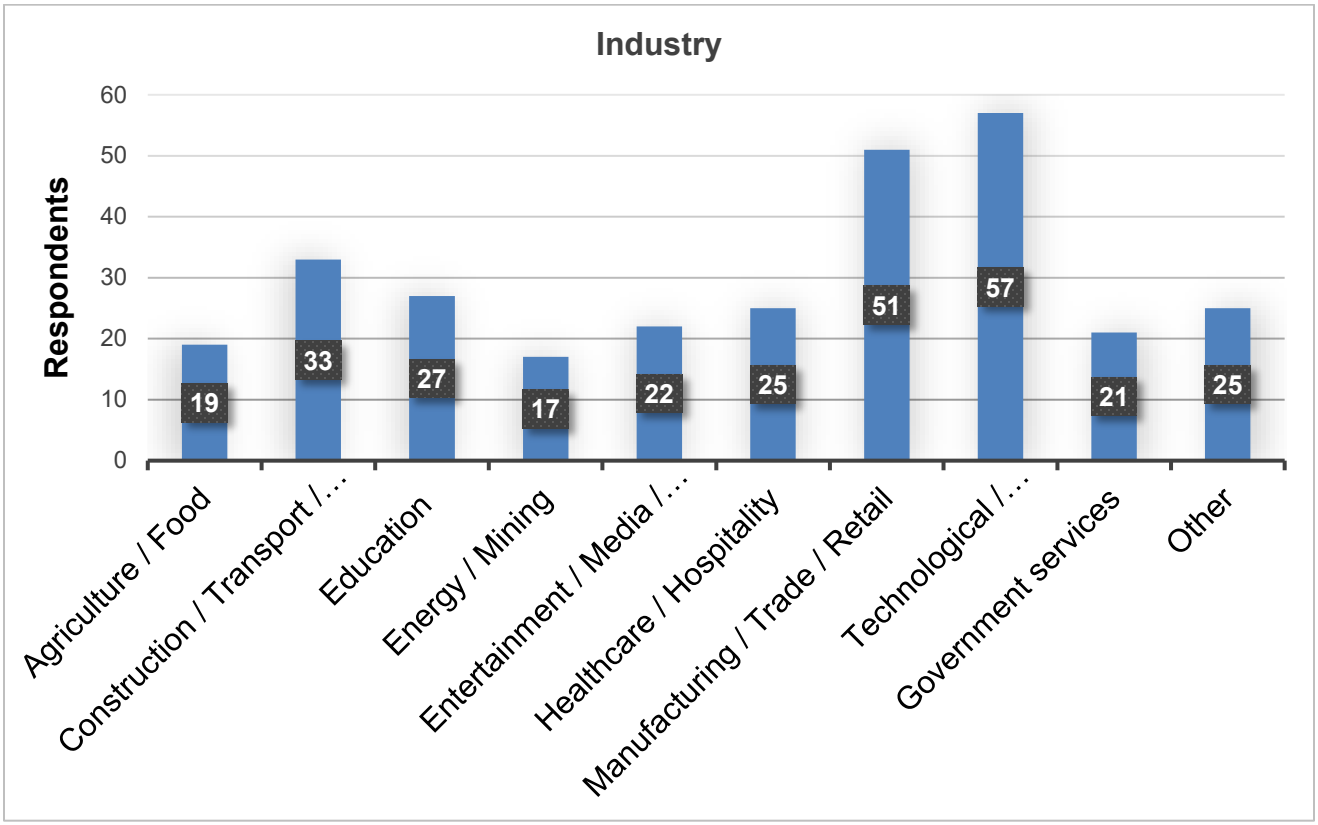

Figure 5-5: Organisation industry of the respondents

5.6 Empirical evaluation of the conceptual model

As discussed in Section 4.6, the model was assessed using the two-phase PLS-SEM model assessment proposed by Henseler *et al.* (2009), which involves firstly assessing the outer (measurement) model and then the inner (structural) model.

5.6.1 Evaluation of the measurement model

From the established PLS-SEM assessment methods discussed in Section 4.8, the measurement (outer) model was evaluated for internal consistency reliability, convergent validity and discriminant validity. The SmartPLS software (version 3) was used to assess the outer model.

5.6.1.1 Item reliability, internal consistency and convergent validity

Internal consistency reliability was assessed using Cronbach's alpha (α) and the composite reliability (CR), with values greater than 0.7 deemed acceptable for both measures (Nunnally & Bernstein, 1994). Convergent validity was assessed using the average variance extracted (AVE) with values greater than 0.5 deemed acceptable (Fornell & Larcker, 1981). Table 5-10 illustrates that the values of α, CR and AVE exceeded the minimum threshold values. Some items had outer loadings below the desirable threshold of 0.708 (Hair *et al.,* 2021). Indicator CUI3 had a loading of 0.688, indicator GC4 had a loading of 0.484, and indicator OP4 had a loading of 0.518. These items (CUI3, GC4, OP4) were retained because their loadings were above the cut-off value of 0.40, and their latent variables exceeded the threshold values of internal consistency reliability and convergent validity (Hair *et al.,* 2021). Notably, these indicators were reverse-coded items. All items had *p*-values below 0.05 (two-tailed); thus, they were statistically significant loadings.

Table 5-10: Internal consistency and convergent validity

Construct (Latent variable)	Indicator	Outer loading	*p*-value (two-tailed)	α	CR	AVE
Attitude towards the supplier	ASP1	0.880	0.000	0.913	0.939	0.792
	ASP2	0.898	0.000			

	ASP3	0.897	0.000			
	ASP4	0.887	0.000			
Attitude towards the technology	ATT1	0.911	0.000	0.917	0.942	0.801
	ATT2	0.874	0.000			
	ATT3	0.922	0.000			
	ATT4	0.873	0.000			
Commitment	CM1	0.873	0.000	0.879	0.917	0.736
	CM2	0.902	0.000			
	CM3	0.784	0.000			
	CM4	0.867	0.000			
Compatibility	COMP1	0.803	0.000	0.894	0.919	0.656
	COMP2	0.890	0.000			
	COMP3	0.803	0.000			
	COMP4	0.850	0.000			
	COMP5	0.745	0.000			
	COMP6	0.757	0.000			
Capability shortcomings	CS1	0.873	0.000	0.860	0.915	0.781
	CS2	0.923	0.000			
	CS3	0.855	0.000			
Continuance use intention	CUI1	0.893	0.000	0.767	0.866	0.686
	CUI2	0.887	0.000			

	CUI3	0.688	0.000			
Distrust	DT1	0.830	0.000	0.921	0.938	0.717
	DT2	0.836	0.000			
	DT3	0.890	0.000			
	DT4	0.868	0.000			
	DT5	0.826	0.000			
	DT6	0.830	0.000			
Goal congruence	GC1	0.895	0.000	0.816	0.885	0.668
	GC2	0.909	0.000			
	GC3	0.901	0.000			
	GC4	0.484	0.000			
Opportunism	OP1	0.860	0.000	0.800	0.877	0.649
	OP2	0.885	0.000			
	OP3	0.897	0.000			
	OP4	0.518	0.000			
Perceived ease of use	PEOU1	0.889	0.000	0.923	0.945	0.812
	PEOU2	0.915	0.000			
	PEOU3	0.900	0.000			
	PEOU4	0.901	0.000			
Perceived usefulness	PU1	0.907	0.000	0.921	0.944	0.809
	PU2	0.902	0.000			

	PU3	0.915	0.000			
	PU4	0.874	0.000			
Reliability shortcomings	RS1	0.930	0.000	0.824	0.896	0.744
	RS2	0.927	0.000			
	RS3	0.712	0.000			
Trust	TR1	0.722	0.000	0.882	0.911	0.630
	TR2	0.832	0.000			
	TR3	0.812	0.000			
	TR4	0.809	0.000			
	TR5	0.797	0.000			
	TR6	0.786	0.000			

5.6.1.2 Discriminant validity

Table 5-11 displays the variances of latent variables explained by the items (or indicators), variances of latent variables explained by other constructs and the HTMT values in italic font (above the diagonal). The latent variables accounted for more variance with their associated indicators than with other constructs, thereby establishing discriminant validity using the method suggested by Fornell and Larcker (1981). The HTMT values of the measurement model were below the maximum threshold value of 0.85, also providing evidence of discriminant validity (Henseler *et al*., 2015). Consequently, the adequate discriminant validity of the measurement model was confirmed, taking into account the HTMT.

Table 5-11: Discriminant validity assessment

	ASP	ATT	CM	COMP	CS	CU	DT	GC	OPP	PEOU	PU	RS	TR
ASP	0.890	*0.631*	*0.760*	*0.566*	*0.488*	*0.631*	*0.659*	*0.793*	*0.595*	*0.536*	*0.532*	*0.593*	*0.806*
ATT	0.580	0.895	*0.591*	*0.792*	*0.475*	*0.847*	*0.503*	*0.529*	*0.450*	*0.784*	*0.788*	*0.805*	*0.565*
CM	0.683	0.532	0.858	*0.517*	*0.461*	*0.556*	*0.598*	*0.740*	*0.545*	*0.557*	*0.588*	*0.547*	*0.785*
COMP	0.518	0.723	0.464	0.810	*0.401*	*0.822*	*0.440*	*0.521*	*0.370*	*0.772*	*0.797*	*0.779*	*0.579*
CS	-0.429	-0.426	-0.398	-0.359	0.884	*0.532*	*0.566*	*0.429*	*0.612*	*0.350*	*0.423*	*0.711*	*0.425*
CU	0.530	0.720	0.468	0.699	-0.427	0.828	*0.565*	*0.552*	*0.545*	*0.763*	*0.746*	*0.801*	*0.603*
DT	-0.609	-0.465	-0.542	-0.406	0.502	-0.469	0.847	*0.648*	*0.831*	*0.437*	*0.456*	*0.599*	*0.656*
GC	0.698	0.471	0.643	0.463	-0.325	0.435	-0.552	0.818	*0.655*	*0.519*	*0.475*	*0.493*	*0.786*
OPP	-0.507	-0.382	-0.453	-0.319	0.509	-0.420	0.716	-0.496	0.805	*0.417*	*0.393*	*0.557*	*0.628*
PEOU	0.493	0.721	0.502	0.708	-0.316	0.645	-0.404	0.459	-0.355	0.901	*0.769*	*0.785*	*0.577*
PU	0.490	0.725	0.531	0.726	-0.379	0.637	-0.423	0.414	-0.331	0.709	0.900	*0.778*	*0.576*
RS	-0.521	-0.708	-0.471	-0.684	0.579	-0.641	0.509	-0.393	0.437	-0.699	-0.688	0.862	*0.607*
TR	0.726	0.509	0.693	0.521	-0.368	0.502	-0.594	0.682	-0.525	0.522	0.519	-0.526	0.794

Above the diagonal: Heterotrait–monotrait ratio (HTMT)

Diagonal: Square root of the Average Variance Extracted (AVE)

Below the diagonal: Variable's correlation with any of the other variables

5.6.2 Evaluation of the structural model

After the measurement model passed the evaluation for validity and reliability, the structural model evaluation followed as recommended by Hair *et al.* (2019), Henseler and Schuberth (2020) and Samani (2016). Five measures were used to assess the structural model as discussed in Section 4.9: i) structural model collinearity, ii) significance and size of path coefficients, iii) f^2 effect size (for in-sample prediction), iv) R^2 of endogenous variables, and v) predictive relevance, Q^2 (Henseler & Schuberth, 2020; Samani, 2016). The SmartPLS software (Version 4) was used to determine the structural model assessment measures.

5.6.2.1 Collinearity

Collinearity in the inner model was assessed using the variance inflation factor (VIF), whereby values less than 5.00 were deemed acceptable, and values less than 3.00 were deemed good for the inner model (Hair *et al.,* 2021). Kock (2015) argued that the occurrence of an inner VIF larger than 3.30 indicates excessive collinearity and common method bias contamination. All the inner VIF values were below 3.30, as displayed in Table 5-12. Most paths (ASP→ATT, ASP→CUI, ATT→CUI, COMP→ATT, COMP→CS, COMP→PU, COMP→PEOU, COMP→RS, PEOU→ATT, PEOU→PU, PU→ATT, CS→ATT, GC→ASP, GC→CM, GC→TR, GC→DT, GC→OPP, TR→ASP, TR→CM, CM→ASP, DT→ASP, OPP→ASP,) had VIF values below 3.00 and path RS→ATT had a value of 3.164. Accordingly, there is no detrimental collinearity among latent variables.

Table 5-12: Collinearity assessment (inner model)

Inner Path	Inner VIF	Inference
ATT → CUI	1,507	Good
COMP → ATT	2,742	Good
COMP → CS	1,000	Good
COMP → PEOU	1,000	Good
COMP → PU	2,006	Good
COMP → RS	1,000	Good
PEOU → ATT	2,743	Good

PEOU → PU	2,006	Good
PU → ATT	2,717	Good
RS → ATT	3,164	Acceptable
CS → ATT	1,622	Good
ASP → ATT	1,578	Good
ASP → CUI	1,507	Good
GC → ASP	2,187	Good
GC → CM	1,000	Good
GC → DT	1,000	Good
GC → OPP	1,000	Good
GC → TR	1,705	Good
CM → ASP	2,201	Good
TR → CM	1,868	Good
TR → ASP	2,552	Good
OPP → ASP	2,135	Good
DT → ASP	2,471	Good

5.6.2.2 Hypothesised paths

Table 5-13 presents this study's hypothesised (theorised) paths. A total of 23 structural paths were hypothesised. The results of the statistical evaluation of the hypotheses are presented in the subsequent section.

Table 5-13: Hypothesised paths

	Hypothesised paths
1	Attitude towards technology (ATT) positively influences continuance use intention (CUI).
2	Perceived ease of use (PEOU) positively influences attitude towards technology (ATT).
3	Perceived usefulness (PU) positively influences attitude towards technology (ATT).
4	Reliability shortcomings (RS) negatively influence attitude towards technology (ATT).
5	Capability shortcomings (CS) negatively influence attitude towards technology (ATT).
6	Compatibility (COMP) positively influences attitude towards technology (ATT).

7	Compatibility (COMP) positively influences perceived ease of use (PEOU).
8	Compatibility (COMP) positively influences perceived usefulness (PU).
9	Compatibility (COMP) negatively influences reliability shortcomings (RS).
10	Compatibility (COMP) negatively influences capability shortcomings (CS).
11	Attitude towards supplier (ASP) positively influences continuance use intention (CUI).
12	Attitude towards the supplier (ASP) positively influences attitude towards the technology (ATT).
13	Trust (TR) positively influences attitude towards the supplier (ASP).
14	Commitment (CM) positively influences attitude towards the supplier (ASP).
15	Distrust (DT) negatively influences attitude towards the supplier (ASP).
16	Opportunism (OPP) negatively influences attitude towards the supplier (ASP).
17	Goal congruence (GC) positively influences attitude towards the supplier (ASP).
18	Goal congruence (GC) positively influences trust (TR).
19	Goal congruence (GC) positively influences commitment (CM).
20	Goal congruence (GC) negatively influences distrust (DT).
21	Goal congruence (GC) negatively influences opportunism (OPP).
22	Trust (TR) positively influences commitment (CM).
23	Perceived ease of use (PEOU) positively influences perceived usefulness (PU).

5.6.2.1 Path significance

Bootstrapping was conducted in SmartPLS (Version 4) using 5000 subsamples and 300 iterations to calculate the path coefficients of the hypothesised paths. Most of the paths (ASP→ATT, ASP→CUI, ATT→CUI, COMP→ATT, COMP→CS, COMP→PU, COMP→PEOU, COMP→RS, PEOU→ATT, PEOU→PU, PU→ATT, RS→ATT, GC→ASP, GC→CM, GC→TR, GC→DT, GC→OPP, TR→ASP, TR→CM, CM→ASP, DT→ASP) were statistically significant as illustrated in Table 5-14. However, two hypothesised paths (CS→ATT, OPP→ASP) were not statistically significant. The hypothesised paths that were statistically significant were accepted, while those that were not statistically significant were rejected.

Table 5-14: Path significance assessment

Path	β	CI		*p*-value (two-tailed)	Inference	Hypothesised path accepted or rejected?
		2.5%	97.5%			
ASP → ATT	0.159	0.073	0.269	0.002	Statistically significant	Accepted
ASP → CUI	0.169	0.065	0.285	0.003	Statistically significant	Accepted
ATT → CUI	0.622	0.508	0.718	0.000	Statistically significant	Accepted
CM → ASP	0.217	0.080	0.348	0.002	Statistically significant	Accepted
COMP → ATT	0.204	0.067	0.340	0.003	Statistically significant	Accepted
COMP → CS	-0.359	-0.473	-0.241	0.000	Statistically significant	Accepted
COMP → PEOU	0.708	0.625	0.781	0.000	Statistically significant	Accepted
COMP → PU	0.448	0.301	0.580	0.000	Statistically significant	Accepted
COMP → RS	-0.684	-0.752	-0.611	0.000	Statistically significant	Accepted
CS → ATT	-0.042	-0.135	0.050	0.371	Not statistically significant	Rejected
DT → ASP	-0.169	-0.291	-0.050	0.006	Statistically significant	Accepted
GC → ASP	0.263	0.141	0.383	0.000	Statistically significant	Accepted
GC → CM	0.319	0.163	0.464	0.000	Statistically significant	Accepted
GC → DT	-0.552	-0.645	-0.457	0.000	Statistically significant	Accepted
GC → OPP	-0.496	-0.598	-0.389	0.000	Statistically significant	Accepted
GC → TR	0.682	0.593	0.760	0.000	Statistically significant	Accepted
OPP → ASP	-0.004	-0.114	0.098	0.948	Not statistically significant	Rejected
PEOU → ATT	0.220	0.097	0.349	0.001	Statistically significant	Accepted
PEOU → PU	0.392	0.262	0.521	0.000	Statistically significant	Accepted
PU → ATT	0.219	0.069	0.358	0.003	Statistically significant	Accepted
RS → ATT	-0.157	-0.292	-0.027	0.020	Statistically significant	Accepted
TR → ASP	0.293	0.159	0.409	0.000	Statistically significant	Accepted
TR → CM	0.475	0.339	0.618	0.000	Statistically significant	Accepted

Two variables were hypothesised as factors directly influencing continuance use intention. The positive influence of attitude towards technology (ATT) on continuance use

intention (CUI) was statistically significant (β = 0.622, p = 0.000). ATT had a greater influence on CUI than attitude towards supplier (ASP). The influence of attitude towards supplier (ASP) on CUI was also statistically significant (β = 0.169, p = 0.003). In addition to influencing CUI, ASP was hypothesised as a factor positively influencing ATT. This relationship (ASP→ATT) was statistically significant, as shown in the results (β = 0.159, p = 0.002).

The technological 'reasons for' were theorised as factors positively influencing attitude towards technology (ATT), while the 'reasons against' were theorised as factors negatively influencing ATT. Regarding the technological 'reasons for', the direct influence of perceived ease of use (PEOU) on ATT was statistically significant (β = 0.220, p = 0.001), and the direct influence of perceived usefulness (PU) on ATT was also statistically significant (β = 0.219, p = 0.003). PEOU had a statistically significant influence on PU (β = 0.392, p = 0.000), a relationship between technological 'reasons for' that was hypothesised in this study. The negative influence of reliability shortcomings (RS) on ATT was statistically significant (β = -0.157, p = 0.020), while the negative influence of capability shortcomings (CS) on ATT was statistically not significant (β = -0.042, p = 0.371).

Compatibility (COMP) was theorised as the technological value (belief) influencing PEOU, PU, RS, CS and ATT. COMP had a statistically significant direct influence on ATT (β = 0.204. p = 0.003). The positive influence of COMP on the technological 'reasons for' was statistically significant for both PEOU (β = 0.708, p = 0.000) and PU (β = 0.448, p = 0.000). The negative influence of COMP on the technological 'reasons against' was also statistically significant for both RS (β = -0.684, p = 0.000) and CS (β = -0.359, p = 0.000).

The relational 'reasons for' were theorised as factors positively influencing attitude towards the supplier (ASP), while the 'reasons against' were theorised as factors negatively influencing ASP. Regarding the relational 'reasons for', the direct influence of trust (TR) on ASP was statistically significant (β = 0.293, p = 0.000), and the direct influence of commitment (CM) on ASP was also statistically significant (β = 0.217, p = 0.002). Additionally, TR had a statistically significant influence on CM (β = 0.475, p = 0.000), a relationship between relational 'reasons for' that was hypothesised in this study.

The negative influence of distrust (DT) on ASP was statistically significant (β = -0.169, p = 0.006), while the negative influence of opportunism (OPP) on ASP was not statistically significant (β = -0.004, p = 0.948).

The relational value (belief) that influences other relational factors (TR, CM, GC, OPP, DT) was theorised as goal congruence (GC). The positive direct influence of GC on attitude towards supplier (ASP) was statistically significant (β = 0.263, p = 0.000). The positive direct influence of GC on the relational 'reasons for' was statistically significant for both TR (β = 0.682, p = 0.000) and CM (β = 0.319, p = 0.000). The strongest direct influence of GC was on TR. The negative influence of GC on the relational 'reasons against' was statistically significant on both DT (β = -0.552, p = 0.000) and OPP (β = -0.496, p = 0.000). Table 5-14 displays the summary of path significance assessment.

5.6.2.2 Effect size

The effect size (f^2) was assessed using suggestions by Cohen (1988), whereby values below 0.02 were regarded as weak. Those up to 0.15, 0.35 and those above 0.35 were considered small, medium and large effects, respectively (Hair *et al.,* 2021). Large effects were found on five paths (ATT→CUI, COMP→PEOU, COMP→RS, GC→TR, GC→DT) and medium effects were found on four paths (COMP→PU, PEOU→PU, GC→OPP, TR→CM). Most of the paths (COMP→ATT, COMP→CS, GC→CM PEOU→ATT, PU→ATT, RS→ATT, ASP→ATT, ASP→CUI, GC→ASP, CM→ASP, TR→ASP, DT→ASP) had small effects. Table 5-15 shows that weak effects were found on two paths (CS→ATT, OPP→ASP).

Table 5-15: Effect size assessment

Group	Path	f^2	Inference
Factors of CUI	ATT → CUI	0.557	Large effect
	ASP → CUI	0.041	Small effect
	ASP → ATT	0.051	Small effect
Technological factors	PEOU → ATT	0.056	Small effect
	PU → ATT	0.056	Small effect
	COMP → ATT	0.048	Small effect

	RS → ATT	0.025	Small effect
	COMP → PEOU	1.006	Large effect
	COMP → RS	0.878	Large effect
	COMP → PU	0.252	Medium effect
	PEOU → PU	0.193	Medium effect
	COMP → CS	0.148	Small effect
	CS → ATT	0.003	Weak effect
Relational factors	TR → ASP	0.096	Small effect
	GC → ASP	0.090	Small effect
	CM → ASP	0.061	Small effect
	DT → ASP	0.033	Small effect
	GC → CM	0.117	Small effect
	GC → DT	0.439	Large effect
	GC → OPP	0.326	Medium effect
	GC → TR	0.868	Large effect
	TR → CM	0.260	Medium effect
	OPP → ASP	0.000	Weak effect

5.6.2.3 Predictive relevance

Predictive relevance (Q^2) was assessed using suggestions by Geisser (1975) and Stone (1974), whereby values greater than 0 were deemed acceptable, those above 0.25 were considered moderate, and those above 0.50 were considered strong. ASP and ATT were found to have strong predictive relevance, while most variables (CM, CUI, PEOU, PU, RS, TR) had moderate predictive relevance. CS, DT and OPP had low but acceptable predictive relevance, as displayed in Table 5-16.

Table 5-16: Predictive relevance (Q^2) assessment

	Q^2	Inference
ASP	0.505	Strong
ATT	0.539	Strong

CM	0.387	Moderate
CS	0.096	Acceptable
CUI	0.358	Moderate
DT	0.216	Acceptable
OPP	0.151	Acceptable
PEOU	0.402	Moderate
PU	0.482	Moderate
RS	0.340	Moderate
TR	0.290	Moderate

5.6.2.4 Variance explained

Variance explained, or the coefficient of determination (R^2), was assessed using suggestions by Henseler *et al.* (2009), with values around 0.25, 0.50 and 0.75 considered weak, moderate and substantial. Table 5-17 illustrates that the variance explained for ASP and ATT was substantial while that for most of the variables (CM, CUI, PEOU, PU, RS, TR) was moderate. Three variables (CS, DT, OPP) had weak values of variance explained, and notably, each had one influencing factor in the model.

Table 5-17: Variance explained (R^2) assessment

LV	R^2	Inference
ASP	0.649	Substantial
ATT	0.686	Substantial
CM	0.534	Moderate
CS	0.129	Weak
CUI	0.538	Moderate
DT	0.305	Weak
OPP	0.246	Weak
PEOU	0.502	Moderate
PU	0.603	Moderate
RS	0.468	Moderate

TR	0.465	Moderate

5.7 Ad hoc analysis (mediations)

The implied mediations are outlined in Table 5-18. The results of the statistical evaluation of the implied mediations are presented in the subsequent section.

Table 5-18: Implied mediations

	Implied mediations
1	Attitude towards the technology (ATT) mediates the influence of attitude towards the supplier (ASP) on continuance use intention (CUI).
2	Commitment (CM) mediates the influence of goal congruence (GC) on attitude towards the supplier (ASP).
3	Distrust (DT) mediates the influence of goal congruence (GC) on attitude towards the supplier (ASP).
4	Opportunism (OPP) mediates the influence of goal congruence (GC) on attitude towards the supplier (ASP).
5	Trust (TR) mediates the influence of goal congruence (GC) on attitude towards the supplier (ASP).
6	Commitment (CM) mediates the influence of trust (TR) on attitude towards the supplier (ASP)
7	Capability shortcomings (CS) mediate the influence of compatibility (COMP) on attitude towards the technology (ATT).
8	Perceived ease of use (PEOU) mediates the influence of compatibility (COMP) on attitude towards the technology (ATT).
9	Perceived usefulness (PU) mediates the influence of compatibility (COMP) on attitude towards the technology (ATT).
10	Reliability shortcomings (RS) mediate the influence of compatibility (comp) on attitude towards the technology (ATT).
11	Perceived usefulness (PU) mediates the influence of perceived ease of use (PEOU) on attitude towards the technology (ATT).

12	Perceived ease of use (PEOU) and perceived usefulness (PU) have a multiple mediation effect on the effect of compatibility (COMP) on attitude towards the technology (ATT).
13	Trust (TR) and commitment (CM) have a multiple mediation effect on the effect of goal congruence (GC) on attitude towards the supplier (ASP).

Similar to path significance, indirect effects are statistically significant if $p \leq 0.05$ (two-tailed) and the 95% two-tailed percentile confidence interval (CI) does not include zero '0'. Bootstrapping was conducted in SmartPLS (Version 4) using 5000 subsamples and 300 iterations to calculate the statistical significance values of the indirect effects and the CIs. Table 5-19 shows that most of the indirect influences (ASP→ATT→CUI, COMP→PEOU→ATT, COMP→PU→ATT, COMP→PEOU→PU→ATT, COMP→RS→ATT, GC→CM→ASP, GC→DT→ASP, GC→TR→ASP, PEOU→PU→ATT, TR→CM→ASP, GC→TR→CM→ASP) were statistically significant while two of the indirect influences (COMP→CS→ATT, GC→OPP→ASP) were statistically not significant. The results of the multiple mediation paths (GC→TR→CM→ASP and COMP→PEOU→PU→ATT) are also presented due to their contribution to the total influence of GC on ASP and COMP on ATT, respectively.

Table 5-19: Indirect influence assessment

Path	*β*	CI		*p*-value (two-tailed)	Inference
		2.5%	97.5%		
ASP → ATT → CUI	0,099	0,044	0,159	0,001	Statistically significant
COMP → CS → ATT	0,015	-0,017	0,054	0,395	Statistically not significant
COMP → PEOU → ATT	0,156	0,067	0,254	0,001	Statistically significant
COMP → PU → ATT	0,098	0,035	0,184	0,009	Statistically significant
COMP → RS → ATT	0,108	0,026	0,214	0,024	Statistically significant
GC → CM → ASP	0,069	0.022	0.125	0,008	Statistically significant
GC → DT → ASP	0,093	0.027	0.169	0,010	Statistically significant
GC → OPP → ASP	0,002	-0.051	0.058	0,949	Statistically not significant
GC → TR → ASP	0,200	0.109	0.285	0,000	Statistically significant

PEOU → PU → ATT	0,086	0,033	0,151	0,004	Statistically significant
TR → CM → ASP	0,103	0,037	0,184	0,007	Statistically significant
GC→TR→CM→ASP	0,070	0.024	0.130	0,010	Statistically significant
COMP→PEOU→PU→ATT	0,061	0,024	0,112	0,005	Statistically significant

The direct influence of attitude towards the supplier (ASP) on continuance use intention (CUI) was statistically significant (β = 0.169, p = 0.003). The indirect influence of ASP on CUI, with attitude towards the technology (ATT) as a mediator, was statistically significant (β = 0.099, p = 0.001). The resultant total influence (ASP→CUI) was also statistically significant (β = 0.268, p = 0.000), as shown in Table 5-20. Thus, ATT partially mediated the influence of ASP on CUI.

Table 5-20: Mediator analysis (influence of ASP on CUI)

Influence	Mediator	β	CI		p-value (two-tailed)	Inference
			2.5%	**97.5%**		
Total influence (ASP→CUI)	-	0,268	0,158	0,398	0,000	Statistically significant
Direct influence (ASP→CUI)	-	0,169	0,065	0,285	0,003	Statistically significant
Indirect influence (ASP→CUI)	ATT	0,099	0,044	0,159	0,001	Statistically significant

The direct influence of goal congruence (GC) on attitude towards the supplier (ASP) was statistically significant (β = 0.263, p = 0.000). The indirect influence of GC on ASP, with trust (TR), commitment (CM) and distrust (DT) as mediators, were statistically significant (with the results of β = 0.200, p = 0.000; β = 0.069, p = 0.008 and β = 0.093, p = 0.010, respectively). The indirect influence of GC on ASP with opportunism (OPP) as the

mediator was statistically not significant (β = 0.002, p = 0.949). Thus, TR, CM and DT partially mediated the influence of GC on ASP, while the mediation of OPP was not statistically significant. The multiple mediation of TR and CM on the relationship between GC and ASP was statistically significant (β = 0.070, p = 0.010). The total influence of GC on ASP was statistically significant (β = 0.698, p = 0.000), as shown in Table 5-21.

Table 5-21: Mediator analysis (influence of GC on ASP)

Influence	Mediator(s)	β	CI		p-value (two-tailed)	Significant?
			2.5%	97.5%		
Total (GC→ASP)	-	0.698	0,625	0,763	0.000	Statistically significant
Direct (GC→ASP)	-	0.263	0.141	0.383	0.000	Statistically significant
Indirect (GC→ASP)	CM	0.069	0.022	0.125	0.008	Statistically significant
	DT	0.093	0.027	0.169	0.010	Statistically significant
	OPP	0.002	-0.051	0.058	0.949	Not statistically significant
	TR	0.200	0.109	0.285	0.000	Statistically significant
	TR→CM	0.070	0.024	0.130	0.010	Statistically significant

Compatibility (COMP) had a statistically significant direct influence (β = 0.204, p = 0.003) on attitude towards the technology (ATT). The indirect influence of COMP on ATT, with perceived ease of use (PEOU), perceived usefulness (PU) and reliability shortcomings (RS) as mediators, were also statistically significant (as shown by the results of β = 0.156, p = 0.001; β = 0.098, p = 0.009 and β = 0.108, p = 0.024, respectively). The indirect influence of COMP on ATT with capability shortcomings (CS) as the mediator was statistically not significant (β = 0.015, p = 0.395). Thus, PU, RS and PEOU partially mediated the influence of COMP on ATT, while the mediation of CS was statistically not significant. Additionally, the multiple mediations of PEOU and PU on the relationship between COMP and ATT were statistically significant (β = 0.061, p = 0.005). As displayed

in Table 5-22, the total influence of COMP on ATT was statistically significant (β = 0.641, p = 0.000)

Table 5-22: Mediator analysis (influence of COMP on ATT)

Influence	Mediator(s)	β	CI		*p-value* (two-tailed)	Significant?
			2.5%	97.5%		
Total (COMP→ATT)	-	0.641	0.526	0.735	0.000	Statistically significant
Direct (COMP→ATT)	-	0.204	0.067	0.340	0.003	Statistically significant
Indirect (COMP→ATT)	CS	0.015	-0.018	0.053	0.395	Not statistically significant
	PEOU	0.156	0.067	0.255	0.001	Statistically significant
	PU	0.098	0.028	0.177	0.009	Statistically significant
	RS	0.108	0.018	0.204	0.024	Statistically significant
	PEOU→PU	0.061	0.019	0.105	0.005	Statistically significant

The direct influence of perceived ease of use (PEOU) on attitude towards the technology (ATT) was statistically significant (β=0.220, p=0.001). As shown in Table 5-23, the indirect influence of PEOU on ATT, including perceived usefulness (PU) as the mediator, was statistically significant (β = 0.086, p = 0.004). The total influence of PEOU on ATT was also statistically significant (β = 0.305, p = 0.000). Thus, perceived usefulness partially mediated the influence of perceived ease of use on attitude towards the technology.

Table 5-23: Mediator analysis (influence of PEOU on ATT)

Influence	Mediator	β	CI		*p*-value (two-tailed)	Inference
			2.5%	97.5%		
Total (PEOU→ATT)	-	0.305	0.177	0.442	0.000	Statistically significant
Direct (PEOU→ATT)	-	0.220	0.097	0.349	0.001	Statistically significant

Indirect (PEOU→ATT)	PU	0.086	0.033	0.151	0.004	Statistically significant

Trust (TR) had a statistically significant direct influence on attitude towards the supplier (ASP) (β = 0.293, p = 0.000). The indirect influence of TR on ASP with commitment (CM) as a mediator was statistically significant (β = 0.103, p = 0.007). Therefore, CM partially mediated the influence of TR on ASP. The total influence of TR on ASP was statistically significant (β = 0.397, p = 0.000), as illustrated in Table 5-24.

Table 5-24: Mediator analysis (influence of TR on ASP)

Influence	Mediator	β	CI		p-value	Inference
			2.5%	97.5%		
Total (TR→ASP)	-	0.397	0.282	0.501	0.000	Statistically significant
Direct (TR→ASP)	-	0.293	0.159	0.409	0.000	Statistically significant
Indirect (TR→ASP)	CM	0.103	0.037	0.184	0.007	Statistically significant

5.8 Conclusion

This chapter provided the results of the study from the statistical analysis of the responses using the SmartPLS software. The screening of the data, additional coding, data normality, assessment of non-response bias, common method bias, description of the data, sample adequacy checks and demographic profiling were detailed before unpacking the model assessment. The two-phase PLS-SEM model assessment procedure was used, starting with the outer model assessment and then the inner model assessment. The outer model passed the internal consistency, convergent validity and discriminant validity assessment. When the inner model was assessed, 21 of the 23 hypothesised paths were statistically significant, and 11 out of 13 mediations were statistically significant, supporting the proposed conceptual model. Both attitude towards the technology and attitude towards the supplier significantly influence the end-users'

continuance use intention of paperless technology. Compatibility, ease of use, usefulness and reliability shortcomings were confirmed as factors influencing attitude towards the technology. However, the influence of capability shortcomings was insignificant. Goal congruence, trust, commitment and distrust were supported as factors influencing attitude towards the supplier, while the influence of opportunism was not statistically significant. The next chapter discusses the results and concludes this study.

6 Chapter 6: Discussion and Conclusion

6.1 Introduction

This study aimed to identify how business end-users' perceptions of paperless technology and the buyer-supplier relationship influence their continued use of office paperless technology. This chapter will discuss the following: i) the identified and evaluated buyer-supplier relational factors influencing office paperless technology use continuance from the perspective of business end-users, ii) the identified and assessed technology factors influencing office paperless technology use continuance from the perspective of business end-users, and iii) the theoretical and business implications of the findings. From the implications of the findings, recommendations will be made to both academics and managers of office automation organisations, thereby achieving the final secondary objective of this study.

In conclusion, this chapter reviews the work done, summarises specifics in all chapters, and shows how the secondary objectives were achieved (Monreal, 2016; Trafford, Leshem & Bitzer, 2014). The chapter shows the study's contribution to the body of knowledge by filling the identified research gaps (Monreal, 2016; Trafford *et al*., 2014). The originality of the study is discussed as part of the concluding remarks. This chapter acknowledges the study's limitations and suggests further research (Monreal, 2016; Trafford *et al.*, 2014).

6.2 Factors influencing paperless technology continuance use intention

The key factors influencing paperless technology continuance use intention in business-to-business (B2B) settings were identified from the literature as attitude towards the supplier and attitude towards the technology. The statistical analysis results showed that both attitude towards the supplier and attitude towards the technology significantly influenced the end-users' continuance use intention of office paperless technology. The explained variance of end-users' continuance use intention by their attitude towards the technology and attitude towards the supplier was substantial at 53.83%. This finding supports the proposed model, suggesting that both economic exchange (paperless

technology services in this study) and social exchange (B2B relationship) are important, as argued by Cropanzano and Mitchell (2005).

Attitude towards the technology as a factor influencing continuance use intention

Many studies have found that attitude towards technology positively influences end-users' continuance use intention, a hypothesis supported in this study. The current study also showed that attitude towards technology strongly influences continuance use intention (β = 0.622, p = 0.000). This finding is consistent with the findings of several other authors, such as Ajjan *et al.* (2014), Iranmanesh *et al.* (2017), Matikiti *et al.* (2018) and Zhao *et al.* (2018), who found that attitude towards technology positively influences the users' continuance use intention of that respective technology. The effect size of attitude towards the technology on continuance use intention in the current study was large (f^2 = 0.557). Therefore, the end-users' attitude towards the technology should be enhanced to strengthen their continuance use intention of paperless technology.

Attitude towards the supplier as a factor influencing continuance use intention

In this study, it was proposed that attitude towards the supplier positively influences the continuance use intention of end-users. The data supported the direct positive influence of attitude towards the supplier on continuance use intention (β = 0.169, p = 0.003). However, the effect size of the direct influence of attitude towards the supplier on continuance use intention was small (f^2 = 0.041). Although there is a shortage of research on the influence of attitude towards the supplier on continuance use intention, other authors have investigated the relationship of constructs analogous to attitude towards the supplier and continuance use intention. For example, Claybaugh *et al.* (2022) established that relationship satisfaction positively influences business end-users' continuance use of CRM software. According to Oliver (1980), satisfaction is experience-specific, but attitude is more long-term, transcending all the other previous experiences. The finding in the current study shows that attitude towards the supplier should be enhanced to strengthen the end-users' continuance use intention of paperless technology. Moreover, the total influence of attitude towards the supplier on continuance use intention (with attitude towards the technology as a mediator) was statistically significant (β = 0.268, p = 0.000).

Thus, attitude towards the supplier influences continuance use intention directly and indirectly.

Attitude towards the supplier as a factor influencing attitude towards paperless technology

The identified factors influencing paperless technology continuance use intention were theorised to have a relationship between them. Attitude towards the supplier was hypothesised to positively influence attitude towards paperless technology. Attitude towards the supplier was supported by the data (β = 0.159, p = 0.002) as a factor influencing attitude towards the technology. This outcome shows that attitude towards the supplier promotes the continuance use of paperless technology, as it positively contributes to the end-users' attitude towards it. The effect size of the direct influence of attitude towards the supplier on attitude towards the technology was small (f^2 = 0.051). There is also a paucity of research on the influence of attitude towards the supplier on attitude towards the technology. However, some authors have investigated relationships between other analogous constructs. For example, Høgevold *et al.* (2020), Jyh-Liang *et al.* (2022), and Sales-Vivó *et al.* (2020) found that social satisfaction positively influences economic satisfaction in B2B relationships. Thus, end-users' attitudes toward the supplier can be enhanced to improve their attitudes toward paperless technology.

6.2.1 Technological factors

Besides attitude towards the supplier influencing attitude towards paperless technology, compatibility, technological 'reasons for' (perceived ease of use, perceived usefulness), and technological 'reasons against' (reliability shortcomings, capability shortcomings) were also identified from the literature as factors influencing attitude towards paperless technology. The variance of end-users' attitudes towards the technology explained by attitude towards the supplier and these technological aspects was 68.56%. Additionally, compatibility was hypothesised to influence the technological 'reasons for' as well as the technological 'reasons against', while perceived ease of use was hypothesised to influence perceived usefulness.

- *Compatibility as a factor influencing attitude towards paperless technology*

From arguments of the technology-organisation-environment (TOE) framework, compatibility was hypothesised as the technological antecedent influencing end-users' attitudes toward paperless technology and the technological reasons. Therefore, the influence of compatibility on attitude towards paperless technology can be direct and indirect. Compatibility had a statistically significant direct influence on attitude towards paperless technology (β = 0.204, p = 0.003). This outcome is consistent with the findings of other authors, such as Chatterjee *et al.* (2021) and Kanchanatanee *et al.* (2014), who empirically confirmed the positive influence of technology compatibility on attitude towards the technology. The direct influence of technology compatibility on attitude towards the technology in this study was small (f^2 = 0,048). The total influence of compatibility on attitude towards the technology (including technological reasons as mediators) was statistically significant (β = 0.641, p = 0.000). These findings show that the compatibility of paperless technology influences the end-users' attitudes towards paperless technology directly and indirectly (see section 6.3 on mediations). Thus, the end-users' perceptions that paperless technology is compatible with their work should be heightened to improve their attitude towards paperless technology.

- *Perceived ease of use as a factor influencing attitude towards paperless technology*

From the technology acceptance model (TAM), perceived ease of use was hypothesised as a positive factor influencing attitude towards paperless technology with a direct and indirect influence mediated by perceived usefulness. Karahanna *et al.* (1999) argued that the influence of perceived ease of use on attitude towards the technology becomes less significant in the post-adoption phases due to the focus of users on job performance (usefulness). However, the data supported perceived ease of use as a direct factor influencing attitude towards paperless technology (β = 0.220, p = 0.001) in the current study. Other authors, such as Alsharo *et al.* (2020) and Matikiti *et al.* (2018), applied the technology acceptance model and similarly found that perceived ease of use positively influences attitudes toward technology in a business context. The effect size (of the direct

influence) of perceived ease of use on attitude towards paperless technology was small (f^2 = 0.056). Additionally, the total effect of perceived ease of use on attitude (with perceived usefulness as the mediator) was statistically significant (β = 0.305, p = 0.000), as further discussed in Section 6.3. Thus, the end-users' ease of use perceptions of paperless technology should be addressed and improved because perceived ease of use enhances end-users' attitudes toward paperless technology directly and indirectly.

- *Perceived ease of use as a factor influencing perceived usefulness*

The data supported the positive influence of perceived ease of use on perceived usefulness (β = 0.392, p = 0.000). The effect size of perceived ease of use on perceived usefulness was medium (f^2 = 0.193). Several authors (e.g., Faqih & Jaradat, 2015; Warganegara & Babolian Hendijani, 2022) found that perceived ease of use positively influences perceived usefulness, in agreement with the notion by Davis (1986) that when technology is easy to use, it improves one's overall productivity. In the context of this study, office automation organisations can strengthen the end-users' usefulness perceptions of paperless technology by heightening its ease of use aspects.

- *Perceived usefulness as a factor influencing attitudes toward paperless technology*

Perceived usefulness from the TAM was hypothesised to positively influence the users' attitude towards paperless technology. The results supported the positive influence of perceived usefulness on attitude towards paperless technology (β = 0.219, p = 0.003). Similar to perceived ease of use, the effect size of perceived usefulness on attitude towards paperless technology was small (f^2 = 0.056). Alsharo *et al.* (2020) and Zhao *et al.* (2018) applied the technology acceptance model and also found that perceived usefulness positively influences the users' attitude toward technology in the post-adoption phase by business end-users. In the current study, the end-users' usefulness perceptions of paperless technology should be strengthened because positive usefulness perceptions enhance their attitudes toward paperless technology.

- *Reliability shortcomings as a factor influencing attitudes toward paperless technology*

Reliability shortcomings were hypothesised as a ‘reason against’ that negatively influence attitude towards paperless technology. The negative influence of reliability shortcomings on attitude towards paperless technology was statistically significant (β = -0.157, p = 0.020). The effect of reliability shortcomings on attitude towards the technology was small (f^2 = 0.025). Reliability shortcomings have been scarcely examined for their influence on end-users’ attitudes toward the technology. The current study showed that the reliability shortcomings of paperless technology negatively influence B2B end-users' attitudes toward paperless technology. In other words, office automation organisations can reduce and highlight the minimal reliability shortcomings of paperless technology to enhance the end-users' attitudes toward the technology.

- *Capability shortcomings as a factor influencing attitudes toward paperless technology*

Capability shortcomings were hypothesised as the second “reason against” that negatively influences attitudes towards paperless technology. The direct influence of capability shortcomings on attitude towards paperless technology was statistically not significant (p = 0.371). Studies that have examined the effect of capability shortcomings on attitudes toward technology are scarce. However, Hajiheydari *et al.* (2021) investigated other constructs and found that the influence of flexibility (analogous to capability) on scepticism (a broad evaluation similar to a negative attitude) was not statistically significant. Pickering, Bartholomew, Janian, Moreno and Surridge (2020) argued that when end-users’ understand technology's usefulness, they can accept shortcomings emanating from its implementation. The comprehension of the usefulness of paperless technology might have contributed to the statistically insignificant influence of capability shortcomings in the context of the current study. Reducing capability shortcomings is not important in enhancing end-users’ attitudes toward paperless technology.

- *Compatibility as a factor influencing reliability shortcomings*

The data in this study supported the negative direct influence of compatibility on reliability shortcomings (β = -0.684, p = 0.000). The effect size of compatibility on reliability

shortcomings was large (f^2 = 0.878), showing that perceptions of paperless technology compatibility largely reduce perceptions of its unreliability. There is also a scarcity of research on the influence of compatibility on reliability shortcomings. The current study filled this gap and proved that increasing the compatibility of paperless technology will reduce the perceived reliability shortcomings of the technology.

- *Compatibility as a factor influencing capability shortcomings*

Compatibility had a negative direct influence (β = -0.359, p = 0.000) on capability shortcomings, as proposed in this study. The effect size of compatibility on capability shortcomings was small (f^2 = 0,148). Compatibility has been scarcely investigated for its influence on capability shortcomings. However, Furneaux and Wade (2017) found that technologies with a stronger reflection of institutionalised norms (analogous to technology compatibility) exhibited fewer capability shortcomings. The results of the current study presented evidence that perceptions of paperless technology compatibility reduce perceptions of its capability shortcomings.

- *Compatibility as a factor influencing perceived usefulness*

The positive direct influence of compatibility on perceived usefulness was statistically significant (β = 0.448, p = 0.000), as hypothesised in this study. This result is consistent with findings from previous studies such as Crespo *et al.* (2013), Kanchanatanee *et al.* (2014), and Sugandini *et al.* (2018), who found that compatibility positively influences perceived usefulness. The effect size of compatibility on perceived usefulness was medium (f^2 = 0.252). Therefore, increasing and highlighting the compatibility of paperless technology with aspects such as the 'preferred work style' of business end-users increases their perceptions of the usefulness of the technology.

- *Compatibility as a factor influencing perceived ease of use*

The data supported the positive direct influence of compatibility on perceived ease of use (β = 0.708, p = 0.000). Crespo *et al.* (2013) and Patwardhan *et al.* (2017) found that technology compatibility had a positive influence on perceived ease of use. In this study, the effect size of compatibility on perceived ease of use was large (f^2 = 1.006), showing

that perceptions of paperless technology compatibility strongly influenced perceptions of its ease of use. Effect sizes above 1.00 indicate that the effect of the independent variable on the dependent variable is very large (AlWahaibi, Al-Hadabi & Al-Kharousi, 2020). In other words, end-users' perceptions of the ease of use of paperless technology are largely influenced by perceptions of its compatibility with their work. Thus, office automation organisations can emphasise how paperless technology is compatible with the job performance of business end-users as a way of increasing their ease of use perceptions.

6.2.2 Relational factors

Factors of the business-to-business (B2B) relationship that influence the end-users' attitudes toward the supplier were hypothesised from literature as goal congruence, the 'reasons for' (trust, commitment), and the 'reasons against' (distrust, opportunism). The variance of end-users' attitudes toward the supplier explained by relational factors was 64.90%. Additionally, goal congruence was hypothesised to influence the relational 'reasons for' and the relational 'reasons against', while trust was hypothesised to influence commitment.

- *Goal congruence as a factor influencing attitude towards the supplier*

From the social exchange theory (SET), goal congruence was hypothesised as a relational value that influences end-users' attitudes toward the supplier. The influence of goal congruence on attitude towards the supplier was direct and indirect (mediated by relational reasons). The positive influence of goal congruence on attitude towards the supplier was supported by the results of this study (β = 0.263; p = 0.000). Research that has assessed the effect of goal congruence on attitude towards the supplier is scant. However, the current study's findings can be compared to the findings of Akman and Yörür (2012) and Vieira *et al.* (2014), who found that common goals in B2B relationships positively influence relationship satisfaction. The effect size of the direct influence of goal congruence on attitude towards the supplier in the current study was small (f^2 = 0.090). The total influence of goal congruence (from the direct and indirect paths) on attitude towards the supplier was statistically significant (β = 0.698, p = 0.000). This result shows

that the importance of goal congruence in B2B relationships is critical because it influences end-users' attitudes toward the supplier directly and indirectly, as further discussed in Section 6.3. Thus, goal congruence should be improved and demonstrated to enhance the end-users' attitude towards the supplier.

- *Trust as a factor influencing attitude towards the supplier*

Trust was hypothesised as a relational 'reason for' that positively influences attitude towards the supplier directly and indirectly (through commitment). The data supported the direct positive influence of trust on attitude towards the supplier (β = 0.293; p = 0.000). Trust had a statistically significant direct influence on attitude towards the supplier (β = 0.293; p = 0.000). However, the effect size was small (f^2 = 0.096). Research investigating the influence of trust on attitude toward the supplier is still limited. Nonetheless, Park and Park (2013) and Roberts-Lombard *et al.* (2019) found that trust positively influences relationship satisfaction. In the current study, the total influence of trust (including commitment as a mediator) on attitude towards the supplier was statistically significant (β = 0.397, p = 0.000). This finding presented evidence of the importance of trust in the B2B relationship because of its direct and indirect influence on the end-users' attitude towards the supplier (see Section 6.3 on mediations). Therefore, trust should be fostered in the B2B relationships to enhance the end-users' attitudes toward the supplier.

- *Commitment as a factor influencing attitude towards the supplier*

In this study, commitment was hypothesised as the second relational 'reason for' that positively influences attitude towards the supplier. From the analysis of the data, the positive influence of commitment on attitude towards the supplier was statistically significant (β = 0.217, p = 0.002). However, the effect size of commitment on attitude towards the supplier was small (f^2 = 0.061). There is limited research on the relationship between commitment and attitude toward the supplier. Some studies, such as Park and Park (2013) and Roberts-Lombard *et al.* (2019), found that commitment positively influences relationship satisfaction. The current study's findings proved that end-users' high levels of commitment in the B2B relationship result in positive attitudes towards the supplier. In other words, commitment is also significant in the B2B relationship of this

study. Therefore, commitment should be strengthened to enhance the attitude of end-users towards the supplier.

- *Distrust as a factor influencing attitude towards the supplier*

This study hypothesised that distrust is a relational 'reason against' that directly influences attitude towards the supplier. The direct negative influence of distrust on attitude towards the supplier was supported by the results of this study (β = -0.169; p = 0.006). This result shows that distrust weakens the quality of B2B relationships, as postulated by Guo *et al.* (2017) and Seppanen and Blomqvist (2006). So *et al.* (2018) found that distrust negatively influences attitude towards the supplier in a B2C context. In this study, the effect size of distrust on attitude towards the supplier was small (f^2 = 0.033). The findings in the current study showed that reduced distrust results in positive attitudes towards the supplier. Accordingly, it is imperative for the office automation organisation in the current study to maintain low levels of distrust by end-users to positively influence the end-users' attitude towards the organisation (the supplier).

- *Opportunism as a factor influencing attitude towards the supplier*

Opportunism was hypothesised in this study as the second relational 'reason against' that has a direct negative influence on attitude towards the supplier. The influence of opportunism on attitude towards the supplier was negative, but it was statistically not significant (p = 0.948). Studies that have examined the influence of opportunism on attitude towards the supplier are scarce. This study's findings were inconsistent with those of other authors, such as Jeong and Oh (2017), who found that opportunism had a statistically significant negative influence on relationship satisfaction in B2B relationships. However, Jyh-Liang *et al.* (2022) found that opportunism did not significantly influence non-economic satisfaction in B2B relationships, citing the culture of Taiwanese companies as a probable cause. For Khatleli and Root (2009), opportunism by businesses is widespread in South Africa. Extensive business opportunism in South Africa could be a probable cause of opportunism being a statistically insignificant factor of attitude towards the supplier in the current study. Therefore, reducing perceptions of supplier opportunism by end-users in the current study does not enhance their attitude towards the supplier.

- *Goal congruence as a factor influencing trust*

Goal congruence was hypothesised to positively influence end-users' supplier trust in the B2B relationship. The positive influence of goal congruence on trust was supported by the results of this study (β = 0.682; p = 0.000). These results ratify the view by Cuevas *et al.* (2015) that goal congruence is a prerequisite for the establishment of trust. Thus, the commonality of interests in B2B relations evolves into trust (Morgan & Hunt, 1994; Schoorman *et al*., 2007). This finding was consistent with the findings of authors such as Chen *et al.* (2014), Eren Erdoğmuş *et al.* (2012), and Hessling *et al.* (2018), who found that shared values positively influence trust in dyadic relationships. In this study, the effect size of goal congruence on trust was large (f^2 = 0.868). The finding in the current study provides evidence that goal congruence in the B2B relationship increases end-users' trust. Thus, goal congruence should be intensified to increase the levels of trust of the end-users.

- *Goal congruence as a factor influencing commitment*

Goal congruence was also hypothesised to positively influence end-users' commitment to the B2B relationship. The results of the analysis showed that goal congruence had a positive statistically significant influence (β = 0.319, p = 0.000) on commitment. This result was consistent with the findings of studies such as Eren Erdoğmuş *et al.* (2012), Morgan and Hunt (1994), and Theron *et al.* (2008) that shared values positively influence commitment in B2B relationships. The effect size of goal congruence on commitment in the current study was small (f^2 = 0.117). This finding proved that goal congruence in the B2B relationship increases the commitment of end-users. Thus, goal congruence should be strengthened to increase commitment.

- *Goal congruence as a factor influencing distrust*

Goal congruence was hypothesised to negatively influence end-users' distrust of the supplier in the B2B relationship. The results supported the negative influence of goal congruence on distrust (β = -0.552; p = 0.000). In this study, the effect size of goal congruence on distrust was large (f^2 = 0.439). Despite a scarcity of research on the relationship between goal congruence and distrust, the study by McKnight *et al.* (2017) found that service outcome quality (an assessment of the fulfilment of strategic goals)

negatively influenced distrust. Suk-Joo *et al.* (2018) established that structural assurance (relational structures to ensure the achievement of goals) negatively influences distrust. The finding in the current study indicated that the office automation organisation can ensure congruence of goals with its customers (end-users) to reduce distrust.

- *Goal congruence as a factor influencing opportunism*

As hypothesised in the current study, the negative influence of goal congruence on opportunism was supported by the results of the study (β = -0.496; p = 0.000). The effect size of goal congruence on opportunism was medium (f^2 = 0.326). This finding was consistent with results from other studies, such as Tran *et al.* (2022), who concluded that goal congruence reduces opportunism. Yen and Barnes (2011) also found that coordination to achieve mutual goals negatively impacted opportunism in B2B relationships. In order to decrease perceptions of supplier opportunism by end-users, the office automation organisation in the current study should heighten and demonstrate goal congruence in the B2B relationships.

- *Trust as a factor influencing commitment*

Trust was hypothesised as a factor positively influencing commitment in the B2B relationship. The data supported the positive influence of trust on commitment (β = 0.475; p = 0.000). The effect size of trust on commitment was medium (f^2 = 0.260). Eren Erdoğmuş *et al.* (2012), Saleh *et al.* (2014), and Wu *et al.* (2015) also found that trust in dyadic B2B relationships is positively associated with commitment. Thus, trust enables exchange partners to take action without fear of the other party abusing their power, thereby assisting in maintaining effective long-term committed relationships (Zafari *et al*., 2020). Thus, it is imperative for the office automation organisation in the current study to foster trust, which will increase the end-users' commitment to the B2B relationship.

6.3 Mediation effects

Most (nine) of the mediations were partial (both direct and indirect influences were statistically significant), with one mediating variable in each of the paths. Two of the mediations were partial and multiple (both direct and indirect influences were statistically significant), with two mediating variables in each of the paths. However, two of the

mediations were statistically insignificant (indirect influence is not significant), which had one mediating variable in each path. These findings (discussed below) support the conceptual model because most of the assessed mediations were statistically significant.

6.3.1 Global motive mediation

The influence of attitude towards the supplier on continuance use intention was assessed for mediation by attitude towards the technology. Attitude towards the technology partially mediated the influence of attitude towards the supplier on continuance use intention. The indirect influence of attitude towards the supplier on continuance use intention, including attitude towards the technology as a mediator, was statistically significant (β = 0.099, p = 0.001), while the direct influence was also statistically significant (β = 0.169, p = 0.003). A paucity of studies have assessed the mediating role of attitude towards the technology on the relationship between attitude towards the supplier and continuance use intention. The finding in the current study filled this gap and presented evidence that the influence of attitude towards the supplier on continuance use intention is partially mediated by attitude towards the technology. Therefore, improving the end-users' attitudes toward the supplier will enhance their attitude towards the technology, positively influencing their continuance use intention.

6.3.2 Technological mediations

The influence of technology compatibility on attitude towards the technology was analysed for mediation by perceived ease of use, reliability shortcomings, perceived usefulness and capability shortcomings. The mediation of perceived usefulness on the relationship between perceived ease of use and attitude towards the technology was also assessed.

- *Perceived ease of use mediates the influence of compatibility*

Perceived ease of use partially mediated the influence of compatibility on attitude towards the technology. The indirect influence of compatibility on attitude towards the technology, with perceived ease of use as a mediator, was statistically significant (β = 0.156; p = 0.001), while the direct influence was also statistically significant (β = 0.204, p = 0.003). Inconsistent with results from Agarwal and Karahanna (1998), this finding showed that

perceived ease of use mediates the relationship between compatibility and attitude towards the technology in work settings. Several studies in different contexts have shown that perceived ease of use partially mediates the influence of compatibility on attitude towards the technology, such as Mohammadi (2015) and Raza *et al.* (2017). Therefore, the compatibility of paperless technology must be heightened to increase the end-users' ease of use perceptions, positively impacting their attitudes toward the technology.

- *Perceived usefulness mediates the influence of compatibility*

In the current study, perceived usefulness partially mediated the influence of compatibility on attitude towards the technology. The indirect influence of compatibility on attitude towards the technology, mediated by perceived usefulness, was statistically significant (β = 0.098, p = 0.009). The direct influence was also statistically significant (β = 0.204, p = 0.003), as discussed above. This finding was consistent with results from studies such as Sugandini *et al.* (2018), who also found that perceived usefulness partially mediates the influence of compatibility on attitude towards the technology. The finding in the current study shows that when end-users perceive paperless technology as compatible with their work, their usefulness perceptions of the technology are increased, thereby positively influencing their attitudes toward it.

- *Reliability shortcomings mediate the influence of compatibility*

Reliability shortcomings were found to partially mediate the influence of compatibility on attitude towards the technology. The indirect influence of compatibility on attitude towards the technology, with reliability shortcomings as the mediator, was statistically significant (β = 0.108, p = 0.024). The direct influence was also statistically significant (β = 0.204, p = 0.003). Few studies have examined the mediating role of reliability shortcomings on the relationship between compatibility and attitude towards the technology. The finding in the current study filled this gap and showed that the influence of compatibility on end-users' attitudes towards paperless technology is partially mediated by their perceptions of its reliability shortcomings. This finding shows that strengthening the compatibility of paperless technology reduces the end-users' perceptions of its reliability shortcomings, subsequently enhancing their attitudes toward the technology.

- *Capability shortcomings mediate the influence of compatibility*

Mediation of capability shortcomings on the influence of compatibility on attitude towards the technology was not statistically significant (p = 0.396). The not statistically significant indirect effect resulted from capability shortcomings not significantly influencing attitude towards the technology, despite capability shortcomings being directly influenced by compatibility. Studies that have examined the mediating effect of capability shortcomings on the relationship between compatibility and attitude towards the technology are scarce. The current study proved that the influence of compatibility on end-users' attitudes toward paperless technology is not catalysed by their perceptions of the technology's capability shortcomings.

- *Perceived usefulness mediates the influence of perceived ease*

Perceived usefulness partially mediated the influence of perceived ease of use on attitude towards the technology in this study. The indirect influence of perceived ease of use on attitude towards the technology, including perceived usefulness as a mediator, was statistically significant (β = 0.086, p = 0.004), and the direct influence was also statistically significant (β = 0.220, p = 0.001). Several authors (e.g., Faqih & Jaradat, 2015; Park & Park, 2020) have also found that the influence of perceived ease of use on attitude towards the technology is partially mediated by perceived usefulness. The finding in the current study shows that improving the ease of use perceptions of end-users increases their usefulness perceptions, ultimately enhancing their attitudes toward paperless technology.

- *Perceived ease of use and perceived usefulness mediate the influence of compatibility*

The indirect path (compatibility → perceived ease of use → perceived usefulness → attitude towards the technology) was statistically significant (β = 0.061, p = 0.005), in addition to compatibility having a statistically significant direct effect on attitude towards the technology. A paucity of studies have evaluated the mediating role of both perceived ease of use and perceived usefulness (in a single path) on the relationship between compatibility and attitude towards the technology. The finding in the current study proved that strengthening and showing the compatibility of paperless technology increases ease

of use perceptions, which in turn increases usefulness perceptions that will eventually influence the end-users' attitudes toward the technology positively.

6.3.2.1 Importance of technological mediations

The partial mediations (by perceived usefulness, reliability shortcomings and perceived ease of use) were important in the current study because they catalysed the influence of compatibility on attitude towards the technology. These partial mediations contributed to the statistically significant total influence of compatibility on attitude towards the technology (β = 0.641, p = 0.000). Increasing and showing the compatibility of paperless technology increases perceptions of ease of use and usefulness while decreasing perceptions of reliability shortcomings, subsequently enhancing attitude towards the technology. The total effect of perceived ease of use on attitude towards the technology (β = 0.305; p = 0.000) resulted from the partial mediation of perceived usefulness. Thus, showing how paperless technology is easy to use, increases the perceptions of its usefulness, enhancing the end-users' attitudes toward paperless technology.

6.3.3 Relational mediations

The influence of goal congruence on attitude towards the supplier was analysed for mediation by the relational 'reasons for' (trust, commitment) and 'reasons against' (opportunism, distrust). The mediation of commitment on the influence of trust on attitude towards the supplier was also assessed.

- *Trust mediates the influence of goal congruence*

The indirect influence of goal congruence on attitude towards the supplier, with trust as the mediator, was statistically significant (β = 0.200, p = 0.000). The direct influence of goal congruence on attitude towards the supplier was also statistically significant (β = 0.263, p = 0.000). Studies that have examined the mediating effect of trust on the influence of goal congruence on attitude towards the supplier are scarce. The finding in the current study filled this gap by showing that the influence of goal congruence on attitude towards the supplier is partially mediated by trust. Therefore, managers should foster congruence of goals with customers because this increases trust in the B2B relationship, which will positively influence the end-users' attitudes toward the supplier.

- *Commitment mediates the influence of goal congruence*

Commitment partially mediated the influence of goal congruence on attitude towards the supplier. The indirect influence of goal congruence on attitude towards the supplier, including commitment as the mediator, was statistically significant (β = 0.069, p = 0.008), while the direct influence of goal congruence on attitude towards the supplier was also statistically significant (β = 0.263, p = 0.000). Studies that have examined the mediating effect of commitment on the influence of goal congruence on attitude towards the supplier are scarce. The current study provided evidence that the influence of goal congruence on attitude towards the supplier is partially mediated by commitment. Thus, ensuring goal congruence increases end-users' commitment to the B2B relationship, which eventually enhances their attitudes toward the supplier.

- *Distrust mediates the influence of goal congruence*

Distrust partially mediated the influence of goal congruence on attitude towards the supplier. The direct influence of goal congruence on attitude towards the supplier was statistically significant (β = 0.263, p = 0.000). The indirect influence of goal congruence on attitude towards the supplier (with distrust as the mediator) was also statistically significant (β = 0.093, p = 0.010). Still, there is a scarcity of studies that have examined the mediating effect of distrust on the relationship between goal congruence and attitude towards the supplier in B2B settings. The results of the current study provided evidence of the mediating role of distrust on the influence of goal congruence on attitude towards the supplier. Therefore, managers should strengthen and demonstrate goal congruence to reduce distrust in the B2B relationship so that reduced distrust will positively influence the end-users’ attitudes toward the supplier.

- *Opportunism mediates the influence of goal congruence*

The indirect influence of goal congruence on attitude towards the supplier (mediated by opportunism) was not statistically significant (p = 0.949). The non-significance was a result of opportunism not significantly influencing attitude towards the supplier (p = 0.948), despite goal congruence having a statistically significant direct influence on opportunism (β = -0.496, p = 0.000) and attitude towards the supplier (β = 0.263, p = 0.000). Studies that have examined the mediation effect of opportunism on the relationship between goal

congruence and attitude towards the supplier are scarce. The finding in the current study shows that increasing goal congruence will reduce perceptions of supplier opportunism. However, reduced perceptions of supplier opportunism do not enhance the end-users' attitudes toward the supplier.

- *Commitment mediates the influence of trust*

The indirect influence of trust on attitude towards the supplier, with commitment as a mediator, was statistically significant (β = 0.103, p = 0.007) in addition to the direct influence of trust on attitude towards the supplier being statistically significant (β = 0.293, p = 0.000). Thus, commitment partially mediated the influence of trust on attitude towards the supplier. McKnight *et al.* (2017) found that commitment partially mediates the relationship between trust and continuance intention, while del Bosque Rodríguez, Agudo and Gutiérrez (2006) found that commitment partially mediates the influence of trust on non-economic satisfaction. However, research on the mediating role of commitment in the relationship between trust and attitude towards the supplier is scarce. The finding in the current study show that increased trust evolves into commitment, which will positively influence the end-users' attitudes toward the supplier.

- *Trust and commitment mediate the influence of goal congruence*

Results of the current study presented evidence that trust and commitment have a multiple mediation role in the relationship between goal congruence and attitude towards the supplier. The indirect path (goal congruence → trust → commitment → attitude towards the supplier) was statistically significant (β = 0.070, p = 0.010), while goal congruence had a statistically significant direct influence on attitude towards the supplier (β = 0.263, p = 0.000). The multiple mediation role of trust and commitment (in a single path) on the relationship between goal congruence and attitude towards the supplier has been scarcely investigated. This study proved that the influence of goal congruence on attitude towards the supplier is mediated by both trust and commitment in a single path. Therefore, managers should foster goal congruence in the B2B relationship as it establishes trust evolving into commitment, which will positively influence the end-users' attitudes toward the supplier.

6.3.3.1 Importance of relational mediations

Trust, commitment and distrust catalyse the influence of goal congruence on attitude towards the supplier, contributing to a statistically significant total influence of goal congruence on attitude towards the supplier (β = 0.698, p = 0.000). Ensuring the congruence of goals increases trust and commitment while reducing distrust, which will consequently enhance end-users' attitudes toward the supplier. Additionally, the total effect of trust on attitude towards the supplier was statistically significant (β =0.397, p = 0.000) due to the partial mediation of commitment. Therefore, fostering trust in B2B relationships increases commitment, enhancing the end-users' attitude towards the supplier.

6.4 Contributions

The proposed model was supported by the data, subsequently also supporting the behavioural reasoning theory (BRT), the technology acceptance model (TAM), the social exchange theory (SET) and the technology-organisation-environment (TOE) framework. Most of the hypothesised paths were statistically significant (21 out of 23), as the results supported the BRT and the conceptual model. The results also provided information that office automation organisations can use in strategy formulation.

6.4.1 Theoretical contributions

There are three key theoretical contributions of the current study. Firstly, a model of technology continuance use intention by B2B end-users was developed, and the data supported it. Secondly, the findings proved that both attitude towards the supplier and attitude towards the technology are important factors influencing the continuance use of technology. However, attitude towards the technology had a higher influence. This finding was consistent with the conclusion of Claybaugh *et al.* (2022), who investigated analogous constructs. Claybaugh *et al.* (2022) concluded that the quality of technology (0.359, p<0.01) and relationship satisfaction (0.306, p<0.01) both played a major role in the loyalty to a CRM solution. However, the quality of technology had a slightly higher influence. In the current study, the direct influence of attitude towards the technology (β = 0.622, p = 0.000) was much higher than the total influence of attitude towards the supplier (β = 0.268, p = 0.000). Thirdly, the study showed that B2B research should

consider values and beliefs, negative factors and positive factors for their influence on technological and relational attitudinal dimensions when developing marketing strategies for technology.

This study investigated the continuance use factors of paperless technology by incorporating technology factors and buyer-supplier relational factors in a single study. Some scarcely investigated relationships, such as the influence of reliability shortcomings on attitude towards the technology and the influence of goal congruence on attitude towards the supplier, were investigated and found to be statistically significant. Only two of the hypothesised relationships (the influence of capability shortcomings on attitude towards technology and the influence of opportunism towards the supplier) were not statistically significant. Because the data supported the proposed model in general, it can be used to investigate the continuance use of technology in B2B settings. Similarly, the data supported the BRT that was used to frame the conceptual model for this study.

In terms of the reinforcing theories, all the paths in the TAM were statistically significant in this study. These results further supported the TAM, which Liao *et al.* (2009) argued is a versatile theory of technology adoption. Previous studies that investigated the influence of perceived ease of use on attitude towards the technology in the post-adoption phase had mixed findings, and the current study found that the relationship was statistically significant. Regarding the TOE, Tornatzky *et al.* (1983) posited that compatibility is the aspect that connects the technology to the organisation and its environment. Compatibility had statistically significant direct influences on all hypothesised variables (attitude towards the technology, capability shortcomings, perceived ease of use, reliability shortcomings and perceived usefulness). From a SET standpoint, positive aspects of a B2B relationship (e.g., trust, commitment) positively influenced the B2B relationship (by positively influencing attitude towards the supplier), while one negative aspect (distrust) negatively influenced the relationship. These findings mean that the findings supported the TAM, TOE and SET.

6.4.2 Practical contributions

Studies on the continuance use of technology have provided valuable results in various B2B settings (see Appendix B) but have not examined B2B attitude towards the supplier

as a critical endogenous mechanism to the continuance use of technology. In the current study, attitude towards the technology had a stronger influence (direct) on the end-users' continuance use intention than the influence (total) attitude towards the supplier. However, attitude towards the supplier, directly and indirectly, affected users' continuance use intention due to its positive effect on attitude towards the technology. The current study showed that investigating paperless technology use continuance using the BRT model in B2B settings provides a richer understanding of psychological processes leading to business end-users' continued use of paperless technology. By addressing the antecedents of each attitudinal dimension (based on their total effect), the office automation organisation can enhance both attitude towards the technology and attitude towards the supplier, thereby increasing the usage of paperless technology for work. Recommendations to office automation managers in the next section detail some ways to market paperless technology in the B2B context deduced from the findings of this research.

It can be concluded that relationship marketing can be applied when marketing office paperless functions due to the contribution of attitude towards the supplier. According to Morgan and Hunt (1994:22), relationship marketing is "the conducting of marketing activities aimed at establishment and management of relational exchanges". Although relationship marketing reduces consumers' choices, it simplifies information processing, reduces perceived risks and maintains the cognitive consistency of the customers (Sheth & Parvatlyar,1995). Salem (2021) added that relationship marketing plays a big part in ascertaining the prosperity of organisations (suppliers). Fernandes (2018) stated that managed print service providers (office automation organisations) can be expected to provide more paperless solutions compared to paper-based solutions and lead through B2B relationships.

6.5 Recommendations to office automation managers

The attitude of end-users' towards paperless technology and their attitude towards the supplier significantly influenced their continuance use intention of paperless technology. Thus, paperless technology marketing strategies by office automation organisations should enhance the end-users' attitude towards the technology and their attitude towards

the supplier. Enhancement of attitude towards the technology should be prioritised due to the greater influence of attitude towards the technology on the end-users' continuance use intention. Previous studies such as Claybaugh *et al*. (2022) and Zahedi, Bansal and Ische (2010) have found that technology plays a greater role in the continuance use of technology than the B2B relationship, consistent with the current study's findings. However, the current study showed that attitude towards the supplier also positively influences attitude towards the technology.

6.5.1 Enhancing attitude towards the supplier

In the current study, goal congruence, trust, commitment, and distrust were the important relational factors determined by their total influence on attitude towards the supplier. Competition in the office automation industry is changing from being based on transactional engagements to being anchored by B2B relational exchanges (Susarla & Mukhopadhyay, 2019). Strategies to enhance end-users' attitude towards the office automation organisation (supplier) are discussed below. These strategies are based on the premise of the findings that increasing goal congruence, trust and commitment while reducing distrust will enhance the attitude of end-users toward the supplier.

6.5.1.1 Transparency and honesty

Transparency and honesty in business are the building blocks of trust (Schnackenberg & Tomlinson, 2016) that also reduce distrust (Lee & Li, 2021). Thus, the office automation organisation must be honest and transparent at all levels. For example, when end-users print documents, office automation organisations profit from different revenue streams (Fujiwara, 2017), such as paper sales, paper-based services and printer cartridge sales. However, being honest and transparent about the high cost of printing and storing paper documents compared to paperless solutions (Obeidat, 2015; Prabhu, 2019) can enhance the trust of the end-users and their perceptions of goal congruence. In addition, end-users can be made aware of the advantages of paperless work, such as improved efficiency and ease of access to information that improves their productivity (Tiwari *et al.,* 2017).

Managers must ensure that all the organisation's workers are honest in all economic and social exchanges with end-users (see next section on employee training). Providing accurate and timely information (e.g., software upgrades) increases trust by

demonstrating transparency and honesty (Schnackenberg & Tomlinson, 2016). Trust facilitates the flow of information, increasing the aptitude of the B2B relationships to adapt to unexpected problems (Nicolaou *et al.*, 2013). Businesses should also accept mistakes, respond immediately and be open about solutions (Hübner, Wagner & Kurpjuweit, 2018). Transparent and honest responses to service failures convert negative initial responses (such as distrust) to positive ones (such as commitment) (Hübner *et al.*, 2018), ultimately resulting in positive attitudes toward the supplier.

6.5.1.2 Employee training

Exhibiting competence is a fundamental way of increasing trust in B2B relationships (Alsaad, Mohamad, & Ismail, 2017; Dowell, Heffernan & Morrison, 2013). Continuous training of employees (internally) to be knowledgeable of all paperless functions of multifunction printers, other devices, and services is crucial. Knowledgeable employees can provide better quality service (Sao Joao, Spowart & Taylor, 2019), increasing perceptions of competence and increasing trust (Alsaad *et al.*, 2017; Dowell *et al.*, 2013). Thus, employees (e.g., sales representatives, technicians and support staff) can be regularly trained to understand the new MFP-supported paperless technology trends and how they can assist end-users to benefit from them. Paperless technology trends include contactless technology affordances, mobile services, security solutions and cloud-enabled workflows (Arora *et al.*, 2020; Fernandes, 2020).

In addition to product-oriented training, employees can also receive regular training on etiquette (Wang & Beise-Zee, 2013). Displaying etiquette through various touchpoints shows high levels of professionalism, thereby increasing perceptions of competence (Kaur, 2018). Workers (both sales and service) can be trained continuously to identify and address the goals of the end-users. When the employees cannot address customer goals, they can be escalated within the organisational channels so managers can develop solutions. Thus, managers can ensure that all workers demonstrate an understanding of the various customer needs and how to fulfil these needs in line with the organisational values (Wang & Beise-Zee, 2013).

6.5.1.1 Communication

Effective use of communication channels through various touchpoints (including customer care channels) can enhance commitment (Berezan, Yoo & Christodoulidou, 2016) through understanding and addressing end-user needs (Murphy & Sashi, 2018). Suppliers can implement computer-mediated communication mechanisms such as feedback systems and instant messaging that establish trust through social exchanges within business transactions (Alsaad *et al.*, 2017). End-user-preferred communication channels (such as WhatsApp and Telegram) can be used to simplify communication (Fraccastoro, Gabrielsson & Pullins, 2021). Simple and easy communication channels can be used to understand the goals of the end-users and provide improved service, subsequently increasing goal congruence (Dwivedi *et al.*, 2021). Such technical support enhances perceptions of the supplier's ability (Gajic & Boolaky, 2015). It also improves perceptions of the technology, such as its usefulness and ease of use (Caratiquit & Caratiquit, 2022). When the end-users perceive that the supplier is able to provide a service, their trust is strengthened, which will positively influence their commitment (McKnight *et al.*, 2017).

6.5.1.2 Improved service

For Restuccia and Legoux (2019), providing improved and customised service strengthens B2B relationships. End-user judgements of the B2B relationship are more positive (such as increased trust, increased commitment and perceptions of goal congruence) when the suppliers' actions are responsive rather than initiative (Kaski, Niemi & Pullins, 2018). Understanding and addressing the different needs of the end-users (such as product quality, service quality and affordability) can increase their commitment, trust and perceptions of goal congruence in the B2B relationship (Kaski *et al.*, 2018; Lambe *et al.,* 2001). Providing an improved and customised service may require training (internally), monitoring and reviews (Kaski *et al.*, 2018). Workers who contact end-users can be equipped to make unique arrangements (such as change of IT solutions, after-sales training for end-users, lower pricing and better service levels) to provide an improved and customised service that advances relationships (Kaski *et al.*, 2018). Raddats *et al.* (2019) found that managers should move from traditional product-centric strategies to customer-centric ones to understand and add other services to the

core product offerings, subsequently creating additional customer value. Managers can also consider hiring employees who exhibit rapport, such as responsiveness, emotional intelligence, flexibility, sensitivity, creativity and intuition (Kaski *et al.*, 2018).

Kaski *et al.* (2018) argued that interactions with end-users should be more collaborative and responsive, such as identifying common ground and executing the end-users' line of action. Goal congruence is heightened when the supplier's products and services help end-users create value for their organisation and customers (Wikström, 1996). Quick resolution of the challenges of end-users can assist the end-users to be more productive. Therefore, office automation managers should fulfil promises made to institutions and end-users (such as service levels, response times, off-site and on-site assistance). Office automation managers can launch periodical training programmes for employees to fulfil promises. Fulfilled promises enhance the end-users' trust and ultimately increase their commitment (Gansser, Boßow-Thies & Krol, 2021) while reducing perceptions of opportunism and distrust (McKnight *et al.*, 2017).

6.5.1.3 Content creation and update

Creating and updating content can enhance goal congruence, trust and commitment while reducing distrust and perceptions of opportunism. Managers can ensure that the organisation's goals (values, vision, mission) are clearly communicated internally and externally using content. Content to communicate the organisation's goals can be created and updated using outbound and inbound marketing (Dakouan, 2019; Jain & Yadav, 2017). Outbound marketing is based on contacting consumers to attract them to a product or service, while inbound marketing is based on generating and sharing content that attracts the end-users (Dakouan, 2019; Jain & Yadav, 2017). Some strategies (such as social media posts, e-mails, search engine adverts and displays) can be used for both inbound and outbound marketing (Dakouan, 2019; Jain & Yadav, 2017). When the organisation's mission, values and vision are communicated, end-users can realise how the organisation serves them. Wide-ranging organisational information can be used to show how the goals are competently fulfilled (McKnight *et al.*, 2017), such as products, services, references, ratings, communication channels, certifications, coverage and awards.

Building and updating websites, mass media advertising, brochures and other marketing methods can show end-users how the organisation adds value to institutions. Regular content audits can be made to ascertain and solve any goal differences (Champagne, 2022). Audits of end-user views, comments, ratings and reviews can inform managers of the aspects that need attention (Champagne, 2022). Aspects such as expertise and service quality can be improved using content audits. Improving service quality to address the end-user requirements contributes to resolving any goal differences, consequently increasing perceptions of goal congruence.

6.5.2 Enhancing attitude towards the technology

The findings of this study showed that office automation organisations must heighten and show the compatibility, ease of use and usefulness of paperless technology and decrease its reliability shortcomings to enhance the attitude of end-users towards the technology. Perceived ease of use, reliability shortcomings and perceived usefulness mediated the influence of compatibility on attitude towards the technology. Attitude towards the supplier also positively influenced attitude towards the technology. Therefore, recommendations aimed at enhancing end-users' attitude towards the supplier outlined above (such as communication and improved service) can also contribute to enhancing their attitude towards the technology. Further recommendations for office automation managers to enhance the attitude of end-users towards paperless technology are detailed below.

6.5.2.1 End-user training

Using technology will be challenging even if the environment (customers, competitors) pressures the organisation to use the technology when end-users lack the skills to use it (Matikiti *et al.,* 2018). Training end-users can enhance their perceptions of the technology's ease of use and usefulness (Marshall, Mills & Olsen, 2008). After-sales training of end-users regarding the paperless functions of multi-function printers (MFPs) can be done to enhance their perceptions of the technology's ease of use, compatibility and usefulness. Office automation organisation managers can ensure end-users are trained to create paperless workflows and cloud solutions. This can be done by offering programmes to convert existing paper documents to digital documents for specified periods, for example, the previous 12 months. Office automation organisations can also

show end-users how to use several layers of security, such as password protection and encrypted hard drives (IPA, 2013). Secure remote access to paperless functions through MFPs can be set up for end-users to access resources of their institutions through their smart devices, such as phones (Narayanan, 2013). Moreover, end-users can be shown how to use the self-help options for paperless functions on the MFPs (Goda, 2019) to reduce their perceptions of the reliability shortcomings of the technology.

6.5.2.2 Customisation of solutions

Paperless solutions can be customised for each institution to increase the compatibility, ease of use and usefulness of solutions while reducing reliability shortcomings. Paperless technology combined with servitisation has transformed B2B relationships in the office automation industry from being product-centric, such that suppliers are now required to take on much more responsibility for the fundamental processes of the end-users (Lerch & Gotsch, 2015). Managers can ensure that interfaces (e.g., smart touch screens) are customised on MFPs to make it easy for end-users to be more productive. For example, personal profiles with end-user or organisational preferences such as cloud folder addresses, emails, storage and default functions on the screen can be used (Butterfield, 2023). Thus, standardised and simplified document workflows motivate end-users to use paperless technology (Oliveira *et al.,* 2021). Scanning settings can also be customised to include optical character recognition (OCR) when scanning documents to other digitally searchable formats such as PDF and Word, which reduces errors and duplications (Gross *et al.*, 2015; Kadansky, 2014). Service teams and channels can be implemented to address end-user suggestions for additional requirements, such as online and telephonic support that also specialises in paperless functions. In addition to providing on-demand services such as repairs (Ning, Babich, Handley & Keppo, 2014), office automation managers can also offer change of solutions with minimal or no cost implications to the end-users and their organisations. Although getting pre-sale institutional information can lead to the implementation of customised solutions, post-sale end-user-based customisations can enhance the end-users' perceptions (compatibility, ease of use, usefulness, reliability) of paperless technology. For example, MFPs can be upgraded to have power backup systems (see Section 6.5.2.4).

6.5.2.3 Content

When creating content and marketing paperless functions of MFPs, the managers should show how these functions are compatible with the preferred working style of the end-users. In addition, end-users can be shown how the paperless functions are compatible with other technologies in the business environment and organisational values (such as quality service and low environmental impact). By realising the compatibility of the paperless functions, end-users comprehend the ease of use, reliability, usefulness and capability of the MFP-enabled paperless functions. Thus, office automation organisations should have websites, mass media advertising, brochures and other marketing methods. The advantages of paperless work can be used to show how the technology is useful, compatible and easy to use. These advantages include improvement of the efficiency of services and processes, reduction of expenses, reduction of physical space required, fewer filing errors and compatibility with flexible work schedules (Dhumne, 2017; Jidin, Yusof & Sutikno, 2016; Zunic *et al.,* 2016). Reviews, ratings and testimonials can show end-users how other institutions have incorporated paperless technology into their processes. Videos of how to quickly and safely store or retrieve documents on various platforms using MFPs are examples of content that can be used to enhance the end-users' attitude towards paperless technology. End-users can also be provided feedback and updates related to the use of paperless technology, such as monthly subscription emails and upgrade notifications. Additionally, subscriptions can be used to create reward programmes that can increase commitment (Berezan, Yoo & Christodoulidou, 2016).

6.5.2.4 Improved designs

Designs of MFPs can be improved so that they are more useful, easy to use, compatible, reliable and capable of meeting end-user paperless work needs. Paperless technology should offer unrestricted product choices, allow selection of practice tools, be compatible with anticipated or present equipment, efficiently convert existing data to paperless format, adapt to organisational growth, offer better speed, work with upgraded hardware and software and produce automatic information (Nambi *et al.,* 2018). The software supported by the MFPs can be increased and standardised so that end-users do not have to seek additional software to use for paperless work, subsequently increasing the ease of use, usefulness and compatibility of paperless solutions. Office automation managers

can ensure that MFPs are better designed for customisation, such as larger onboard backup systems, user-friendly interfaces, better screens and security systems. For example, some entry-level MFPs have power backup systems (Butterfield, 2023). Such features can be extended to high-level MFPs to increase the capability and reliability of MFP-enabled paperless technology in countries with energy supply challenges. Suggestions from end-users (through various touchpoints) can be used to improve the designs of MFPs for paperless work. Other MFPs are self-fixing and can reset themselves to a secure state when they detect security threats (Roberts, 2019). This functionality can be standardised for all MFPs, reducing the reliability shortcomings of the devices.

6.6 Summary of the work conducted

The secondary objectives set for this study were achieved in this chapter and the preceding chapters. Brief details of the work conducted in each chapter are provided next.

Chapter 1

Chapter 1 provided a background of this study, the concept of a paperless office, an overview of the previous technology continuance use studies in the B2B context, recognised the challenge for managers of office automation organisations and identified the gap in the literature. Accordingly, research objectives (one primary and six secondary) were determined, and the method applied was briefly discussed. The study's contributions, limitations, delimitation and field of study were also stated.

Chapter 2

Chapter 2 provided a B2B perspective of paperless technology continuance use concepts, imposing on office automation organisations. A chronicle of the progress of office paperless technology was provided, including the development of MFPs and outlined the world of work trends impacting paperless technology use, prospects of the office automation industry, and benefits and detriments of paperless technology use for institutions. Paperless technology opportunities for office automation organisations were also discussed.

Chapter 3

Chapter 3 identified four theories (behavioural reasoning theory – BRT; technology acceptance model – TAM; social exchange theory – SET; technology-organisation-environment – TOE) from the literature to investigate the continuance use of paperless technology by business end-users. Using the BRT as the underpinning framework, a conceptual model of factors influencing paperless technology continuance use intention of business end-users was developed. Technological and business-to-business (B2B) relational factors that can be evaluated from end-users' perceptions were established and discussed in line with the identified theories. Attitude towards the technology and attitude towards the supplier were hypothesised as the factors that directly influence the continuance use intention of business end-users.

Chapter 4

The chosen quantitative methodology was justified and explained in Chapter 4. Details of the research design, targeting the whole population (census), data collection methods, partial least squares structural equation modelling (PLS-SEM) data analysis method, the SmartPLS software used, ethical clearance and limitations of the methodology were provided. Information on how to assess the model using PLS-SEM was provided. The suitability of the quantitative approach and conducting a census were also discussed.

Chapter 5

Chapter 5 provided the results of the study from the statistical analysis of the collected data. The screening of the data, assessment of threats to the results and demographic profiling were detailed before conducting the model assessment. The two-phase PLS-SEM model assessment procedure was used. The outer model passed the standard validity and reliability tests. Assessment of the inner model resulted in 21 out of the 23 hypothesised paths being statistically significant and 9 out of 11 hypothesised mediations being significant, supporting the proposed conceptual model.

Chapter 6

The results of this study were presented in Chapter 6. After analysis of the results, attitude towards the technology and attitude towards the supplier were deliberated as factors

directly influencing paperless technology continuance use intention in the B2B context. Consequently, the statistical results of the influence of relational factors on attitude towards the supplier and the influence of technological factors on attitude towards the technology were discussed and compared to previous studies. The mediation results were also discussed and compared to previous studies. The theoretical and business implications of the findings were also presented. Furthermore, Chapter 6 provided recommendations to office automation managers that can be used to enhance the attitude of end-users towards paperless technology and their attitude towards the supplier, subsequently leading to the continued use of paperless technology for work.

6.7 Achievement of objectives

The primary aim of this study was to identify how business end-users' perceptions of paperless technology and buyer-supplier relationships influence their continued use of office paperless technology. In order to achieve this objective, the following secondary objectives were set:

i. Providing an overview of office paperless technology adoption.
ii. Identifying theories from the literature that can be used to investigate business end-users' continuance use of office paperless technology.
iii. Identifying buyer-supplier relational factors influencing office paperless technology use continuance from the perspective of business end-users, in line with the identified theories.
iv. Identifying technology factors influencing office paperless technology use continuance from the perspective of business end-users, in line with the identified theories.
v. Developing a conceptual model of the continuance use of office paperless technology by business end-users.
vi. Making recommendations that can be used by office automation businesses to inform marketing strategy formulation to enhance the continuance of the use of paperless technology by business end-users.

Secondary objective 1:

Chapter 2 provided an overview of office paperless technology adoption, thus achieving the first secondary objective. This overview showed that there is a need for research-based information that can be used to inform marketing strategies in the office automation industry.

Secondary objective 2:

Chapter 3 identified the BRT, TAM, TOE and SET as theories that can be used to investigate the continuance use of office paperless technology by business end-users. The BRT provided the framework applied in this study to develop the conceptual model in Figure 6-1. Because the end-users' continuance use intention predicts their continuance use behaviour, as from the arguments of Kwon and Silva (2019), the end-users' continuance use intention of office paperless technology was the dependent variable in this study.

Secondary objective 3:

In Chapter 3, buyer-supplier relational factors influencing office paperless technology continuance use from the perspective of business end-users were identified according to the identified theories. Attitude towards the supplier was identified as a key relational factor influencing the end-users' continuance use intention of paperless technology. Consistent with the BRT, the relational value (goal congruence), 'reasons for' (commitment, trust) and 'reasons against' (distrust, opportunism) were proposed as the antecedents of attitude towards the supplier.

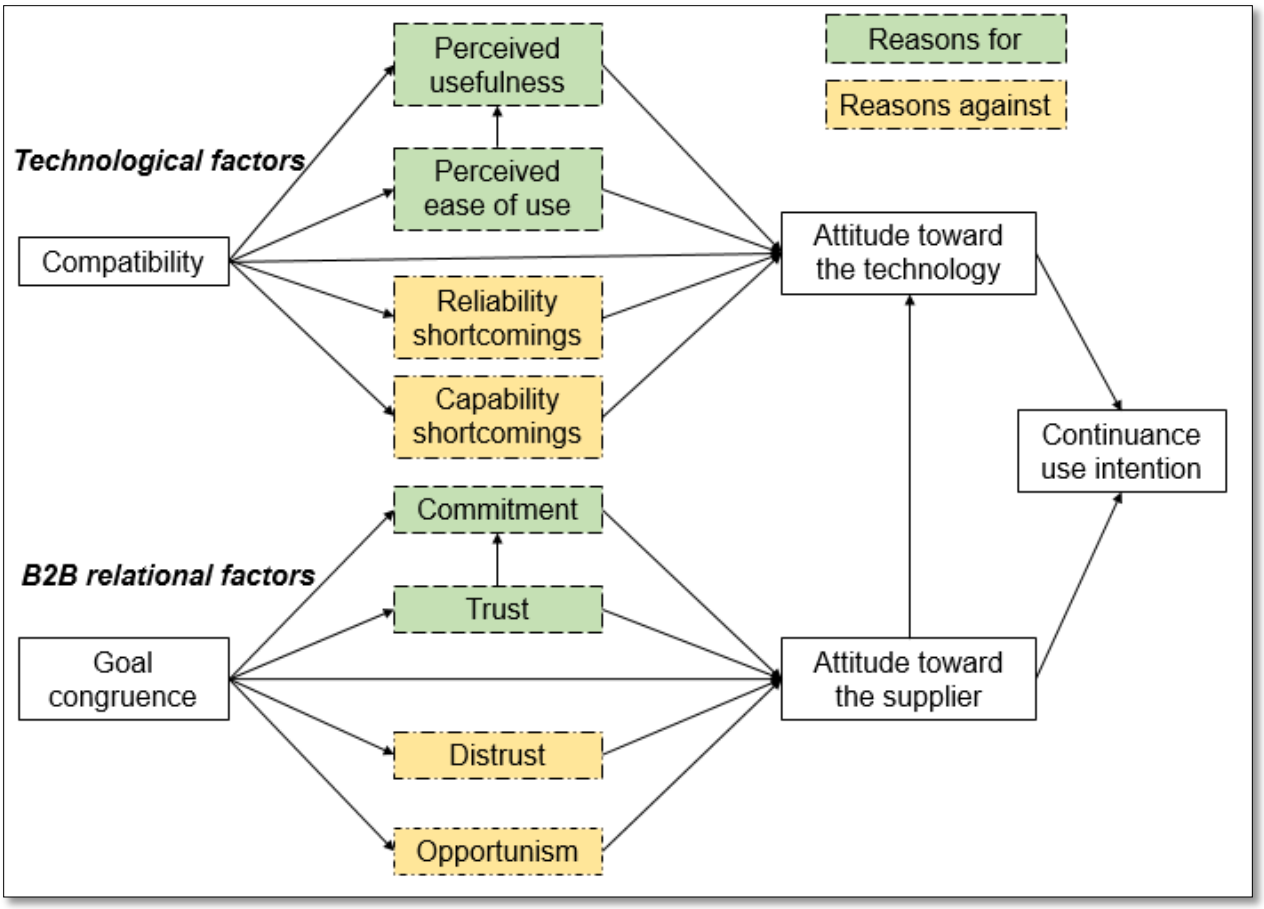

Figure 6-1: Model of technology continuance use intention

Secondary objective 4:

Attitude towards the technology was identified in Chapter 3 as a key technological factor influencing the end-users' continuance intention of paperless technology. The underlying technological value (compatibility), 'reasons for' (perceived ease of use, perceived usefulness) and 'reasons against' (capability shortcomings, reliability shortcomings) were proposed as the key factors of attitude towards the technology.

Secondary objective 5:

Chapter 3 also developed a conceptual model (see Figure 6-1) of the continuance use of office paperless technology by business end-users, supported by the data collected and analysed using the methodology in Chapter 4. The collected data was analysed in Chapter 5 and discussed in Chapter 6. The discussion showed that the proposed model

is supported by the results, supporting the theories used to formulate the conceptual model.

Secondary objective 6:

The discussion in Chapter 6 offered the theoretical and business implications of the findings. From these implications, recommendations that can be used by office automation businesses to inform marketing strategy formulation were made. Thus, the final objective was achieved in this chapter.

6.8 The originality of the study

In addition to the theoretical and practical contributions of this study (see Section 6.4), several calls made by authors of previous studies were answered. Answering the call by Sila (2015) to apply untapped theories and inter-organisational and technological factors to empirically investigate the use of technologies in B2B settings, this study identified context-specific technological and relational factors that influence end-users' continuance use intention of paperless technology. The TAM, TOE and SET theories provided the context-specific factors, while the BRT underpinned the conceptual model. Combining diverse technology acceptance theories answered the call by Blut, Wang and Schoefer (2016) to enrich technological research by combining theories. Sánchez Prieto *et al.* (2016) recommended the investigation of less researched constructs (such as compatibility) when applying the TAM framework, which was done in this study.

The examination of relational and technological factors answered the suggestion by Francisco and Swanson (2018) to investigate non-technological aspects in technology use studies. Although some technological studies have included relational aspects such as relationship satisfaction (Claybaugh *et al.,* 2022), commitment (McKnight *et al.*, 2017), trust (Claybaugh *et al.,* 2022) and distrust (McKnight *et al.*, 2017), attitude towards the supplier (a relational global motive) had not been incorporated as an endogenous mechanism of technology continuance use. Attitude towards the supplier was determined as a significant factor influencing continuance use intention and attitude towards the technology. Therefore, future B2B studies can include attitude towards the supplier as a critical factor of technology use behaviour.

6.9 Limitations of the study

All research studies have limitations (Ross & Bibler Zaidi, 2019), including the current study. Firstly, the literature review identified relevant publications using keywords and combinations of keywords (such as 'paperless office' and 'paperless work') in various databases. The publications without the keywords, publications in other languages (besides English) and those not available in the databases were not identified or used as part of this study's literature (Grewal *et al.,* 2016). EBSCO Information Services (through the University of the Free State) was the primary source of articles used in this study, while Google Scholar was the main secondary source.

Secondly, quantitative studies are usually criticised for failing to capture emotions, underlying meanings and understandings (Denzin, 1989; Queirós *et al.,* 2017). Part of the theoretical recommendations in Section 6.10 suggests that further studies can use qualitative methodologies or mixed methods to explore emotions, underlying meanings, and understandings, as Tashakkori *et al.* (2020) posited.

The results of quantitative studies are limited to pre-determined constructs, theories and categories (Khaldi, 2017). Thus, quantitative studies do not assist in unravelling the unknown but are more effective for examining what is already known (Eyisi, 2016). Thus, the current study might have overlooked critical variables (Maarouf, 2019). Qualitative or mixed-method studies can be used to explore and examine critical factors that might have been overlooked in the current study (Tashakkori *et al.*, 2020).

The effects of demographics were not examined in the current study. The focus of the current study was to identify how business end-users' perceptions of paperless technology and buyer-supplier relationships influence their continuance use of office paperless technology. Demographics can assist researchers in further understanding the continuance use of technology by business end-users, as Venkatesh *et al.* (2003) argued.

The commonly used wave approach assessment for non-response bias was used in Section 5.2.3 to determine that non-response bias is of low concern in this study. Despite using response rate improvement methods (pre-notifications, follow-up emails), this study had an overall response rate of 1.27%, considered low by authors such as Johnson and

Wislar (2012). However, response rates of around 1% are common in business studies (Mellahi & Harris, 2016). According to Chong, Chan, Goh and Tiwari (2013), small sample sizes preclude analysis of demographics such as industry type. Incentives, pre-notifications and follow-up emails can be used to improve the response rates (Wu, Zhao & Fils-Aime, 2022), further strengthening the generalisability and representativeness of the findings (Amhag, Hellström & Stigmar, 2019). Nonetheless, Hendra and Hill (2019) argued that pursuing high response rates reduces nonresponse bias while increasing the cost of conducting the research.

The data was collected from customers of an office automation organisation in South Africa. Demographic information collected in the current study showed the representativeness of the population (Bozkurt *et al.*, 2020); thus, the results can be generalised to the office automation organisation (Polit & Beck, 2010). The results offer important insights. However, they are not generalisable to other organisations, industries and countries. Expanding the investigation to other organisations, industries and countries can enrich the current study's findings and their generalisability (Polit & Beck, 2010).

Quantitative cross-sectional studies are criticised for snapshotting dynamic phenomena (Rahman, 2017). Because cross-sectional data were used in this study, it does not enable the assessment of end-user change of perceptions (Connelly, 2016). Longitudinal designs assess end-user change of perceptions (Carmona-Lavado, Gopalakrishnan & Zhang, 2020), while other authors use them as additional procedural control mechanisms for common bias (Kock *et al.*, 2021).

6.10 Recommendations for future studies

Support for the proposed model entails that both technological and relational aspects are important when investigating the use of technology in the B2B context. Research that combines technological and relational factors (particularly attitude towards suppliers) is still limited. This research has exemplified how the attitude towards the supplier and its antecedents are similarly significant as the attitude towards the technology and its antecedents. Recommendations for future studies are outlined below.

Firstly, the conceptual model can be applied and tested in various settings, such as other organisations, countries, larger population sizes, business-to-customer (B2C) environments, and other technologies. Using dyadic context-specific 'reasons for' and 'reasons against', researchers can identify technological and relational factors influencing the continuance use of technology, products and services in various settings. Comparisons can be made to support or oppose the proposed model in different settings. The findings in this study suggest that academics investigating technology use in B2B settings (especially office automation and paperless technology investigations) must include attitude towards the supplier and its antecedents as it has been supported as a significant factor of continuance use intention and attitude towards the technology.

Aspects that were beyond the scope of this study can also be investigated. For example, the significance of demographics (such as gender, age, institution size, and the industry of the institution) to the continuance use of paperless technology in B2B settings can be examined in future studies. Results of demographic assessments can be compared to other studies, and businesses can use them to customise office paperless solutions and marketing strategies.

Concerning the methodology, the current study used a quantitative research approach. This study applied the partial least squares structural equation modelling (PLS-SEM) to analyse the proposed model. Future studies can use the covariance-based structural equation modelling CB-SEM to test and confirm the model (Henseler *et al.,* 2016). Qualitative designs or mixed-method approaches can also be used to identify aspects that might have been overlooked in this study (Khaldi, 2017). Additionally, longitudinal data can be collected to assess end-user changes in perceptions (Carmona-Lavado *et al*., 2020).

This study evaluated the continuance use intention of end-users, not actual behaviour. Despite intention being a predictor of behaviour (Ajzen, 2015; 2020), a person's behaviour can be tangent to attitude because every instrument has a margin of error (Mehra, 2017). The study by Francisco and Swanson (2018) went beyond behavioural intention and investigated usage behaviour. Future studies can apply the proposed model in the current

study and add behaviour, where possible, as the dependent variable of continuance use intention.

Further studies can be conducted targeting decision-makers as respondents. End-users who are not decision-makers can advocate for the supplier (Lawrence, Crecelius, Scheer & Lam, 2019) and influence the procurement of products and services (Fehl, Good, & Arnold, 2022). However, decision-makers such as professional buyers and senior management have a stronger influence on the continuance of the B2B relationship and usage of the products and services (Lawrence *et al.,* 2019). Results from the responses of decision-makers can also be contrasted with those of end-users who are not necessarily decision-makers.

6.11 Conclusion

This chapter discussed the findings, implications, contributions, conclusions and recommendations of this study. Attitude towards the technology and attitude towards the supplier were supported as direct factors influencing paperless technology continuance use intention. The resulting influence of technological and relational factors on respective global motives was discussed and compared to previous studies. The supported conceptual model can be used for investigating technology use in the B2B context. Because the data generally supported the conceptual model, the theories used in this study (BRT, TAM, TOE, SET) were corroborated. Including attitude towards the supplier and its antecedents in B2B technology use studies was the key academic contribution of this study, among other scarcely researched relationships. Although attitude towards the supplier had a lower influence on continuance use intention, it also contributed to the end-users' attitude towards the technology, adding value to the continuance use of paperless technology. As a result, the main practical implication of this study is that both attitude towards the technology and attitude towards the supplier should be enhanced to increase the end-users' continuance use intention of paperless technology. Since a person's intention predicts their behaviour (Ajzen, 2015; 2020), increased continuance use intention will likely increase the usage of MFPs for paperless work by end-users. Consequently, this study recommends that office automation managers apply relationship marketing (enhance both attitudinal dimensions) to heighten end-users' paperless

technology continuance use intention. A summary of the conducted work was also provided, showing that all the set objectives were achieved. Finally, the originality and limitations of the study were outlined.

Bibliography

AbdulKareem, A. K., Bello, M. L., Ishola, A. A., & Jimoh, L. A. (2020). E-government, information and communications technology support and paperless environment in Nigerian public universities: Issues and challenges. *Journal of Technology Management and Business*, 7(1):65-74.

Abdullatif, H., & Velázquez-Iturbide, J. Á. (2020). Relationship between motivations, personality traits and intention to continue using MOOCs. *Education and Information Technologies*, 25:4417-4435.

Åborg, C., & Billing, A. (2003). Health effects of 'the paperless office'– evaluations of the introduction of electronic document handling systems. *Behaviour and Information Technology*, 22(6):389-396.

Abot, I., & Ariyachandra, T. (2019). Digital transformation and geospatial analytics. *Journal of Information Systems Applied Research*, 13(2):4-12.

Abrell, T., Pihlajamaa, M., Kanto, L., Vom Brocke, J., & Uebernickel, F. (2016). The role of users and customers in digital innovation: Insights from B2B manufacturing firms. *Information and Management*, 53(3):324-335.

Abun, D., & Aguot, F. (2017). Measuring environmental attitude and environmental behavior of senior high school students of Divine Word Colleges in Region I, Philippines. *International Journal of Educational Research*, 1(2):32-69.

Acemoglu, D., & Restrepo, P. (2018). *Artificial intelligence, automation and work.* NBER Working Paper (24196). Retrieved November 23, 2020, from https://www.nber.org/system/files/working_papers/w24196/w24196.pdf

Ackerman, J. L. (2021). The COVID-19 Shift. *The CPA Journal*, 91(2/3):69-69.

Adebayo, A. O., Chaubey, M. S., & Numbu, L. P. (2019). Industry 4.0: The fourth industrial revolution and how it relates to the application of internet of things (IoT). *Journal of Multidisciplinary Engineering Science Studies*, 5(2):2477-2482.

Agarwal, R., & Karahanna, E. (1998). On the multi-dimensional nature of compatibility beliefs in technology acceptance. Retrieved October 11, 2020, from https://www.researchgate.net/publication/250028981

Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies?. *Decision Sciences*, 30(2):361-391.

Agburu, J. I., Anza, N. C., & Iyortsuun, A. S. (2017). Effect of outsourcing strategies on the performance of small and medium scale enterprises (SMEs). *Journal of Global Entrepreneurship Research*, 7(26):1-34.

Agler, R., & De Boeck, P. (2017). On the interpretation and use of mediation: Multiple perspectives on mediation analysis. *Frontiers in Psychology*, 8:1984.

Ahmar Habib R. M., & Yazdanifard, R. (2017). The underlying reasons behind Xerox's strategic management failures and possible remedies that could have been implemented. *International Journal of Management, Accounting and Economics*, 4(8):796-810.

Ahmed, D. A. A., & Hussan, M. T. (2018). Cloud computing: Study of security issues and research challenges. *International Journal of Advanced Research in Computer Engineering & Technology*, 7(4):362-369.

Ahmed, F., Qin, Y. J., & Martínez, L. (2019). Sustainable change management through employee readiness: Decision support system adoption in technology-intensive British e-businesses. *Sustainability*, 11(11):2998.

Aichner, T., & Gruber, B. (2017). Managing customer touchpoints and customer satisfaction in B2B mass customization: A case study. *International Journal of Industrial Engineering and Management*, 8(3):131-140.

Ajibade, P. (2018). Technology acceptance model limitations and criticisms: Exploring the practical applications and use in technology-related studies, mixed-method, and qualitative researches. *Library Philosophy and Practice (e-journal)*. Retrieved May 12, 2021, from http://digitalcommons.unl.edu/libphilprac/1941

Ajina, A. S., Javed, H. M. U., Ali, S., & Zamil, A. M. (2023). Are men from mars, women from venus? Examining gender differences of consumers towards mobile-wallet adoption during pandemic. *Cogent Business and Management*, 10(1):2178093.

Ajjan, H., Hartshorne, R., Cao, Y., & Rodriguez, M. (2014). Continuance use intention of enterprise instant messaging: A knowledge management perspective. *Behaviour and Information Technology*, 33(7):678-692.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2):179-211.

Ajzen, I. (2015). Consumer attitudes and behavior: The theory of planned behavior applied to food consumption decisions. *Italian Review of Agricultural Economics*, 70(2):121-138.

Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies*, 2:314-324.

Akman, G., & Yörür, B. (2012). Effects of business to business relations on customer satisfaction and loyalty in the context of a developing country. *American Journal of Industrial and Business Management*, 2(4):217-229.

Alam, S., Parihar, R. S., & Singhal, R. (2019). Role of paperless office culture in the organisation. *Cosmos - An International Journal of Management* , 9(1):11-14.

Albarracin, D., & Shavitt, S. (2018). Attitudes and attitude change. *Annual Review of Psychology*, 69:299-327.

Alenazi, S. R. A., Shittu, A. J. K., Al-Matari, E. M., & Alanzi, A. R. A. (2014). Paperless office management: A feasibility analysis for Saudi Arabia government offices: Case study in Ministry of Labor. *Journal of Management Research*, 6(3):186-197.

Ali, H. M. K., Farooq, M. U., Wasim, A., Jahanzaib, M., & Hussain, S. (2016). Leverage of office automation in a public sector engineering organization: Pre and post implementation analysis. *Pakistan Journal of Science*, 68(2):170-175.

Allmark, P., & Machaczek, K. (2018). Realism and Pragmatism in a mixed methods study. *Journal of Advanced Nursing*, 74(6):1301-1309.

Alloghani, M., Thron, C., Subair, S. (2022). Past achievements and future promises of digital transformation: A Literature Review. In M. Alloghani, C. Thron, & S. Subair (Eds.), *Artificial intelligence for data science in theory and practice: Studies in computational intelligence* (Vol. 1006, pp. 27-39). Cham: Springer.

Almalki, S. (2016). Integrating quantitative and qualitative data in mixed methods research: Challenges and benefits. *Journal of Education and Learning*, 5(3):288-296.

Al-Mamary, Y. H., Al-nashmi, M., Hassan, Y. A. G., & Shamsuddin, A. (2016). A critical review of models and theories in field of individual acceptance of technology. *International Journal of Hybrid Information Technology*, 9(6):143-158.

Almomani, H. Q. (2019). Relationship quality as predictor of B2B customer loyalty in the pharmaceutical sector: Evidence from Jordan. *Journal of Relationship Marketing*, 18(2):108-123.

Alsaad, A. K., Mohamad, R., & Ismail, N. A. (2017). The moderating role of trust in business to business electronic commerce (B2B EC) adoption. *Computers in Human Behavior*, 68:157-169.

Alsharo, M., Alnsour, Y., & Alabdallah, M. (2020). How habit affects continuous use: evidence from Jordan's national health information system. *Informatics for Health and Social Care*, 45(1):43-56.

Altman, N., & Krzywinski, M. (2016). Analyzing outliers: influential or nuisance? *Nature Methods*, 13(4):281-283.

Alturki, R. (2021). Research onion for smart IoT-enabled mobile applications. *Scientific Programming*, 2021:4270998.

AlWahaibi, I. S. H., Al-Hadabi, D. A. M., & Al-Kharousi, H. A. T. (2020). Cohen's criteria for interpreting practical significance indicators: A critical study. *Cypriot Journal of Educational Sciences*, 15(2):246-258.

Amade, N., Oliveira, T. H., & Painho, M. (2020). Understanding the determinants of GIT post-adoption: Perspectives from Mozambican institutions. *Heliyon*, 6(5):e03879.

Amankwah-Amoah, J., Khan, Z., Wood, G., & Knight, G. (2021). COVID-19 and digitalization: The great acceleration. *Journal of Business Research*, 136:602-611.

Amaya, A., Biemer, P. P., & Kinyon, D. (2020). Total error in a big data world: Adapting the TSE framework to big data. *Journal of Survey Statistics and Methodology*, 8(1):89-119.

Amhag, L., Hellström, L., & Stigmar, M. (2019). Teacher educators' use of digital tools and needs for digital competence in higher education. *Journal of Digital Learning in Teacher Education*, 35(4):203-220.

Amora, J. T. (2021). Convergent validity assessment in PLS-SEM: A loadings-driven approach. *Data Analysis Perspectives Journal*, 2(3):1-6.

Anabo, I. F., Elexpuru-Albizuri, I., & Villardón-Gallego, L. (2019). Revisiting the Belmont report's ethical principles in internet-mediated research: Perspectives from disciplinary associations in the social sciences. *Ethics and Information Technology*, 21(2):137-149.

Anderson, J. C., Narus, J. A., & Wouters, M. (2014). Tiebreaker selling: How nonstrategic suppliers can help customers solve important problems. *Harvard Business Review*, 92(3):90-96.

Andres, L. A., Zentner, A., & Zentner, J. (2014). *Measuring the effect of internet adoption on paper consumption.* World Bank policy research working paper (6965). Retrieved August 19, 2020, from https://openknowledge.worldbank.org/bitstream/handle/10986/19360/WPS6965.pdf?sequence=1

Ankita, J. (2015). Print document using password authentication on network printer. *Journal of Information Technology and Software Engineering*, 5(2):1-5.

Anseel, F., Lievens, F., Schollaert, E., & Choragwicka, B. (2010). Response rates in organizational science, 1995–2008: A meta-analytic review and guidelines for survey researchers. *Journal of Business and Psychology*, 25(3):335-349.

Antwi, S. K., & Hamza, K. (2015). Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European Journal of Business and Management*, 7(3):217-225.

Anwar, M. (2016). What does it mean to be ethical in research? What should it mean?. *Jurnal Bisnis dan Manajemen*, 16(1):22-28.

Aprilia, H. D., & Cahyaningtias, A. (2021). Pemanfaatan E-Office sebagai Praktik Paperless Office. *Jurnal Administrativa*, 3(3):385-392.

Apuke, O. D. (2017). Quantitative research methods: A synopsis approach. *Arabian Journal of Business and Management Review (Kuwait Chapter)*, 6(10):40-47.

Ariffin, N. A. N., Ismail, A., Kadir, I. K. A., & Kamal, J. I. A. (2018). Implementation of electronic medical records in developing countries: Challenges & barriers. *International Journal of Academic Research in Progressive Education and Development*, 7(3):187-199.

Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, 14(3):396-402.

Armstrong, K. (2018). The weird science of culture, values, and behavior. *APS Observer*, 31(4):25-31.

Arora, C., Catlin, T., Forrest, W., Kaplan, J., & Lars, V. (2020). Three actions CEOs can take to get value from cloud computing. In R. Narisetti, *The next normal, The recovery will be digital: Digitizing at speed and scale* (pp. 6-10). McKinsey Global Publishing. Retrieved December 06, 2022, from https://www.mckinsey.com/~/media/mckinsey/business%20functions/mckinsey%

20digital/our%20insights/how%20six%20companies%20are%20using%20technology%20and%20data%20to%20transform%20themselves/the-next-normal-the-recovery-will-be-digital.pdf

Ashby, L. (2011). Extension's progress in the paperless revolution: Balancing digital and paper. *Journal of Extension*, 49(1):11. Retrieved June 05, 2021, from https://tigerprints.clemson.edu/joe/vol49/iss1/11

Asija, R. (2015). Enhancing security and privacy of healthcare data using XML schema. *International Journal of Computer Applications*, 116(12):1-6.

Assael, H., & Keon, J. (1982). Nonsampling vs. sampling errors in survey research. *Journal of Marketing*, 46(2):114-123.

Assensoh-Kodua, A., & Lekhanya, L. M. (2014). A theoretic extension and empirical investigation of conducting business online social network: The continuance intention phenomenon. *Journal of Economics and Behavioral Studies*, 6(5):373-385.

Attaran, M., Attaran, S., & Kirkland, D. (2020). Technology and organizational change: Harnessing the power of digital workplace. In E. C. Idemudia (Ed.), *Handbook of research on social and organizational dynamics in the digital era* (pp. 383-408). Hershey: IGI Global.

Avci, E. (2017). A normative analysis to determine the goals of ethics education through utilizing three approaches: Rational moral education, ethical acculturation, and learning throughout life. *International Journal of Ethics Education*, 2(2):125-145.

Awa, H. O., Ojiabo, O. U., & Emecheta, B. C. (2015). Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs. *Journal of Science and Technology Policy Management*, 6(1):76-94.

Awa, H. O., Ojiabo, O. U., & Orokor, L. E. (2017). Integrated technology-organization-environment (TOE) taxonomies for technology adoption. *Journal of Enterprise Information Management*, 30(6):893-921.

Awadhiya, A. K., & Miglani, A. (2016). Mobile Learning: Challenges for teachers of Indian open universities. *Journal of Learning and Development*, 3(2):35-46.

Awang, H., Aji, Z. M., & Osman, W. R. S. (2018). Data cleaning for the evaluation of virtual learning environment success among teachers. *Management*, 3(8):57-66.

Awang, Z., Afthanorhan, A., & Mamat, M. (2016). The Likert scale analysis using parametric based structural equation modeling (SEM). *Computational Methods in Social Sciences*, 4(1):13-21.

Azih, N. (2018). Electronic accounting: An imperative tool for quality assurance in accounting education programme in the digital era. *Nigerian Journal of Business Education*, 1(2):90-98.

Baer, A. (2012). Small Printers With Big Features. *Inc*, 34(8):44.

Bailey, L. F. (2014). The origin and success of qualitative research. *International Journal of Market Research*, 56(2):167-184.

Baker, J. (2012). The technology–organization–environment framework. In Y. K. Dwivedi, M. R. Wade, & S. L. Schneberger (Eds.), *Information systems theory: Explaining and predicting our digital society* (Vol. 1, pp. 231-245). New York: Springer.

Bal, P. M., Chiaburu, D. S., & Jansen, P. G. (2010). Psychological contract breach and work performance. *Journal of Managerial Psychology*, 25(3):252-273.

Balliester, T., & Elsheikhi, A. (2018). *The future of work: A literature review.* ILO Research Department Working Paper (29). Geneva: International Labour Organization.

Balu, V., Tiruveedhula, R. L., & Shastri, A. P. (2020). Paperless Office. *Mukt Shabd Journal*, 9(4):1697-1701.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs: Prentice Hall.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52(1):1-26.

Banerjee, A., Chitnis, U. B., Jadhav, S. L., Bhawalkar, J. S., & Chaudhury, S. (2009). Hypothesis testing, type I and type II errors. *Industrial Psychiatry Journal*, 18(2):127-131.

Banerjee, P. K., & Ma, L. C. (2012). Routinisation of B2B E-commerce by small firms: A process perspective. *Information Systems Frontiers*, 14(5):1033-1046.

Bans-Akutey, A. (2018). Staff Perceptions on Paperless Management–A Qualitative Study of RPS Engineering Services Ghana Limited. *International Journal of ICT and Management* , 6(1):6-14.

Barnad, B. (2019). Paperless office Sebuah Kebutuhan Kantor Masa Depan Di Indonesia. *Jurnal Bisnis Terapan*, 3(1):73-84.

Barnes, B. R., Leonidou, L. C., Siu, N. Y., & Leonidou, C. N. (2010). Opportunism as the inhibiting trigger for developing long-term-oriented Western exporter–Hong Kong importer relationships. *Journal of International Marketing*, 18(2):35-63.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6):1173-1182.

Barrick, M. R., Mount, M. K., & Li, N. (2013). The theory of purposeful work behavior: The role of personality, higher-order goals, and job characteristics. *The Academy of Management Review*, 38(1):132-153.

Barroga, E., & Matanguihan, G. J. (2022). A practical guide to writing quantitative and qualitative research questions and hypotheses in scholarly articles. *Journal of Korean Medical Science*, 37(16): e121.

Basias, N., & Pollalis, Y. (2018). Quantitative and qualitative research in business & technology: Justifying a suitable research methodology. *Review of Integrative Business and Economics Research*, 7:91-105.

Baškarada, S., & Koronios, A. (2018). A philosophical discussion of qualitative, quantitative, and mixed methods research in social science. *Qualitative Research Journal*, 18(1):2-21.

Bauer, M. W. (2015). *Atoms, bytes and genes: Public resistance and techno-scientific responses.* New York: Routledge.

Becker, J. M., Ringle, C. M., Sarstedt, M., & Völckner, F. (2015). How collinearity affects mixture regression results. *Marketing Letters*, 26(4):643-659.

Beckmann, O. C., Royer, S., & Schiavone, F. (2016). Old but sexy: Value Creation of old technology-based businesses models. *Journal of Business Models*, 4(2):1-21.

Beldad, A. D., & Hegner, S. M. (2018). Expanding the technology acceptance model with the inclusion of trust, social influence, and health valuation to determine the predictors of German users' willingness to continue using a fitness app: A structural equation modeling approach. *International Journal of Human–Computer Interaction*, 34(9):882-893.

Belghith, A., & Jedidi, I. (2019). Digital IT use in organizations: Socio-cognitive approach-based analysis. *Global Journal of Research in Business & Management*, 7(2):540-546.

Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, 2:8-14.

Beno, M. (2020). Four factors that will shape the future of work. *Journal on Advances in Theoretical and Applied Informatics*, 5(1):12-24.

Berezan, O., Yoo, M., & Christodoulidou, N. (2016). The impact of communication channels on communication style and information quality for hotel loyalty programs. *Journal of Hospitality and Tourism Technology*, 7(1):100-116.

Bhardwaj, P. (2019). Types of sampling in research. *Journal of the Practice of Cardiovascular Sciences*, 5(3):157-163.

Bhargava, A., Bester, M., & Bolton, L. (2020). Employees' perceptions of the implementation of robotics, artificial intelligence, and automation (RAIA) on job satisfaction, job security, and employability. *Journal of Technology in Behavioral Science*, 6:106-113.

Bhaskar, R. (2015). *The possibility of naturalism: A philosophical critique of the contemporary human sciences* (4th ed.). New York: Routledge.

Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly*, 25(3):351-370.

Bhattacherjee, A., & Lin, C. (2014). A unified model of IT continuance: Three complementary perspectives and crossover effects. *European Journal of Information Systems*, 24(4):364-373.

Bhattacherjee, A., Davis, C. J., Connolly, A. J., & Hikmet, N. (2018). User response to mandatory IT use: A coping theory perspective. *European Journal of Information Systems*, 27(4):395-414.

Bhodiwal, S., Chauhan, S., & Agarwal, R. (2022). A novel approach: Handmade papermaking. *MOJ Eco Environ Sci*, 7(1):11-16.

Bhuyar, R., & Ansari, S. (2016). Design and implementation of smart office automation system. *International Journal of Computer Applications*, 151(3):37-42.

Blau, P. (1964). *Exchange and power in social life.* New York: John Wiley and sons.

Blut, M., Wang, C., & Schoefer, K. (2016). Factors influencing the acceptance of self-service technologies: A meta-analysis. *Journal of Service Research*, 19(4):396-416.

Boddy, C. R. (2016). Sample size for qualitative research. *Qualitative Market Research*, 19(4):426-432.

Boehm, J., Kaplan, J., & Sportsman, N. (2020). Cybersecurity's dual mission during the coronavirus crisis. In R. Narisetti, *The next normal, The recovery will be digital: Digitizing at speed and scale* (pp. 101-104). McKinsey Global Publishing. Retrieved December 06, 2022, from https://www.mckinsey.com/~/media/mckinsey/business%20functions/mckinsey%20digital/our%20insights/how%20six%20companies%20are%20using%20technology%20and%20data%20to%20transform%20themselves/the-next-normal-the-recovery-will-be-digital.pdf

Bogna, F., Raineri, A., & Dell, G. (2020). Critical realism and constructivism: merging research paradigms for a deeper qualitative study. *Qualitative Research in Organizations and Management: An International Journal*, 15(4):461-484.

Bolarinwa, O. A. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *Nigerian Postgraduate Medical Journal*, 22(4):195-201.

Bozkurt, S., Cahan, E. M., Seneviratne, M. G., Sun, R., Lossio-Ventura, J. A., Ioannidis, J., & Hernandez-Boussard, T. (2020). Reporting of demographic data and representativeness in machine learning models using electronic health records. *Journal of the American Medical Informatics Association*, 27(12):1878-1884.

Brannon, S. M., & Gawronski, B. (2018). Cognitive consistency in social cognition. In M. Hogg (Ed.), *The Oxford encyclopedia of social psychology.* New York: Oxford University Press.

Brierley, J. A. (2017). The role of a pragmatist paradigm when adopting mixed methods in behavioural accounting research. *International Journal of Behavioural Accounting and Finance*, 6(2):140-154.

Brinkmann, S., Jacobsen, M. H., & Kristiansen, S. (2014). Historical overview of qualitative research in the social sciences. In P. Leavy (Ed.), *The Oxford handbook of qualitative research* (pp. 17-42). New York: Oxford University Press.

Briscoe, M. D. (2022). The paperless office twenty years later: Still a myth? *Sustainability: Science, Practice and Policy*, 18(1):837-845.

Brooks, J. (1967). *Xerox Xerox Xerox Xerox*. Retrieved August 12, 2020, from https://www.academia.edu/30842083/Xerox_Xerox_Xerox_Xerox_Chapter_5_in_Business_Adventures

Bryan, J. D., & Zuva, T. (2021). A review on TAM and TOE framework progression and how these models integrate. *Advances in Science, Technology and Engineering Systems Journal*, 6(3):137-145.

Buckley, P. J. (2016). Historical research approaches to the analysis of internationalisation. *Management International Review*, 56(6):879-900.

Business Week. (1975). The Office of the Future. *Business Week*, 2387(30):48-70.

Butterfield, E. (2023). *Best portable printers in 2023*. Retrieved January 20, 2023, from https://www.tomsguide.com/best-picks/best-portable-printers

Cai, Z., Fan, X., & Du, J. (2017). Gender and attitudes toward technology use: A meta-analysis. *Computers and Education*, 105:1-13.

Califf, C. B., Sarker, S., & Sarker, S. (2020). The bright and dark sides of technostress: A mixed-methods study involving healthcare IT. *MIS Quarterly*, 44(2):809-856.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological bulletin*, 56(2):81-105.

Caratiquit, L. J., & Caratiquit, K. (2022). Influence of technical support on technology acceptance model to examine the project PAIR E-Learning system in distance learning modality. *Participatory Educational Research*, 9(5):467-485.

Cardoso, J. (2006). Office automation systems. In J. G. Webster (Ed.), *Encyclopedia of medical devices and instrumentation* (2nd ed., pp. 149-160). Hoboken: John Wiley and sons.

Carleton, R. N. (2016). Fear of the unknown: One fear to rule them all?. *Journal of Anxiety Disorders*, 41:5-21.

Carmona-Lavado, A., Gopalakrishnan, S., & Zhang, H. (2020). Product radicalness and firm performance in B2B marketing: A moderated mediation model. *Industrial Marketing Management*, 85:58-68.

Carr, C. L. (1981). The concept of formal justice. *Philosophical Studies*, 39(3):211-226.

Carr, M. R. (2005). An analysis of the feasibility of a paperless environment–The case of the Mona School of Business. *Management of Environmental Quality: An International Journal*, 16(4):286-290.

Carrión, G. C., Nitzl, C., & Roldán, J. L. (2017). Mediation analyses in partial least squares structural equation modeling: Guidelines and empirical examples. In H. Latan, & R. Noonan (Eds.), *Partial least squares path modeling: Basic concepts, methodological issues and applications* (pp. 173–195). Cham: Springer.

Caruana, E. J., Roman, M., Hernandez-Sanchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of Thoracic Disease*, 7(11):537-540.

Castañer, X., & Oliveira, N. (2020). Collaboration, coordination, and cooperation among organizations: Establishing the distinctive meanings of these terms through a systematic literature review. *Journal of Management*, 46(6):965-1001.

Catlin, T., Scanlan, J., & Willmott, P. (2015). Raising your digital quotient. *McKinsey Quarterly*, 2015(3):31-43.

Cenfetelli, R. T., & Schwarz, A. (2011). Identifying and testing the inhibitors of technology usage intentions. *Information Systems Research*, 22(4):808-823.

Chae, B., Yen, H. R., & Sheu, C. (2005). Information technology and supply chain collaboration: Moderating effects of existing relationships between partners. *IEEE Transactions on Engineering Management*, 52(4):440-448.

Champagne, L. (2022). *The importance of regular content audits (and steps to perform one)*. Retrieved January 19, 2023, from https://www.lonefircreative.com/blog/the-importance-of-regular-content-audits-and-steps-to-perform-one

Chan, F. K., Thong, J. Y., Venkatesh, V., Brown, S. A., Hu, P. J., & Tam, K. Y. (2010). Modeling citizen satisfaction with mandatory adoption of an e-government technology. *Journal of the Association for Information Systems*, 11(10):519-549.

Chan, L. L., & Idris, N. B. (2017). Validity and reliability of the instrument using exploratory factor analysis and Cronbach's alpha. *International Journal of Academic Research in Business and Social Sciences*, 7(10):400-410.

Chandra, S., & Kumar, K. N. (2018). Exploring factors influencing organizational adoption of augmented reality in e-commerce: Empirical analysis using technology-organization-environment model. *Journal of Electronic Commerce Research*, 19(3):237-265.

Chatterjee, S., Rana, N. P., Khorana, S., Mikalef, P., & Sharma, A. (2021). Assessing organizational users' intentions and behavior to AI integrated CRM systems: A Meta-UTAUT approach. *Information Systems Frontiers*. Retrieved March 09, 2022, from https://d-nb.info/1244919209/34

Chau, P. Y., & Hu, P. J. (2002). Examining a model of information technology acceptance by individual professionals: An exploratory study. *Journal of Management Information Systems*, 18(4):191-229.

Chen, S. C., Liu, S. C., Li, S. H., & Yen, D. C. (2013). Understanding the mediating effects of relationship quality on technology acceptance: An empirical study of e-appointment system. *Journal of medical systems*, 37:1-13.

Chen, X., Yu, H., & Yu, F. (2015). What is the optimal number of response alternatives for rating scales? From an information processing perspective. *Journal of Marketing Analytics*, 3(2):69-78.

Chen, Y. H., Wu, J. J., Chien, S. H., & Shiah, Y. C. (2014). Exploring the factors of Inter-organizational knowledge sharing. *International Journal of Industrial and Manufacturing Engineering*, 8(7):2196-2199.

Chen, Y., & Carrillo, J. E. (2011). Single firm product diffusion model for single-function and fusion products. *European Journal of Operational Research*, 214(2):232-245.

Cheng, Y. M. (2018). A hybrid model for exploring the antecedents of cloud ERP continuance: Roles of quality determinants and task-technology fit. *International Journal of Web Information Systems*, 15(2):215-235.

Cheng, Z., Dimoka, A., & Pavlou, P. A. (2016). Context may be King, but generalizability is the Emperor!. *Journal of Information Technology*, 31(3):257-264.

Chien, S. H., Chen, Y. H., & Hsu, C. Y. (2012). Exploring the impact of trust and relational embeddedness in e-marketplaces: An empirical study in Taiwan. *Industrial Marketing Management*, 41(3):460-468.

Children's Act, nr 38. (2005). Cape Town: Government printer.

Cho, H. (2011). Theoretical intersections among social influences, beliefs, and intentions in the context of 3G mobile services in Singapore: Decomposing perceived critical mass and subjective norms. *Journal of Communication*, 61(2):283-306.

Cho, I. H. (2015). Facebook discontinuance: Discontinuance as a temporal settlement of the constant interplay between disturbance and coping. *Quality and Quantity*, 49(4):1531-1548.

Choi, J., Dutz, M. A., & Usman, Z. (Eds.). (2020). *The future of work in Africa: Harnessing the potential of digital technologies for all.* Washington: The World Bank.

Chong, A. Y. L., Chan, F. T., Goh, M., & Tiwari, M. K. (2013). Do interorganisational relationships and knowledge-management practices enhance collaborative commerce adoption?. *International Journal of Production Research*, 51(7):2006-2018.

Chouk, I., & Mani, Z. (2019). Factors for and against resistance to smart services: Role of consumer lifestyle and ecosystem related variables. *Journal of Services Marketing*, 33(4):449-462.

Chowdhury, P. P. (2012). Antecedents and consequences of trust and commitment in B2B relationship: A review of literature. *Focus*, 4(2):49-63.

Chyung, S. Y., Barkin, J. R., & Shamsy, J. A. (2018). Evidence-based survey design: The use of negatively worded items in surveys. *Performance Improvement*, 57(3):16-25.

Civelek, M. E., Çemberci, M., Uca, N., Çelebi, Ü., & Özalp, A. (2017). Challenges of paperless trade redesign of the foreign trade processes and bundling functions of traditional documents. *International Business Research*, 10(2):74-81.

Claudy, M. C., Garcia, R., & O'Driscoll, A. (2015). Consumer resistance to innovation: A behavioral reasoning perspective. *Journal of the Academy of Marketing Science*, 43:528-544.

Claudy, M. C., Peterson, M., & O'Driscoll, A. (2013). Understanding the attitude-behavior gap for renewable energy systems using behavioral reasoning theory. *Journal of Macromarketing*, 33(4):273-287.

Claybaugh, C. C., Reychav, I., & Nah, F. F. H. (2022). Relational and technological assessment of CRM providers: A multifactor study. *Journal of Computer Information Systems*, 63(1):107-117.

Clements, J. (2023). *Document scanning services market analysis 2030*. Retrieved October 17, 2023, from https://www.managedoutsource.com/blog/document-scanning-services-market-analysis-2030/

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale: Lawrence Erlbaum Associates.

Cohen, J. (1992). Quantitative methods in psychology: A power primer. *Psychological Bulletin*, 112:155-159.

Collier, J. E. (2020). *Applied structural equation modeling using AMOS: Basic to advanced techniques.* New York: Routledge.

Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review*, 82(6):407-428.

Companies Act, nr 71. (2008). Cape Town: Government Printer.

Connelly, L. M. (2016). Cross-sectional survey research. *Medsurg Nursing*, 25(5):369-370.

Cook, K. S., Cheshire, C., Rice, E. R., & Nakagawa, S. (2013). Social exchange theory. In J. DeLamater, & A. Ward (Eds.), *Handbook of social psychology* (pp. 61-88). Dordrecht: Springer.

Counsell, A., & Harlow, L. (2017). Reporting practices and use of quantitative methods in Canadian Journal articles in psychology. *Canadian Psychology/psychologie canadienne*, 58(2):140-147.

Cowan, K., Paswan, A. K., & Van Steenburg, E. (2015). When inter-firm relationship benefits mitigate power asymmetry. *Industrial Marketing Management*, 48:140-148.

Crespo, Á. H., de los Salmones, M. M. G., & del Bosque, I. R. (2013). Influence of users' perceived compatibility and their prior experience on B2C e-commerce acceptance. In T. Matsuo, & R. Colomo-Palacios (Eds.), *Electronic business and marketing: New trends on its process and applications* (Vol. 484, pp. 103-123). Berlin: Springer.

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research.* Thousand Oaks: Sage publications.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika.* , 16(3):297-334.

Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, 31(6):874-900.

Cropanzano, R., Anthony, E. L., Daniels, S. R., & Hall, A. V. (2017). Social exchange theory: A critical review with theoretical remedies. *Academy of Management Annals*, 11(1):479-516.

Cuevas, J. M., Julkunen, S., & Gabrielsson, M. (2015). Power symmetry and the development of trust in interdependent relationships: The mediating role of goal congruence. *Industrial Marketing Management*, 48(1):149-159.

Cygnetise. (2022). *To go paperless or not (Survey results)*. Retrieved January 25, 2023, from https://www.cygnetise.com/blog/paperless-office-survey

Dakouan, C. (2019). Inbound marketing vs. outbound marketing. *Expert Journal of Marketing*, 7(1):1-6.

D'Alessandro, U. (2017). Life after disruption. *Quality Progress*, 50(3):34-37.

Dan, V. (2018). Empirical and non-empirical methods. In J. Matthes (Ed.), *Wiley international encyclopedia of communication research methods.* Hoboken: John Wiley and sons.

Daniel, B. (2022). The role of research methodology in enhancing postgraduate students research experience. *Electronic Journal of Business Research Methods*, 20(1):34-48.

D'Arcy, J., & Lowry, P. B. (2019). Cognitive-affective drivers of employees' daily compliance with information security policies: A multilevel, longitudinal study. *Information Systems Journal*, 29(1):43-69.

Das, N. K., & Sil, A. (2017). Evolution of ethics in clinical research and ethics committee. *Indian Journal of Dermatology*, 62(4):373-379.

Davies, S. E. (2020). The introduction of research ethics review procedures at a university in South Africa: Review outcomes of a social science research ethics committee. *Research Ethics*, 16(1-2):1-26.

Davis, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results.* (Doctoral dissertation, Massachusetts Institute of Technology). Retrieved September 27, 2021, from https://dspace.mit.edu/bitstream/handle/1721.1/15192/14927137-MIT.pdf

Davis, F. D., Bagozzi R. P., & Warshaw P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8):982-1003.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 22(14):1111-1132.

Davis, J., Hadley, J., Davis, H., & Kepczyk, R. (2012). Paperless processes: Benchmarking small firm level of implementation to larger firm level of implementation. *International Journal of Business, Humanities and Technology*, 2(4):1-10.

Davoudi, N., Nayeri, N. D., Raiesifar, A., Poortaghi, S., & Ahmadian, S. (2017). Issues of theoretical sampling: A narrative review. *Nursing and Midwifery Studies*, 6(2):e38284.

de Koning, M., Meyer, B., Moors, A., & Pels, P. (2019). Guidelines for anthropological research: Data management, ethics, and integrity. *Ethnography*, 20(2):170-174.

de Leeuw, E. D., Hox, J. J., & Dillman, D. A. (2008). *International handbook of survey methodology.* New York: Psychology Press.

De Wet, W., Koekemoer, E., & Nel, J. A. (2016). Exploring the impact of information and communication technology on employees' work and personal lives. *South African Journal of Industrial Psychology*, 42(1):a1330.

De', R., Pandey, N., & Pal, A. (2020). Impact of digital surge during COVID-19 pandemic: A viewpoint on research and practice. *International Journal of Information Management*, 55:102171.

del Bosque Rodríguez, I. R., Agudo, J. C., & Gutiérrez, H. S. M. (2006). Determinants of economic and social satisfaction in manufacturer–distributor relationships. *Industrial Marketing Management*, 35(6):666-675.

Delaney, R., & D'Agostino, R. (2015). The challenges of integrating new technology into an organization. Retrieved April 17, 2021, from http://digitalcommons.lasalle.edu/mathcompcapstones/25

Delone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4):9-30.

Deming, D. J., & Noray, K. (2020). Earnings dynamics, changing job skills, and STEM careers. *The Quarterly Journal of Economics*, 135(4):1965-2005.

Demming, C. L., Jahn, S., & Boztuğ, Y. (2017). Conducting mediation analysis in marketing research. *Marketing: ZFP–Journal of Research and Management*, 39(3):76-93.

Deng, L., Yang, M., & Marcoulides, K. M. (2018). Structural equation modeling with many variables: A systematic review of issues and developments. *Frontiers in Psychology*, 9:580.

Dennis, A., Clay, P. F., & Ko, D. (2017). From individual cognition to social ecosystem: A structuration model of enterprise systems use. *AIS Transactions on Human-Computer Interaction*, 9(4):301-338.

Denzin, N. & Lincoln, Y. (2018). *Handbook of qualitative research* (5th ed.). Los Angeles: Sage Publications.

Denzin, N. K. (1989). *Interpretive interactionism.* California: Sage publications.

Depietro, R., Wiarda, E., & Fleischer, M. (1990). The context for change: Organization, technology and environment. In L. G. Tornatzky, & M. Fleischer, *The process of technology innovation* (pp. 151-175). Lexington: Lexington Books.

Devi, M., Azfar, M., & Tanwar, N. (2018). *Research trends in Mathematics and Statistics.* Delhi: AkiNik Publications.

Dhumne, K. M. (2017). Paperless society in digital era. *International Journal of Library and Information Studies*, 7(4):317-319.

Diaz, R. (2000). Cultural regulation, self-regulation, and sexuality. In R. B. Parker, R. Barbosa, & P. Aggleton (Eds.), *Framing the sexual object: The politics of gender, sexuality, and power* (pp. 191-215). Berkeley: University of California Press.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Hoboken: John Wiley and sons.

Dimopoulos, G. (2008). *Paperless Joy: Paperless business & lifestyle design with information and communication technology.* Baltimore: Digital Life Artist Inc.

Dirks, K. T., & Ferrin, D. L. (2001). The role of trust in organizational settings. *Organization Science*, 12(4):450-467.

Divisi, D., Di Leonardo, G., Zaccagna, G., & Crisci, R. (2017). Basic statistics with Microsoft Excel: A review. *Journal of Thoracic Disease*, 9(6):1734-1740.

Dixon, S., & Quirke, L. (2018). What's the harm? The coverage of ethics and harm avoidance in research methods textbooks. *Teaching Sociology*, 46(1):12-24.

Domingues, R., Filippone, M., Michiardi, P., & Zouaoui, J. (2018). A comparative evaluation of outlier detection algorithms: Experiments and analyses. *Pattern Recognition*, 74:406-421.

Dommann, M. (2019). Copy machine as a mediating technology of organization. In T. Beyes, R. Holt, & C. Pias (Eds.), *The Oxford handbook of media, technology, and organization studies* (pp. 172-190). Oxford: Oxford University Press.

Doney, P., & Cannon, J. (1997). An examination of the nature of trust in buyer-seller relationships. *Journal of Marketing*, 61(2):35-51.

Dowell, D., Heffernan, T., & Morrison, M. (2013). Trust formation at the growth stage of a business-to-business relationship: A qualitative investigation. *Qualitative Market Research: An International Journal*, 16(4):436-451.

du Prel, J. B., Hommel, G., Röhrig, B., & Blettner, M. (2009). Confidence interval or p-value?: Part 4 of a series on evaluation of scientific publications. *Deutsches Arzteblatt International*, 106(19):335-339.

Dube, T., Van Eck, R., & Zuva, T. (2020). Review of technology adoption models and theories to measure readiness and acceptable use of technology in a business organization. *Journal of Information Technology*, 2(04):207-212.

Dubey, U., Kothari, D. P., & Awari, G. K. (2017). *Quantitative techniques in business, management and finance: A case-study approach.* Boca Raton: CRC Press.

Dunleavy, P. (2003). *Authoring a PhD: How to plan, draft, write and finish a doctoral thesis or dissertation.* Hampshire: Palgrave Macmillan.

Duszynski, T. J., Fadel, W., Dixon, B. E., Yiannoutsos, C., Halverson, P. K., & Menachemi, N. (2022). Successive wave analysis to assess nonresponse bias in a statewide random sample testing study for SARS-CoV-2. *Journal of Public Health Management and Practice*, 28(4):685-691.

Dutta, P., & Ahmed, S. (2016). Investigating the determinants of implementation of packaged software in SMEs: A research agenda. *AIMA Journal of Management and Research*, 10(2/4):14.

Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J., Jain, V., Karjaluoto, H., Kefi, H., Krishen, A. S., Kumar, V., Rahman, M. M., Raman, R.,

Rauschnabel, P. A., Rowley, J., Salo, J., Tran, G. A., & Wang, Y. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. *International Journal of Information Management*, 59(102168):1-37.

Dwyer, F. R., Schurr, P. H., & Oh, S. (1987). Developing buyer-seller relationships. *Journal of Marketing*, 51(2):11-27.

Eberl, A., & Klar, B. (2023). Centre-free kurtosis orderings for asymmetric distributions. Retrieved August 30, 2023, from https://link.springer.com/article/10.1007/s00362-023-01403-6#citeas

Edavalath, M., & Bharathan, B. P. (2021). Methodology for developing and evaluating diagnostic tools in Ayurveda: A review. *Journal of Ayurveda and Integrative Medicine*, 12(2):389-397.

Electronic Communications and Transactions Act, nr 25. (2002). Cape Town: Government Printer.

El-gohary, T. M. (2019). Hypothesis testing, type I and type II errors: Expert discussion with didactic clinical scenarios. *International Journal of Health and Rehabilitation Sciences (IJHRS)*, 8(3):132-138.

Ellis, C. D. (2011). *Joe Wilson and the creation of Xerox.* Hoboken: John Wiley and sons.

Emerson, R. M. (1962). Power-dependence relations. *American Sociological Review*, 27(1):31-41.

Employment Equity Act, nr 55. (1998). Pretoria: Government Printer.

Epley, K. (2019). Emotions, attitudes, and reasons. *Pacific Philosophical Quarterly*, 100(1):256-282.

Eren Erdoğmuş, İ., Yalçın, A. M., & Bopieva, A. (2012). Revisiting relationship marketing in emerging markets: The case of Turkish exportes. *Bogazici Journal: Review of Social, Economic and Administrative Studies*, 26(1):81-101.

Erickson, K. C. (2019). Personal printers and ink in São Paulo and Recife: Getting new things done. *Journal of Business Anthropology*, 8(2):273-297.

Etikan, I., & Bala, K. (2017). Sampling and sampling methods. *Biometrics and Biostatistics International Journal*, 5(6):215-217.

Eyarefe, I. D., & Sanusi, G. P. (2019). Ethical guidelines for responsible conduct of students' research: An overview. *Journal of Social Sciences and Public Policy*, 11(1):1-13.

Eyisi, D. (2016). The usefulness of qualitative and quantitative approaches and methods in researching problem-solving ability in science education curriculum. *Journal of Education and Practice*, 7(15):91-100.

FAO. (2022). *Forestry production and trade*. Retrieved September 22, 2022, from https://www.fao.org/faostat/en/#data/FO

Faqih, K. M., & Jaradat, M. I. R. M. (2015). Assessing the moderating effect of gender differences and individualism-collectivism at individual-level on the adoption of mobile commerce technology: TAM3 perspective. *Journal of Retailing and Consumer Services*, 22:37-52.

Farn, C. K., & Huang, L. T. (2009). A study on industrial customers loyalty to application service providers–The case of logistics information services. *International Journal of Computers*, 1(3):151-160.

Farrugia, P., Petrisor, B. A., Farrokhyar, F., & Bhandari, M. (2010). Research questions, hypotheses and objectives. *Canadian Journal of Surgery*, 53(4):278-281.

Faryadi, Q. (2019). PhD thesis writing process: A systematic approach - How to write your methodology, results and conclusion. *Online Submission*, 10:766-783.

Fauth, T., Hattrup, K., Mueller, K., & Roberts, B. (2013). Nonresponse in employee attitude surveys: A group-level analysis. *Journal of Business and Psychology*, 28(1):1-16.

Fauzi, M. A. (2022). Partial least square structural equation modelling (PLS-SEM) in knowledge management studies: Knowledge sharing in virtual communities. *Knowledge Management and E-Learning*, 14(1):103-124.

Fehl, A. G., Good, V., & Arnold, T. (2022). Exploring the drivers of B2B end user engagement. *Journal of Personal Selling and Sales Management*, 6(2):e38284.

Feng, X., Park, D. S., Liang, Y., Pandey, R., & Papeş, M. (2019). Collinearity in ecological niche modeling: Confusions and challenges. *Ecology and Evolution*, 9(18):10365-10376.

Fernandes, L. (2018). *Print 2025 - Evolution or revolution?.* Retrieved August 05, 2020, from https://www.xerox.com/downloads/dl/usa/en/services/document/quocirca_print2025_xerox_summary.pdf

Fernandes, L. (2020). *Can the COVID-19 pandemic spur innovation in the print industry channel?.* Retrieved September 02, 2020, from https://quocirca.com/content/what-role-will-printing-play-in-the-post-covid-19-workplace/

Festinger, L. (1957). *A theory of cognitive dissonance.* New York: Row, Peterson.

Fidelis, O. O. (2017). Writing non-empirical articles for publication. *International Journal of Advanced Academic Research*, 3(3):25-31.

Finne, M., Brax, S., & Holmström, J. (2013). Reversed servitization paths: A case analysis of two manufacturers. *Service Business*, 7(4):513-537.

Fisch, F., & Fleury, A. (2020). Towards the digitally-enabled multinational inner network (DEMIN). *Gestão & Produção*, 27(3):e5615.

Fishbein, M. (1967). *A behavior theory approach to the relations between beliefs about an object and attitude toward the object.* New York: John Wiley and sons.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research.* Boston: Addison-Wesley.

Fisher, R. A. (1992). Statistical methods for research workers. In S. Kotz, & N. L. Johnson (Eds.), *Breakthroughs in statistics: Methodology and distribution* (pp. 66-70). New York: Springer.

Fitzgerald, D. (2021). Spreading without being seen: Towards a global history of early modern chinese paper. *Ars Orientalis*, 51:105-132.

Fleming, D., Lynch, P., & Kelliher, F. (2016). The process of evaluating business to business relationships facing dissolution: An SME owner manager perspective. *Industrial Marketing Management*, 58(1):83-93.

Fletcher, A. J. (2017). Applying critical realism in qualitative research: Methodology meets method. *International Journal of Social Research Methodology*, 20(2):181-194.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1):39-50.

Fraccastoro, S., Gabrielsson, M., & Pullins, E. B. (2021). The integrated use of social media, digital, and traditional communication tools in the B2B sales process of international SMEs. *International Business Review*, 30(4):101776.

Francisco, K., & Swanson, D. (2018). The supply chain has no clothes: Technology adoption of blockchain for supply chain transparency. *Logistics*, 2(1):2.

Fuchs, R., Seelig, H., Göhner, W., Schlatterer, M., & Ntoumanis, N. (2017). The two sides of goal intentions: Intention self-concordance and intention strength as predictors of physical activity. *Psychology and Health*, 32(1):110-126.

Fuentes, A. (2017). Human niche, human behaviour, human nature. *Interface Focus*, 7(5):20160136.

Fujiwara, M. (2017). A dynamic perspective on innovation and business model: A case study of the inkjet printer industry. In S. E. Little, *Global innovation and entrepreneurship* (pp. 191-210). Cham: Palgrave Macmillan.

Furneaux, B., & Wade, M. (2011). An exploration of organizational level information systems discontinuance intentions. *MIS Quarterly*, 35(3):573-598.

Furneaux, B., & Wade, M. (2017). Impediments to information systems replacement: A calculus of discontinuance. *Journal of Management Information Systems*, 34(3):902-932.

Gajic, N., & Boolaky, M. (2015). Impact of technical support on customer satisfaction: Case of automotive paints. *SAGE Open*, 5(4):2158244015611457.

Galterio, M. G., Shavit, S. A., & Hayajneh, T. (2018). A review of facial biometrics security for smart devices. *Computers*, 7(3):37.

Gambal, M. J., Asatiani, A., & Kotlarsky, J. (2022). Strategic innovation through outsourcing:A theoretical review. *The Journal of Strategic Information Systems*, 31(2):101718.

Ganesan, S., Brown, S. P., Mariadoss, B. J., & Ho, H. (2010). Buffering and amplifying effects of relationship commitment in business-to-business relationships. *Journal of Marketing Research*, 47(2):361-373.

Gangwar, H. (2017). Cloud computing usage and its effect on organizational performance. *Human Systems Management*, 36(1):13-26.

Gansser, O. A., Boßow-Thies, S., & Krol, B. (2021). Creating trust and commitment in B2B services. *Industrial Marketing Management*, 97:274-285.

Garone, A., Pynoo, B., Tondeur, J., Cocquyt, C., Vanslambrouck, S., Bruggeman, B., & Struyven, K. (2019). Clustering university teaching staff through UTAUT: Implications for the acceptance of a new learning management system. *British Journal of Educational Technology*, 50(5):2466-2483.

Garson, B. (1988). *The electronic sweatshop: How computers are transforming the office of the future into the factory of the past.* New York: Penguin Books.

Gates, B. (1999). *Business @ the speed of thought: Succeeding in the digital economy.* London: Penguin Books.

Gawronski, B. & Brannon, S. M. (2019). What is cognitive consistency and why does it matter? In E. Harmon-Jones (Ed.), *Cognitive dissonance: Progress on a pivotal theory in social psychology* (2nd ed., pp. 91-116). Washington DC: American Psychological Association.

Gefen, D. (2004). What makes an ERP implementation relationship worthwhile: Linking trust mechanisms and ERP usefulness. *Journal of Management Information Systems*, 21(1):263-288.

Gefen, D., & Keil, M. (1998). The impact of developer responsiveness on perceptions of usefulness and ease of use: An extension of the technology acceptance model. *The DATA BASE for Advances in Information Systems*, 29(2):35-49.

Geisser, S. (1975). The predictive sample reuse method with applications. *Journal of the American statistical Association*, 70(350):320-328.

Genesis, E., & Oluwole, O. (2018). Towards a “paperless” higher education system in Nigeria: Concept, challenges and prospects. *Journal of Education, Society and Behavioural Science*, 24(2):19913.

Gerald, B. (2018). A brief review of independent, dependent and one sample T-test. *International Journal of Applied Mathematics and Theoretical Physics*, 4(2):50-54.

Gewirtz, J. L., & Stingle, K. G. (1968). Learning of generalized imitation as the basis for identification. *Psychological Review*, 75(5):374-397.

Gharib, R. K., Philpott, E., & Duan, Y. (2017). Factors affecting active participation in B2B online communities: An empirical investigation. *Information and Management*, 54(4):516-530.

Gholami, R., Molla, A., Goswami, S., & Brewster, C. (2018). Green information systems use in social enterprise: The case of a community-led eco-localization website in

the west midlands region of the UK. *Information Systems Frontiers*, 20(6):1345-1361.

Goda, T. (2019). *Catalogue for single function, inkjet, laserJet and multifunction printers*. Retrieved March 16, 2023, from https://www.academia.edu/40391438/

Gonçalves, J. M., & da Silva Gonçalves, R. P. (2012). Overcoming resistance to changes in information technology organizations. *Procedia Technology*, 5:293-301.

Goodhue, D. L., & Thompson, R. L. (1995). Task technology fit and individual performance. *MIS Quarterly*, 19(2):213-236.

Gorla, N., Chiravuri, A., & Chinta, R. (2017). Business-to-business e-commerce adoption: An empirical investigation of business factors. *Information Systems Frontiers*, 19(3):645-667.

Goswami, A., & Dutta, S. (2016). Gender differences in technology usage - A literature review. *Open Journal of Business and Management*, 4(1):51-59.

Grady, C. (2015). Institutional review boards: Purpose and challenges. *Chest*, 148(5):1148-1155.

Grant, C., & Osanloo, A. (2014). Understanding, selecting, and integrating a theoretical framework in dissertation research: Developing a 'blueprint' for your "house". *Administrative Issues Journal*, 4(2):12-26.

Grewal, A., Kataria, H., & Dhawan, I. (2016). Literature search for research planning and identification of research problem. *Indian Journal of Anaesthesia*, 60(9):635-639.

Gries, T., Mueller, V., & Jost, J. (2022). The market for belief systems: A formal model of ideological choice. *Psychological Inquiry*, 33(2):65-83.

Grigoryan, T. (2018). Investigating digital native female learners' attitudes towards paperless language learning. *Research in Learning Technology*, 26:1937.

Grobler, A., & Joubert, Y. T. (2018). Psychological capital: Convergent and discriminant validity of a reconfigured measure. *South African Journal of Economic and Management Sciences*, 21(1):a1715.

Groshen, E. L., & Holzer, H. J. (2019). Improving employment and earnings in twenty-first century labor markets: An introduction. *RSF: The Russell Sage Foundation Journal of the Social Sciences*, 5(5):1-19.

Gross, A. D., Neely, D. G., & Sidgman, J. (2015). When paper meets the paperless world. *The CPA Journal*, 85(5):64-67.

Gu, M., Yang, L., & Huo, B. (2021). Gu, M., Yang, L., & Huo, B. (2021). The impact of information technology usage on supply chain resilience and performance: An ambidexterous view. *International Journal of Production Economics*, 232:107956.

Guenther, J., & Falk, I. (2019). Generalising from qualitative research (GQR): A new old approach. *The Qualitative Report*, 24(5):1012-1033.

Guenther, P., Guenther, M., Ringle, C. M., Zaefarian, G., & Cartwright, S. (2023). Improving PLS-SEM use for business marketing research. *Industrial Marketing Management*, 111:127-142.

Guetterman, T. (2019). Basics of statistics for primary care research. *Family and community health*, 7(2):1-7.

Guo, S. L., Lumineau, F., & Lewicki, R. J. (2017). Revisiting the foundations of organizational distrust. *Foundations and Trends® in Management*, 1(1):1-88.

Gupta, A., & Arora, N. (2017). Understanding determinants and barriers of mobile shopping adoption using behavioral reasoning theory. *Journal of Retailing and Consumer Services*, 36:1-7.

Gupta, S. (2017). Ethical issues in designing internet-based research: Recommendations for good practice. *Journal of Research Practice*, 13(2):D1. Retrieved August 30, 2019, from http://jrp.icaap.org/index.php/jrp/article/view/576/476

Gure, G. S. (2015). Different scale construction approaches used to attitude measurement in social science research. *International Journal of Research in Economics and Social Sciences*, 5(1):26-44.

Haddock, G., & Maio, G. R. (2019). Inter-individual differences in attitude content: Cognition, affect, and attitudes. *Advances in Experimental Social Psychology*, 59:53-102.

Hagan, T. L. (2014). Measurements in quantitative research: How to select and report on research instruments. *Oncology Nursing Forum*, 41(4):431-433.

Haig, B. D. (2018). The philosophy of quantitative methods. In *Method matters in Psychology* (pp. 159-186). Springer: Cham.

Haigh, T. (2006). Remembering the office of the future: The origins of word processing and office automation. *IEEE Annals of the History of Computing*, 28(4):6-31.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Thousand Oaks: Sage publications.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Cham: Springer. Retrieved January 19, 2023, from https://library.oapen.org/bitstream/handle/20.500.12657/51463/9783030805197.pdf?sequence=1

Hair, J. F., Jr., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis* (7th ed.). Harlow: Pearson Education Limited.

Hair, J. F., Page, M., & Brunsveld, N. (2020). *Essentials of business research methods* (4th ed.). New York: Routledge.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19(2):139-152.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long Range Planning*, 46(1-2):1-12.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1):2-24.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2018). *Advanced issues in partial least squares structural equation modeling.* Thousand Oaks: Sage publications.

Hajiheydari, N., Delgosha, M. S., & Olya, H. (2021). Scepticism and resistance to IoMT in healthcare: Application of behavioural reasoning theory with configurational perspective. *Technological Forecasting and Social Change*, 169:120807.

Hallikainen, H., Paesbrugghe, B., Laukkanen, T., Rangarajan, D., & Gabrielsson, M. (2017). How individual technology propensities and organizational culture influence B2B customer's behavioral intention to use digital services at work. In *Proceedings of the 50th Hawaii International Conference on System Sciences 2017.* Retrieved January 30, 2020, from http://hdl.handle.net/10125/41718

Ham, M., Jeger, M., & Frajman Ivković, A. (2015). The role of subjective norms in forming the intention to purchase green food. *Economic Research-Ekonomska Istraživanja*, 28(1):738-748.

Hammer, C. S. (2011). The importance of participant demographics. *American Journal of Speech-Language Pathology*, 20(4):261-261.

Hancock, D. R., & Algozzine, B. (2017). *Doing case study research: A practical guide for beginning researchers* (3rd ed.). New York: Teachers College Press.

Handley, S. M., & Angst, C. M. (2015). The impact of culture on the relationship between governance and opportunism in outsourcing relationships. *Strategic Management Journal*, 36(9):1412-1434.

Haselhuhn, M. P., Pope, D. G., Schweitzer, M. E., & Fishman, P. (2012). The impact of personal experience on behavior: Evidence from video-rental fines. *Management Science*, 58(1):52-61.

Hassan, H., Tretiakov, A., & Whiddett, D. (2017). Factors affecting the breadth and depth of e-procurement use in small and medium enterprises. *Journal of Organizational Computing and Electronic Commerce*, 27(4):304-324.

Hassan, R. S., Nawaz, A., Lashari M. N., & Zafard, F. (2015). Effect of customer relationship management on customer satisfaction. *Procedia Economics and Finance*, 23(1):563-567.

Hawkins, T. G., Pohlen, T. L., & Prybutok, V. R. (2013). Buyer opportunism in business-to-business exchange. *Industrial Marketing Management*, 42(8):1266-1278.

Hayashi, P., Abib, G., & Hoppen, N. (2019). Validity in qualitative research: A processual approach. *The Qualitative Report*, 24(1):98-112.

Hazra, A. (2017). Using the confidence interval confidently. *Journal of Thoracic Disease*, 9(10):4125-4130.

Head, G. (2020). Ethics in educational research: Review boards, ethical issues and researcher development. *European Educational Research Journal*, 19(1):72-83.

Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. *Evidence-based Nursing*, 18(3):66-67.

Healey, J. F. (2016). *The essentials of statistics: A tool for social research* (4th ed.). Boston: Cengage Learning.

Helms, C., Gardner, A., & Mcinnes, E. (2017). The use of advanced web-based survey design in delphi research. *Journal of Advanced Nursing*, 73(12):3168-3177.

Henderson, J., Pollack, A., Gordon, J., & Miller, G. (2014). Patients and technology: Technology in practice-GP computer use by age. *Australian Family Physician*, 43(12):831-831.

Hendra, R., & Hill, A. (2019). Rethinking response rates: New evidence of little relationship between survey response rates and nonresponse bias. *Evaluation Review*, 43(5):307-330.

Hendriarto, P. (2021). Understanding of the role of digitalization to business model and innovation: Economics and business review studies. *Linguistics and Culture Review*, 5(S1):160-173.

Hendriks, C. J., & Maposa, H. (2020). Tax compliance and electronic filing. *Administratio*, 28(1):1-24.

Henrich, J. (2015). Culture and social behavior. *Current Opinion in Behavioral Sciences*, 3:84-89.

Henseler, J., & Schuberth, F. (2020). Using confirmatory composite analysis to assess emergent variables in business research. *Journal of Business Research*, 120:147-156.

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management and Data Systems*, 116(1):2-20.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1):115-135.

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In R. R. Sinkovics, & P. N. Ghauri (Eds.), *Advances in International Marketing* (pp. 277-320). Bingley: Emerald Publishing Limited.

Hernández-Ortega, B. (2011). The role of post-use trust in the acceptance of a technology: Drivers and consequences. *Technovation*, 31(10):523-538.

Hessling, V., Åsberg, M., & Roxenhall, T. (2018). Relationship commitment and value creation in sponsorship relationships. *Journal of Business-to-Business Marketing*, 25(2):137-160.

Hichem, H., & Yacine, B. (2022). The safe transition from paper to paperless administration: Case study of the Malaysian experience, E-Tanah (E-land administration). *Finance and Business Economics Review*, 6(4):202-214.

Hitt, M. A., Xu, K., & Carnes, C. M. (2016). Resource based theory in operations management research. *Journal of Operations Management*, 41:77-94.

Hjørland, B. (2015). Theories are knowledge organizing systems (KOS). *Knowledge Organization*, 42(2):113-28.

Ho, C. H. (2010). Continuance intention of e-learning platform: Toward an integrated model. *International Journal of Electronic Business Management*, 8(3):206-215.

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind.* New York: McGraw-Hill.

Hoft, J. (2021). Anonymity and confidentiality. In J. C. Barnes, & D. R. Forde (Eds.), *The Encyclopedia of Research Methods in Criminology and Criminal Justice* (Vol. 1, pp. 223-227). Hoboken: John Wiley and sons.

Høgevold, N., Svensson, G., & Roberts-Lombard, M. (2020). Opportunism and conflict as precursors of non-economic and economic satisfaction outcomes in seller–customer business relationships. *Journal of Business-to-Business Marketing*, 27(4):375-395.

Homans, G. C. (1958). Social behavior as exchange. *American Journal of Sociology*, 63(6):597-606.

Hoque, M. R., & Boateng, R. (2017). Adoption of B2B e-commerce in developing countries: Evidence from ready made garment (RMG) industry in Bangladesh. *Pacific Asia Journal of the Association for Information Systems*, 9(1):55-74.

Horner, J., & Minifie, F. D. (2011). Research ethics II: Mentoring, collaboration, peer review, and data management and ownership. *Journal of Speech, Language, and Hearing Research*, 54:330-345.

Hou, C. K. (2016). Understanding business intelligence system continuance intention: An empirical study of Taiwan's electronics industry. *Information Development*, 32(5):1359-1371.

Howe, L. C., & Krosnick, J. A. (2017). Attitude strength. *Annual Review of Psychology*, 68(1):327-351.

Hsiao, R. L. (2003). Technology fears: Distrust and cultural persistence in electronic marketplace adoption. *The Journal of Strategic Information Systems*, 12(3):169-199.

Huang, M. H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. *Journal of the Academy of Marketing Science*, 49:30-50.

Huang, Y., & Wilkinson, I. F. (2013). The dynamics and evolution of trust in business relationships. *Industrial Marketing Management*, 42(3):455-465.

Hubert, M., Blut, M., Brock, C., Zhang, R. W., Koch, V., & Riedl, R. (2019). The influence of acceptance and adoption drivers on smart home usage. *European Journal of Marketing*, 53(6):1073-1098.

Hübner, D., Wagner, S. M., & Kurpjuweit, S. (2018). The service recovery paradox in B2B relationships. *Journal of Business and Industrial Marketing*, 33(3):291–302.

Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal*, 20(2):195-204.

Hume, D. (2018). *Enquiry concerning human understanding.* Ann Arbor: Charles River Editors.

Hurmerinta-Peltomäki, L., & Nummela, N. (2006). Mixed methods in international business research: A value-added perspective. *Management International Review*, 46(4):439-459.

Hussein, L. A., Baharudin, A. S., Jayaraman, K., & Kiumarsi, S. (2019). B2B e-commerce technology factors with mediating effect perceived usefulness in Jordanian manufacturing SMEs. *Journal of Engineering Science and Technology*, 14(1):411-429.

Hussein, L. A., Baharudin, A. S., Kiumarsi, S., & Kiumarsi, S. (2020). Factors influencing the intention to continue using B2B e-commerce in manufacturing SMEs. *Engineering, Technology and Applied Science Research*, 10(2):5528-5533.

Hussein, L., A., & Baharudin, A. S. (2016). Factors affecting the owner's intention/continuance e-commerce adoption in Jordan small and medium enterprises. *International Journal of Computer Science and Information Security*, 14(11):75-83.

Hutchison, E. D. (2018). *Dimensions of human behavior: Person and environment* (6th ed.). Thousand Oaks: Sage publications.

Huyssen, A. (1986). *After the great divide: Modernism, mass culture, postmodernism* (Vol. 399). Bloomington: Indiana University Press.

Hyman, L., Lamb, J., & Bulmer, M. (2006). The use of pre-existing survey questions: Implications for data quality. Retrieved September 08, 2021, from https://ec.europa.eu/eurostat/documents/64157/4374310/22-Use-of-pre-existing-survey-questions-implications-for-data-quality-2006.pdf/e953a39e-50be-40b3-910f-6c0d83f55ed4

Hyman, M. R., & Sierra, J. J. (2016). Open- versus close-ended survey questions. *NMSU Business Outlook*, 14(2). Retrieved December 02, 2019, from https://www.academia.edu/16266400

IBM. (2021). *Propel research and analysis with a comprehensive statistical software solution*. Retrieved December 02, 2021, from https://www.ibm.com/downloads/cas/ERYRD6G5

Ibrahim, N., Shiratuddin, M. F., & Wong, K. W. (2015). Instruments for measuring the influence of visual persuasion: Validity and reliability tests. *European Journal of Social Science Education and Research*, 2(3):25-37.

Igbaria, M., Schiffman, S. J., & Wieckowski, T. J. (1994). The respective roles of perceived usefulness and perceived fun in the acceptance of microcomputer technology. *Behaviour and Information Technology*, 13(6):349-361.

Ilias, S., & Shamsudin M. F. (2020). Customer satisfaction and business growth. *Journal of Undergraduate Social Science and Technology*, 2(2):224-236.

Imperatori, B. (2017). *Engagement and disengagement at work: Drivers and organizational practices to sustain employee passion and performance.* New York: Springer.

IPA. (2013). *Research report on the security of MFPs*. Retrieved December 01, 2020, from https://www.ipa.go.jp/security/jisec/apdx/documents/20130312report_E.pdf

Iranmanesh, M., Zailani, S., & Nikbin, D. (2017). RFID continuance usage intention in health care industry. *Quality Management in Healthcare*, 26(2):116-123.

Ismail, H., & Islam, N. (2019). Factors influencing strategic options of managed service adoption by telecommunication operators: The case of Sri Lanka. *Journal of Applied Business Research*, 35(6):157-178.

ITU. (2022). *Statistics*. Retrieved September 23, 2022, from https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx

ITU., & UNESCO. (2020). *The state of broadband 2020: Tackling digital inequalities - A decade for action.* Geneva: International Telecommunication Union and United Nations Educational, Scientific and Cultural Organization. Retrieved March 18,

2021, from https://www.itu.int/dms_pub/itu-s/opb/pol/S-POL-BROADBAND.21-2020-PDF-E.pdf

Jaga, A., Arabandi, B., Bagraim, J., & Mdlongwa, S. (2018). Doing the 'gender dance': Black women professionals negotiating gender, race, work and family in post-apartheid South Africa. *Community, Work and Family*, 21(4):429-444.

Jagodič, G., & Milfelner, B. (2022). The role of B2B marketing strategy, ICT B2B marketing support, and service quality in market orientation–Performance relationship: Evidence from three European countries. *Cogent Business and Management*, 9(1):2128252.

Jain, E., & Yadav, A. (2017). Marketing and technology: Role of technology in modern marketing. *IOSR Journal of Business and Management*, 19(5):49-53.

Jain, P., & Gupta, C. (2021). A sustainable journey of handmade paper from past to present: A review. *Problemy Ekorozwoju*, 16(2):234-244.

Jain, V. (2014). 3D model of attitude. *International Journal of Advanced Research in Management and Social Sciences*, 3(3):1-12.

Janis, I. L., & Mann, L. (1977). *Decision making: A psychological analysis of conflict, choice, and commitment.* New York: Free Press.

Jap, S. D. (1999). Pie-expansion efforts: Collaboration processes in buyer-supplier relationships. *Journal of Marketing Research*, 36(4):461-475.

Jap, S. D., & Anderson, E. (2003). Safeguarding interorganizational performance and continuity under ex post opportunism. *Management Science*, 49(12):1684-1701.

Jap, S. D., & Ganesan, S. (2000). Control mechanisms and the relationship life cycle: Implications for safeguarding specific investments and developing commitment. *Journal of Marketing Research*, 37(2):227-245.

Jatain, R. (2013). Different prospects of office automation systems. *International Journal of Computer Trends and Technology*, 4(3):210-212.

Javeria, A., Siddiqui, S. H., Rasheed, R., & Nawaz, M. S. (2019). Investigation into the role of leadership commitment on implementation of green banking: Moderating influence of responsible leadership characteristics. *Review of Economics and Development Studies*, 5(2):245-252.

Jayashankar, P., Nilakanta, S., Johnston, W. J., Gill, P., & Burres, R. (2018). IoT adoption in agriculture: The role of trust, perceived value and risk. *Journal of Business and Industrial Marketing*, 33(6):804-821.

Jeong, M., & Oh, H. (2017). Business-to-business social exchange relationship beyond trust and commitment. *International Journal of Hospitality Management*, 65:115-124.

Jevnaker, B. H., & Olaisen, J. (2022). The future of knowledge work: Working smarter and greener in the age of digitalization. In B. H. Jevnaker, & J. Olaisen, *Reimagining sustainable organization* (pp. 137-156). Cham: Palgrave Macmillan.

Jidin, A. Z., Yusof, N. M., & Sutikno, T. (2016). Arduino based paperless queue management system. *Telkomnika*, 14(3):839-845.

Johnson, T. P., & Wislar, J. S. (2012). Response rates and nonresponse errors in surveys. *Jama*, 307(17):1805-1806.

Johnston, C. M. (2016). Global paper market forecasts to 2030 under future internet demand scenarios. *Journal of Forest Economics*, 25:14-28.

Johnston, M., Dixon, D., Hart, J., Glidewell, L., Schröder, C., & Pollard, B. (2014). Discriminant content validity: A quantitative methodology for assessing content of theory-based measures, with illustrative applications. *British Journal of Health Psychology*, 19(2):240-257.

Joo, Y. J., So, H. J., & Kim, N. H. (2018). Examination of relationships among students' self-determination, technology acceptance, satisfaction, and continuance intention to use K-MOOCs. *Computers and Education*, 122:260-272.

Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2015). Likert scale: Explored and explained. *British Journal of Applied Science and Technology*, 7(4):396-406.

Józsa, K., & Morgan, G. A. (2017). Reversed items in Likert scales: Filtering out invalid responders. *Journal of Psychological and Educational Research*, 25(1):7-25.

Juliana, J., Sembel, R., & Malau, M. (2022). The effect of marketing mix and technology acceptance model on purchase intention via vending machine mediated by attitude. *South East Asia Journal of Contemporary Business, Economics and Law*, 26(1):6-17.

Jyh-Liang, G., Lee, T. R., Roberts-Lombard, M., Svensson, G., & Høgevold, N. (2022). Exploring opportunism, conflict, noneconomic satisfaction and economic satisfaction in a B2B context–A buyer and seller perspective. *South African Journal of Business Management*, 53(1):a3346.

Kadansky, M. (2014). *Going paperless, carefully part 2: Use document scanning to reduce your mountains of paper!* Retrieved April 15, 2021, from http://www.kadansky.com/files/newsletters/2014/2014_12_30p.html

Kadansky, M. (2018). *Going paperless, carefully part 3: An updated perspective*. Retrieved April 15, 2021, from http://kadansky.com/files/newsletters/2018/2018_06_29.html

Kahn, M. (2018). Archival copies: An evolutionary journey. *Journal of Archival Organization*, 15(1-2):71-77.

Kale, P., Singh, H., & Perlmutter, H. (2000). Learning and protection of proprietary assets in strategic alliances: Building relational capital. *Strategic Management Journal*, 21(3):217-237.

Kamalaldin, A., Linde, L., Sjödin, D., & Parida, V. (2020). Transforming provider-customer relationships in digital servitization: A relational view on digitalization. *Industrial Marketing Management*, 89:306-325.

Kanchanatanee, K., Suwanno, N., & Jarernvongrayab, A. (2014). Effects of attitude toward using, perceived usefulness, perceived ease of use and perceived compatibility on intention to use E-marketing. *Journal of Management Research*, 6(3):1-13.

Kantzavelos, M. (2013). Legal technology: E-filing gets the green light. *Illinois Bar Journal*, 101(1):20-20.

Karabulut, C., & Civelek, M. (2019). Hybrid-paperless adoption & integration in foreign trade: Evaluation of the current situation in Turkey. *Eurasian Business and Economics Journal*, 20(1):132-142.

Karahanna, E., Agarwal, R., & Angst, C. M. (2006). Reconceptualizing compatibility beliefs in technology acceptance research. *MIS Quarterly*, 30(4):781-804.

Karahanna, E., Straub, D. W., & Chervany, N. L. (1999). Information technology adoption across time: A cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly*, 23(2):183-213.

Karimikia, H., Singh, H., & Joseph, D. (2020). Negative outcomes of ICT use at work: Meta-analytic evidence and the role of job autonomy. *Internet Research*, 31(1):159-190.

Karlsson, M., & Stöckel, F. (2017). *The myth of the paperless office: Is there a key amongst the clouds?.* Retrieved March 12, 2022, from http://www.diva-portal.org/smash/get/diva2:1149227/FULLTEXT01.pdf

Karovič Jr, V., Kováč, F., Karovič, V., & Veselý, P. (2020). Print management system model in a large organization. *Applied Sciences*, 10(12):4193.

Kaski, T., Niemi, J., & Pullins, E. (2018). Rapport building in authentic B2B sales interaction. *Industrial Marketing Management*, 69:235-252.

Kasza, J. (2019). Forth industrial revolution (4 IR): Digital disruption of cyber-physical systems. *World Scientific News*, 134(2):118-147.

Katz, E., Gurevitch, M., & Haas, H. (1973). On the use of the mass media for important things. *American Sociological Review*, 38:164-181.

Kaur, B. (2018). Poles apart or not: Business etiquette and manners. *Pramana Research Journal*, 8(8):308-312.

Kelly, S., Wagner, B., & Ramsay, J. (2018). Opportunism in buyer–supplier exchange: A critical examination of the concept and its implications for theory and practice. *Production Planning and Control*, 29(12):992-1009.

Kesmodel, U. S. (2018). Cross-sectional studies - What are they good for? *Acta Obstetricia et Gynecologica Scandinavica*, 97(4):388-393.

Khadka, J., Ratcliffe, J., Hutchinson, C., Cleland, J., Mulhern, B., Lancsar, E., & Milte, R. (2022). Assessing the construct validity of the Quality-of-Life-Aged Care Consumers (QOL-ACC): An aged care-specific quality-of-life measure. *Quality of Life Research*, 31:2849-2865 .

Khaldi, K. (2017). Quantitative, qualitative or mixed research: Which research paradigm to use?. *Journal of Educational and Social Research*, 7(2):15-24.

Khalifa, A. B. (2016). Determinants of information and communication technologies adoption by Tunisian firms. *Journal of Innovation Economics*, 20(2):151-177.

Khan Pathan, A. S. (2018). Technological advancements and innovations are often detrimental for concerned technology companies. *International Journal of Computers and Applications*, 40(4):189-191.

Khan, N., & Kumari. D. (2016). The “less paper” library and its effects on environment, economy and efficiency. *Journal of Advancements in Library Sciences*, 3(1):13-17.

Khanal, G. K. (2017). Ensuring quality in survey research. *Journal of Management Value and Ethics*, 7(1):4-16.

Khatleli, N., & Root, D. (2009). The partnership paradox in black economic empowerment initiative. Exploring trust and co-operation in South African PPPs. In *Proceedings*

of RICS COBRA 10 - 11 September 2009. Retrieved October 23, 2022, from https://www.researchgate.net/publication/341326452

Kim, H. Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry and Endodontics*, 38(1):52-54.

Kim, J., Hong, S., Min, J., & Lee, H. (2011). Antecedents of application service continuance: A synthesis of satisfaction and trust. *Expert Systems with Applications*, 38(8):9530-9542.

Kim, J., Kim, Y., Oh, S., Kim, T., & Lee, D. (2021). Estimation of environmental impact of paperless office based on simple model scenarios. *International Journal of Sustainable Building Technology and Urban Development*, 12(1):44-60.

Kim, J., Smith, T., Park, A., & Koch, A. (2006). Social-science research and the general social surveys. *Comparative Sociology*, 5(1):33-43.

Kim, S. (2018). Managing millennials' personal use of technology at work. *Business Horizons*, 61(2):261-270.

Kim, S., Sturman, E., & Kim, E. S. (2015). Structural equation modeling: Principles, processes, and practices. In K. Strang (Ed.), *The palgrave handbook of research design in business and management* (pp. 153-172). New York: Palgrave Macmillan.

Kimutai, K. S., & Kwambai, M. (2017). Effect of office automation on organizational effectiveness of public universities in Kenya. *International Journal of Academic Research in Business and Social Sciences*, 7(12):1061-1071.

King, K., & Toland, J. (2014). iPads and the paperless office: The impact of tablet devices on paper consumption in higher education. *Journal of Applied Computing and Information Technology*, 18(1). Retrieved November 25, 2018, from http://www.citrenz.ac.nz/jacit/JACIT1801/2014King_PaperlessOffice.html

Kivunja, C. (2018). Distinguishing between theory, theoretical framework, and conceptual framework: A systematic review of lessons from the field. *International Journal of Higher Education*, 7(6):44-53.

Klasen, S. (2019). What explains uneven female labor force participation levels and trends in developing countries?. *The World Bank Research Observer*, 34(2):161-197.

Klerk, J. J. D., Joubert, M., & Mosca, H. F. (2021). Is working from home the new workplace panacea? Lessons from the COVID-19 pandemic for the future world of work. *South African Journal of Industrial Psychology*, 47(1):a1883.

Kline, R. B. (2016). *Principles and practice of structural equation modeling.* New York: Guilford publications.

Knekta, E., Runyon, C., & Eddy, S. (2019). One size doesn't fit all: Using factor analysis to gather validity evidence when using surveys in your research. *CBE-Life Sciences Education*, 18(1):rm1.

Kock, F., Berbekova, A., & Assaf, A. G. (2021). Understanding and managing the threat of common method bias: Detection, prevention and control. *Tourism Management*, 86:104330.

Kock, N. (2014). Advanced mediating effects tests, multi-group analyses, and measurement model assessments in PLS-based SEM. *International Journal of e-Collaboration*, 10(1):1-13.

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, 11(4):1-10.

Kock, N. (2016). Hypothesis testing with confidence intervals and p values in PLS-SEM. *International Journal of e-Collaboration*, 12(3):1-6.

Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. *Information Systems Journal*, 28(1):227-261.

Koh, C. E., Prybutok, V. R., Ryan, S. D., & Wu, Y. (2010). A model for mandatory use of software technologies: An integrative approach by applying multiple levels of abstraction of informing science. *Informing Science*, 13:177-203.

Koponen, J., Julkunen, S., & Asai, A. (2019). Sales communication competence in international B2B solution selling. *Industrial Marketing Management*, 82:238-252.

Kopsov, I. (2021). A new theory of human behavior and motivation. *Advances in Social Sciences Research Journal*, 8(10):345-364.

Kostylev, V. A. (2000). Medical physics: Yesterday, today, and tomorrow. *Biomedical Engineering*, 34(2):106-112.

Kotarba, M. (2018). Digital transformation of business models. *Foundations of Management*, 10(1):123-142.

Kramer, R. M. (1999). Trust and distrust in organizations: Emerging perspectives, enduring questions. *Annual Review of Psychology*, 50(1):569-598.

Krosnick, J. A., Boninger, D. S., Chuang, Y. C., Berent, M. K., & Carnot, C. G. (1993). Attitude strength: One construct or many related constructs?. *Journal of Personality and Social Psychology*, 65(6):1132-1151.

Kruglanski, A. W., Jasko, K., Milyavsky, M., Chernikova, M., Webber, D., Pierro, A., & Di Santo, D. (2018). Cognitive consistency theory in social psychology: A paradigm reconsidered. *Psychological Inquiry*, 29(2):45-59.

Kumar, R. (2019). *Research methodology: A step-by-step guide for beginners (5th Edition).* London: Sage publications.

Kuwabara, K. (2011). Cohesion, cooperation, and the value of doing things together: How economic exchange creates relational bonds. *American Sociological Review*, 76(4):560-580.

Kwak, S. G., & Park, S. H. (2019). Normality test in clinical research. *Journal of Rheumatic Diseases*, 26(1):5-11.

Kwak, S. K., & Kim, J. H. (2017). Statistical data preparation: Management of missing values and outliers. *Korean Journal of Anesthesiology*, 70(4):407-411.

Kwon, H. R., & Silva, E. A. (2019). Mapping the landscape of behavioral theories: Systematic literature review. *Journal of Planning Literature*, 35(2):161-179.

Lacka, E., & Chong, A. (2016). Usability perspective on social media sites' adoption in the B2B context. *Industrial Marketing Management*, 54:80-91.

Lages, L. F., Lancastre, A., & Lages, C. (2008). The B2B-RELPERF scale and scorecard: Bringing relationship marketing theory into business-to-business practice. *Industrial Marketing Management*, 37(6):686-697.

Lambe, C. J., Wittmann, C. M., & Spekman, R. E. (2001). Social exchange theory and research on business-to-business relational exchange. *Journal of Business-to-Business Marketing*, 8(3):1-36.

Lang, V. (2021). Digitalization and digital transformation. In V. Lang, *Digital Fluency* (pp. 1-50). Berkeley: Apress.

Langley, D. J. (2022). Digital product-service systems: The role of data in the transition to servitization business models. *Sustainability*, 14(3):1303.

Lansing, J., & Sunyaev, A. (2016). Trust in cloud computing: Conceptual typology and trust-building antecedents. *ACM SIGMIS Database: The DATABASE for Advances in Information Systems*, 47(2):58-96.

Latta, G. S., Plantinga, A. J., & Sloggy, M. R. (2016). The effects of internet use on global demand for paper products. *Journal of Forestry*, 114(4):433-440.

Lavenda, D. (2021). *Are we finally headed to a paperless office?.* Retrieved January 25, 2023, from https://www.reworked.co/digital-workplace/are-we-finally-headed-to-a-paperless-office/

Lawrence, J. M., Crecelius, A. T., Scheer, L. K., & Lam, S. K. (2019). When it pays to have a friend on the inside: Contingent effects of buyer advocacy on B2B suppliers. *Journal of the Academy of Marketing Science*, 47(5):837-857.

Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28(4):563-575.

Lax, G., Buccafurri, F., & Caminiti, G. (2015). Digital document signing: Vulnerabilities and solutions. *Information Security Journal: A Global Perspective*, 24(1-3):1-14.

Lee, D., Rhee, Y., & Dunham, R. B. (2009). The role of organizational and individual characteristics in technology acceptance. *International Journal of Human–Computer Interaction*, 25(7):623-646.

Lee, J. N., Huynh, M. Q., & Hirschheim, R. (2008). An integrative model of trust on IT outsourcing: Examining a bilateral perspective. *Information Systems Frontiers*, 10(2):145-163.

Lee, J. N., Park, Y., Straub, D. W., & Koo, Y. (2019). Holistic archetypes of IT outsourcing strategy: A contingency fit and configurational approach. *MIS Quarterly*, 43(4):1201-1225.

Lee, S. J., Ahn, C., Song, K. M., & Ahn, H. (2018). Trust and distrust in e-commerce. *Sustainability*, 10(4):1015.

Lee, Y., & Li, J. Y. Q. (2021). The role of communication transparency and organizational trust in publics' perceptions, attitudes and social distancing behaviour: A case study of the COVID-19 outbreak. *Journal of Contingencies and Crisis Management*, 29(4):368-384.

Lefever, S., Dal, M., & Matthiasdottir, A. (2007). Online data collection in academic research: Advantages and limitations. *British Journal of Educational Technology*, 38(4):574-582.

Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information and Management*, 40(3):191-204.

Lerch, C., & Gotsch, M. (2015). Digitalized product-service systems in manufacturing firms: A case study analysis. *Research-Technology Management*, 58(5):45-52.

Lerner, R. M. (Ed.). (2019). *Developmental psychology: Historical and philosophical perspectives.* Abingdon: Routledge.

Lesi, O. B. (2020). Office Automation and secretarial productivity in Rivers State University. *American International Journal of Nursing Education and Practice*, 1(1):22-34.

Lewin, K. (1951). *Field theory in social science: Selected theoretical papers.* (D. Cartwright, Ed.) New York: Harper & Row.

Lewis, M. S. (2019). Technology change or resistance to changing institutional logics: The rise and fall of digital equipment corporation. *The Journal of Applied Behavioral Science*, 55(2):141-160 .

Li, H., Vincent, N., Tsai, J., Kaye, J., & Hecht, B. (2019). How do people change their technology use in protest?: Understanding “protest users”. In A. Lampinen, D. Gergle, & D. A. Shamma (Eds.), *Proceedings of the ACM on Human-Computer Interaction.* (Vol. 3, Article 87). New York: Association for Computing Machinery.

Li, X., Pillutla, S., Zhou, H., & Yao, D. Q. (2015). Drivers of adoption and continued use of e-procurement systems: Empirical evidence from China. *Journal of Organizational Computing and Electronic Commerce*, 25(3):262-288.

Liao, C., Palvia, P., & Chen, J. L. (2009). Information technology adoption behavior life cycle: Toward a technology continuance theory (TCT). *International Journal of Information Management*, 29(4):309-320.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*, 22(140):1-55.

Lin, H. F., Lee, G. G., & Lee, C. P. (2005). The influence of partnership attributes on the perceived benefits of business-to-business electronic commerce. *Asia Pacific Management Review*, 10(5):329-339.

Lin, T. C., Huang, S. L., & Chiang, S. C. (2018). User resistance to the implementation of information systems: A psychological contract breach perspective. *Journal of the Association for Information Systems*, 19(4):306-332.

Lippert, S. K. (2007). Investigating Postadoption Utilization: An Examination into the Role of Interorganizational and Technology Trust. *IEEE Transactions on Engineering Management*, 54(3)468-483.

Lippert, S. K., & Davis, M. (2006). A conceptual model integrating trust into planned change activities to enhance technology adoption behavior. *Journal of information science*, 32(5):434-448.

Lip-Sam, T., & Hock-Eam, L. (2011). Estimating the determinants of B2B E-commerce adoption among small & medium enterprises. *International Journal of Business and Society*, 12(1):15-30.

Loh, K. K., & Kanai, R. (2016). How has the Internet reshaped human cognition?. *The Neuroscientist*, 22(5):506-520.

Luaran, J. E. (2014). *Web tools for online survey*. Retrieved 01 18, 2022, from https://www.researchgate.net/profile/Johan-Luaran/publication/296020338_Web_Tools_for_Online_Survey/links/56d1732108ae85c8234aad60/Web-Tools-for-Online-Survey.pdf

Luhmann, N. (1979). *Trust and power.* Chichester: John Wiley and sons.

Lutfi, A. (2022). Factors influencing the continuance intention to use accounting information system in Jordanian SMEs from the perspectives of UTAUT: Top management support and self-efficacy as predictor factors. *Economies*, 10(4):75.

Lutfi, A. A., Idris, K. M., & Mohammed, R. (2016). The influence of technological, organisational and environmental factors on accounting information system usage

among Jordanian small and medium-sized enterprises. *Economics and Financial Issues*, 6(S7):240-248.

Lynch, H. F., Joffe, S., Thirumurthy, H., Xie, D., & Largent, E. A. (2019). Association between financial incentives and participant deception about study eligibility. *JAMA Network Open*, 2(1):e187355.

Maarouf, H. (2019). Pragmatism as a supportive paradigm for the mixed research approach: Conceptualizing the ontological, epistemological, and axiological stances of pragmatism. *International Business Research*, 2(9):1-12.

Macfarlan, G. J. (1962). Xerox 914 copier. *The Australian Library Journal*, 11(4):206-209.

Mahmood, M. A., Hall, L., & Swanberg, D. L. (2001). Factors affecting information technology usage: A meta-analysis of the empirical literature. *Journal of Organizational Computing and Electronic Commerce*, 11(2):107-130.

Maio, G. R., Haddock, G., & Verplanken, B. (2018). *The psychology of attitudes and attitude change* (3rd ed.). London: Sage publications.

Marathe, M., & Chandra, P. (2020). Officers never type: Examining the persistence of paper in e-governance. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems.* Retrieved June 05, 2021, from https://www.priyankc.com/files/Officers_Never_Type.pdf

Marcinkowski, T., & Reid, A. (2019). Reviews of research on the attitude–behavior relationship and their implications for future environmental education research. *Environmental Education Research*, 25(4):459-471.

Mardiana, S. (2020). Modifying research onion for information systems research. *Solid State Technology*, 63(4):5304-5313.

Marshall, B., Mills, R., & Olsen, D. (2008). The role of end-user training in technology acceptance. *Review of Business Information Systems*, 12(2):1-8.

Martínez-Caro, E., Cegarra-Navarro, J. G., & Alfonso-Ruiz, F. J. (2020). Digital technologies and firm performance: The role of digital organisational culture. *Technological Forecasting and Social Change*, 154:119962.

Martinez-Mesa, J., González-Chica, D. A., Duquia, R. P., Bonamigo, R. R., & Bastos, J. L. (2016). Sampling: How to select participants in my research study?. *An Bras Dermatol*, 91(3):326-30.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4):370-396.

Masood, T., & Egger, J. (2019). Augmented reality in support of Industry 4.0-Implementation challenges and success factors. *Robotics and Computer-Integrated Manufacturing*, 58:181-195.

Matikiti, R., Mpinganjira, M., & Roberts-Lombard, M. (2018). Application of the technology acceptance model and the technology–organisation–environment Model to examine social media marketing use in the South African tourism industry. *South African Journal of Information Management*, 20(1):a790.

Matotoka, D., & Odeku, K. O. (2018). Transformative interventions fostering mainstreaming of black south african women into managerial positions in the private sector. *European Review of Applied Sociology*, 11(16):36-50.

Matsumoto, M., & Kamigaki, K. (2013). Development and changes in the industrial product service systems–A case study of the photocopier PSS. In Y. Shimomura, & K. Kimita (Eds.), *Proceedings of the 4th CIRP International Conference on Industrial Product-Service Systems* (pp. 167-172). Berlin: Springer.

Maxwell, J. A. (2016). Expanding the history and range of mixed methods research. *Journal of Mixed Methods Research*, 10(1):12-27.

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *The Academy of Management Review*, 20(3):709-734.

McDonald, R. I., & Crandall, C. S. (2015). Social norms and social influence. *Current Opinion in Behavioral Sciences*, 3:147-151.

McGivern, Y. (2013). *The practice of market research: An Introduction* (4th ed.). Harlow: Pearson Education Limited.

McGregor, S. L. (2018). Philosophical underpinnings of the transdisciplinary research methodology. *Transdisciplinary Journal of Engineering and Science*, 90:182-198.

McGuire, L. (2022). *The problem with paper: Statistics that will blow your mind*. Retrieved January 25, 2023, from https://www.formstack.com/resources/blog-paper-statistics

McKim, C. A. (2017). The value of mixed methods research: A mixed methods study. *Journal of Mixed Methods Research*, 11(2):202-222.

McKnight, D. H., Choudhury, V. & Kacmar, C. (2002). Developing and validating trust measures for e-commerce: An integrative typology. *Information Systems Research*, 13(3):334-359.

McKnight, D. H., Cummings, L. L., & Chervany, N. L. (1998). Initial trust formation in new organizational relationships. *The Academy of Management Review*, 23(3):473-490.

McKnight, D. H., Lankton, N. K., Nicolaou, A., & Price, J. (2017). Distinguishing the effects of B2B information quality, system quality, and service outcome quality on trust and distrust. *The Journal of Strategic Information Systems*, 26(2):118-141.

McMann, K., Pemstein, D., Seim, B., Teorell, J., & Lindberg, S. (2022). Assessing data quality: An approach and an application. *Political Analysis*, 30(3):426-449.

McNeish, D. (2018). Thanks coefficient alpha, we'll take it from here. *Psychological Methods*, 23(3):412-433.

Mehra, S. (2017). Scaling techniques of attitude measurement. *International Journal of Advanced Education and Research*, 2(2):41-50.

Mellahi, K., & Harris, L. C. (2016). Response rates in business and management research: An overview of current practice and suggestions for future direction. *British Journal of Management*, 27(2):426-437.

Mellinger, C. D., & Hanson, T. A. (2020). Methodological considerations for survey research: Validity, reliability, and quantitative analysis. *Linguistica Antverpiensia, New Series–Themes in Translation Studies*, 19:172-190.

Melnikoff, D., Bargh, J., & Lambert, R. (2020). Attitudes as prepared reflexes. *Journal of Experimental Social Psychology*, 88:103950.

Melnikovas, A. (2018). Towards an explicit research methodology: Adapting research onion model for futures studies. *Journal of Futures Studies*, 23(2):29-44.

Memon, J., Sami, M., Khan, R. A., & Uddin, M. (2020). Handwritten optical character recognition (OCR): A comprehensive systematic literature review (SLR). *IEEE Access*, 8:142642-142668.

Memon, M. A., Ting, H., Cheah, J. H., Thurasamy, R., Chuah, F., & Cham, T. H. (2020). Sample size for survey research: Review and recommendations. *Journal of Applied Structural Equation Modeling*, 4(2):i-xx.

Menidjel, C., Benhabib, A., & Bilgihan, A. (2017). Examining the moderating role of personality traits in the relationship between brand trust and brand loyalty. *Journal of Product & Brand Management*, 26(6):631-649.

Mentus, V. (2014). Social power in exchange theories: Homans's and Blau's considerations of the relationship between the power and the exchange. *Sociološki Pregled*, 48(2):165-182.

Merom, D., & John, J. R. (2018). Measurement issues in quantitative research. In P. Liamputtong (Ed.), *Handbook of research methods in health social sciences* (pp. 1-20). Singapore: Springer.

Mertler, C. A., & Vannatta, R. A. (2017). *Advanced and multivariate statistical methods: practical application and interpretation.* New York: Routledge.

Meske, C., Wilms, K., & Stieglitz, S. (2019). Enterprise social networks as digital infrastructures - Understanding the utilitarian value of social media at the workplace. *Information Systems Management*, 36(4):350-367.

Mhlungu, N. S. M., Chen, J. Y. J., & Alkema, P. (2019). The underlying factors of a successful organisational digital transformation. *South African Journal of Information Management*, 21(1):a995.

Microsoft. (2022). *Microsoft 365: Bring out your best in school, work, and life*. Retrieved March 13, 2022, from https://www.microsoft.com/en-za/microsoft-365?rtc=1

Miller, K. (2005). *Communication theories.* New York: McGraw Hill.

Miri-Lavassani, K., Movahedi, B., & Kumar, V. D. (2009). Developments in theories of supply chain management: The case of B2B electronic marketplace adoption. *International Journal of Knowledge, Culture and Change Management*, 9(6):85-97.

Mitchell, A. (2018). A Review of mixed methods, pragmatism and abduction techniques. *The Electronic Journal of Business Research Methods*, 16(3):103-116.

Mitzner, T. L., Savla, J., Boot, W. R., Sharit, J., Charness, N., Czaja, S. J., & Rogers, W. A. (2019). Technology adoption by older adults: Findings from the PRISM Trial. *The Gerontologist*, 59(1):34-44.

Mobarak, A. M., Dakrory, M. I., Elsotouhy, M. M., Ghonim, M. A., & Khashan, M. A. (2022). Drivers of mobile payment services adoption: A behavioral reasoning theory perspective. *International Journal of Human–Computer Interaction*, 1-14.

Mohajan, H. K. (2017). Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University. Economic Series*, 17(4):59-82.

Mohajan, H. K. (2018). Qualitative research methodology in social sciences and related subjects. *Journal of Economic Development, Environment and People*, 7(1):23-48.

Mohajan, H. K. (2020). Quantitative research: A successful investigation in natural and social sciences. *Journal of Economic Development, Environment and People*, 9(4):50-79.

Mohamad, M., Afthanorhan, A., Awang, Z., & Mohammad, M. (2019). Comparison between CB-SEM and PLS-SEM: Testing and confirming the maqasid syariah quality of life measurement model. *The Journal of Social Sciences Research*, 5(3):608-614.

Mohamed, H. A. B., Mohamad, M. H., Ab Ghani, S., Baker, R., Lamin, K., Mohaiyadin, N. M., & Mardzuki, K. (2020). The application of paperless and green theory in national defence University of Malaysia: A conceptual study. *Jurnal Pertahanan: Media Informasi ttg Kajian & Strategi Pertahanan yang Mengedepankan Identity, Nasionalism & Integrity*, 6(1):37-45.

Mohammadi, H. (2015). A study of mobile banking loyalty in Iran. *Computers in Human Behavior*, 44:35-47.

Mohtaramzadeh, M., Ramayah, T., & Jun-Hwa, C. (2018). B2B e-commerce adoption in iranian manufacturing companies: analyzing the moderating role of organizational culture. *International Journal of Human–Computer Interaction*, 34(7):621-639.

Molina-Azorin, J. F. (2016). Mixed methods research: An opportunity to improve our studies and our research skills. *European Journal of Management and Business Economics*, 25:37-38.

Monreal, C. S. (2016). A move-step analysis of the concluding chapters in computer science PhD theses. *Ibérica: Revista de La Asociación Europea de Lenguas Para Fines Específicos (AELFE)*, 32:105-132.

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2(3):192-222.

Mordor Intelligence. (2020). *Printer market - growth, trends, and forecast (2020 - 2025)*. Retrieved December 14, 2020, from https://www.mordorintelligence.com/industry-reports/printer-market

Morgan, N. A., & Lurie, R. S. (2021). Commentary: A strategic perspective on capturing marketing information to fuel growth: Challenges and future research. *Journal of Marketing*, 85(1):184-189.

Morgan, N. A., Kaleka, A., & Gooner, R. A. (2007). Focal supplier opportunism in supermarket retailer category management. *Journal of Operations Management*, 25(2):512-527.

Morgan, R. M. & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(3):20-38.

Morita, N. (2012). Thermal inkjet. In P. J. Smith, & D. H. Shin (Eds.), *Inkjet-based micromanufacturing* (pp. 41-56). Weinheim: John Wiley and sons.

Mort, J. (1994). Xerography: A study in innovation and economic competitiveness. *Physics Today;(United States)*, 47(4):32-38.

Mpinganjira, M., Roberts-Lombard, M., & Svensson, G. (2017). Validating the relationship between trust, commitment, economic and non-economic satisfaction in South African buyer-supplier relationships. *Journal of Business and Industrial Marketing*, 32(3):421-431.

Murfield, M. L. U., & Esper, T. L. (2016). Supplier adaptation: A qualitative investigation of customer and supplier perspectives. *Industrial Marketing Management*, 59:96-106.

Murphy, M., & Sashi, C. M. (2018). Communication, interactivity, and satisfaction in B2B relationships. *Industrial Marketing Management*, 68:1-12.

Mushi, R. (2018). The moderating effect of mandatoriness on the acceptance of mobile phone technology: SMEs perspective. *International Journal of Wireless and Microwave Technologies*, 8(5):46-59.

Mwita, K. (2022). Factors influencing data saturation in qualitative studies. *International Journal of Research in Business and Social Science (2147-4478)*, 11(4):414-420.

Myin, M. T. A., & Watchravesringkan, K. (2020). Examining the drivers and barriers of intention to use AI chatbot to purchase apparel online. *International Textile and Apparel Association Annual Conference Proceedings*, 77(1). Retrieved March 20, 2022, from https://www.iastatedigitalpress.com/itaa/article/id/12161/

Namasudra, S. (2018). Cloud computing: A new era. *Journal of Fundamental and Applied Sciences*, 10(2):113-135.

Nambi, N., Dhayananth, X., Shrinivasan, N. R., & Faizee, S. H. (2018). Contemporary orthodontic office: A review. *International Journal of Current Research and Review*, 10(20):11-14.

Narayanan, K. (2013). *Race to the future: Multi-functional printer markets*. Retrieved September 02, 2020, from https://www.hcltech.com/sites/default/files/race_to_the_future.pdf

Nardi, P. M. (2018). *Doing survey research: A guide to quantitative methods* (4th ed.). New York: Routledge.

Nassaji, H. (2015). Qualitative and descriptive research: Data type versus data analysis. *Language Teaching Research*, 19(2):129-132.

Navimipoura, J. N., & Soltani, Z. (2016). The impact of cost, technology acceptance and employees' satisfaction on the effectiveness of the electronic customer relationship management systems. *Computers in Human Behavior*, 55(1B):1052-1066.

Nawaz, M. A., & Naheed, K. (2020). E-commerce ethics into expectation-confirmation model: Emerging case of pakistan’s B2B SMEs. *Pakistan Social Sciences Review*, 4(3):610-638.

Neagle, C. (2017). Not ready for paperless? Try less paper. *Journal of the Missouri Bar*, 73(3):176-177.

Nicholson, N. (1998). How hardwired is human behavior?. *Harvard Business Review*, 76(4):134-147.

Nicolaou, A. I., & McKnight, D. H. (2006). Perceived information quality in data exchanges: Effects on risk, trust, and intention to use. *Information Systems Research*, 17(4):332-351.

Nicolaou, A. I., Ibrahim, M., & Van Heck, E. (2013). Information quality, trust, and risk perceptions in electronic data exchanges. *Decision Support Systems*, 54(2):986-996.

Nicoll, L. H. (2018). The impact of the photocopier on peer review and nursing theory. *Nursing Research*, 67(2):74-80.

Nielsen, J., & Levy, J. (1994). Measuring usability: Preference vs. performance. *Communications of the ACM*, 37(4):66-75.

Niemoller, J. (2019). *7 Signs it's time to replace your EHS software*. Retrieved May 16, 2023, from https://www.perillon.com/blog/7-signs-its-time-to-replace-your-ehs-software

Ning, J., Babich, V., Handley, J., & Keppo, J. (2014). *Empirical study on managed print services pricing*. Retrieved August 12, 2020, from https://www.academia.edu/17529876/Empirical_Study_on_Managed_Print_Services_Pricing

Ning, J., Babich, V., Handley, J., & Keppo, J. (2018). Risk-aversion and B2B contracting under asymmetric information: Evidence from managed print services. *Operations Research*, 66(2):392-408.

Niraula, S. (2019). A review of research process, data collection and analysis. *Insights in Biology and Medicine*, 3:1-6.

Noordewier, M. K., Topolinski, S., & Van Dijk, E. (2016). The temporal dynamics of surprise. *Social and Personality Psychology Compass*, 10(3):136-149.

Nord, J. H., Koohang, A., & Paliszkiewicz, J. (2019). The internet of things: Review and theoretical framework. *Expert Systems with Applications*, 133:97-108.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory* (3rd ed.). New York: McGraw-Hill.

Nweke, F. I. (2019). Cosmology: The root cause of Africa's state of economic underdevelopment. *AFFRIKA Journal of Politics, Economics and Society*, 9(1):77-90.

Nyahodza, L., & Higgs, R. (2017). Towards bridging the digital divide in post-apartheid South Africa: a case of a historically disadvantaged university in Cape Town. *South African Journal of Libraries and Information Science*, 83(1):39-48.

Obal, M. (2013). Why do incumbents sometimes succeed? Investigating the role of interorganizational trust on the adoption of disruptive technology. *Industrial Marketing Management*, 42(6):900-908.

Obeidat, M. A. (2015). Empirical analysis for the factors affecting realization of paperless office. *International Journal of Economics, Commerce and Management*, 3(6):773-792.

Obendorf, H. (2009). *Minimalism: Designing simplicity.* London: Springer.

Obiora, S. C., Bamisile, O. O., Dodge, K., & Dagbasi, M. (2017). Identifying corporate socially responsible, cost minimizing, management, and energy saving techniques to be implemented on a University campus, through a paperless initiative. *IOSR Journal of Business and Management*, 19(2):55-66.

Ochuodho, T. O., Johnston, C. M. T., & Withey, P. (2017). Assessing economic impacts of internet adoption through reduced pulp and paper demand. *Canadian Journal of Forest Research*, 47(10):1381-1391.

Ocloo, C. E., Xu-hua, H., Akaba, S., Addai, M., Worwui-Brown, D., & Spio-Kwofie, A. (2018). B2B E-commerce Adoption amongst manufacturing SMEs: An Evidence

from Ghana. *Australian Journal of Economics and Management Science*, 8(1):126-146.

Odubiyi, T. B., Aigbavboa, C. O., & Thwala, W. D. (2021). A concise review of the evolution of information and communication technologies for engineering innovations. In *IOP Conference Series: Materials Science and Engineering.* Retrieved October 24, 2023, from https://iopscience.iop.org/article/10.1088/1757-899X/1107/1/012231

Oke, J. O., & Oludele, L. Y. (2022). Utilization of paperless technology as predictor of staff performance in technical colleges in Osun State, Nigeria. *Online Journal for TVET Practitioners*, 7(1):41-48.

Okoro, U. R., Awodele, O., Kuyoro, S. O., & Adekunle, Y. A. (2013). Office of the future: Digitizing record-keeping. *International Journal of Computing*, 2(2):75-87.

Olaleye, S. A., & Sanusi, I. T. (2019). The need for green companies in Nigeria: A study of electronic invoicing. *The African Journal of Information Systems*, 11(1). Retrieved October 18, 2022, from https://digitalcommons.kennesaw.edu/ajis/vol11/iss1/1

Olanrewaju, T., Smaje, K., & Willmott, P. (2020). The seven traits of effective digital enterprises. In R. Narisetti, *The next normal, The recovery will be digital: Digitizing at speed and scale* (pp. 163-167). McKinsey Global Publishing. Retrieved December 06, 2022, from https://www.mckinsey.com/~/media/mckinsey/business%20functions/mckinsey%20digital/our%20insights/how%20six%20companies%20are%20using%20technology%20and%20data%20to%20transform%20themselves/the-next-normal-the-recovery-will-be-digital.pdf

Oliveira J. C., & Azevedo, A. (2018). Antecedents and consequences of servitisation in the office printing industry. *International Journal of Business Environment*, 10(1):52-74.

Oliveira, J., Azevedo, A., Ferreira, J. J., Gomes, S., & Lopes, J. M. (2021). An insight on B2B firms in the age of digitalization and paperless processes. *Sustainability*, 13(21):11565.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4):460-469.

Olson, M. H., & Lucas, H. C. (1982). The impact of office automation on the organization: Some implications for research and practice. *Communications of the Association for Computing Machinery*, 25(11):838-847.

Oluwatayo, J. A. (2012). Validity and reliability issues in educational research. *Journal of Educational and Social Research*, 2(2):391-400.

Omair, A. (2014). Sample size estimation and sampling techniques for selecting a representative sample. *Journal of Health Specialties*, 2(4):142-147.

Ono, Y., Hayashi, M., Yokoyama, K., Okamura, T., & Itsubo, N. (2020). Environmental assessment of innovative paper recycling technology using product lifecycle perspectives. *Resources*, 9(3):23.

Oomsels, P., Callens, M., Vanschoenwinkel, J., & Bouckaert, G. (2019). Functions and dysfunctions of interorganizational trust and distrust in the public sector. *Administration and Society*, 51(4):516-544.

Oosthuizen, R. M. (2021). The fourth industrial revolution: A resilience-based coping strategy for disruptive change. In N. Ferreira, I. L. Potgieter, & M. Coetzee (Eds.), *Agile coping in the digital workplace* (pp. 11-34). Cham: Springer.

Orantes-Jiménez, S. D., Zavala-Galindo, A., & Vázquez-Álvarez, G. (2015). Paperless office: A new proposal for organizations. *Systemics, Cybernetics And Informatics*, 13(3):47-55.

Oude Mulders, J. (2019). Attitudes about working beyond normal retirement age: The role of mandatory retirement. *Journal of Aging and Social Policy*, 31(2):106-122.

Owen, D. (2008). *Copies in seconds: How a lone inventor and an unknown company created the biggest communication breakthrough since Gutenberg--Chester Carlson and the birth of the Xerox machine.* New York: Simon and Schuster.

Ozkan-Tektas, O. (2014). The effects of opportunism and trust on buyer-supplier relationship: Do commitment types matter. *International Journal of Business and Social Research*, 4(9):14-26.

Padgett, D., Hopkins, C. D., & Williams, Z. (2020). Buyer dependence in B2B relationships: The role of supplier investments, commitment form, and trust. *Journal of Business Research*, 119:13-24.

Page, S. A., & Nyeboer, J. (2017). Improving the process of research ethics review. *Research Integrity and Peer Review*, 2(1):14.

Pala, M., Edum-Fotwe, F., Ruikar, K., Doughty, N., & Peters, C. (2019). Post-implementation analysis of a B2B e-marketplace. *Journal of Information Technology in Construction*, 24:129-153.

Palachuk, K. W. (2013). *Managed services in a month-build a successful IT service business in 30 days.* Sacramento: Great Little Book Publishing.

Pallant, J. (2020). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS* (7th ed.). London: Routledge.

Panda, P., Mishra, S., & Behera, B. (2021). Developing a research methodology with the application of explorative factor analysis and regression. *IOSR Journal of Business and Management*, 23(4):23-35.

Park, E. S., & Park, M. S. (2020). Factors of the technology acceptance model for construction IT. *Applied Sciences*, 10(22):8299.

Park, N. R., & Park, J. O. (2013). Antecedents and consequences of trust and commitment in apparel manufacturer-contractor relationships: The moderating role of length of relationship. *The Research Journal of the Costume Culture*, 21(2):220-233.

Parsell, M., Ambler, T., & Jacenyik-Trawoger, C. (2014). Ethics in higher education research. *Studies in Higher Education*, 39(1):166-179.

Pathak, B., Ashok, M., & Tan, Y. (2020). Value co-destruction: Exploring the role of actors' opportunism in the B2B context. *International Journal of Information Management*, 52:102093.

Patwardhan, A. A., Pandey, N., & Dhume, S. M. (2017). Integrated model for understanding Indian physicians' internet usage pattern: An empirical approach. *International Journal of Healthcare Management*, 10(1):19-33.

Pawar, N. (2020). Type of research and type research design. In M. Kanaskar, S. Gupta, & V. V. Kulkarni (Eds.), *Social research methodology (An overview)* (pp. 46-57). Maharashtra: Kripa-Drishti Publications.

Peckham, T. K., Baker, M. G., Camp, J. E., Kaufman, J. D., & Seixas, N. S. (2017). Creating a future for occupational health. *Annals of Work Exposures and Health*, 61(1):3-15.

Pecsek, B. (2018). Working on holiday: The theory and practice of workcation. *Balkans Journal of Emerging Trends in Social Sciences*, 1(1):1-13.

Pennington, N., & Hastie, R. (1993). Reasoning in explanation-based decision making. *Cognition*, 49(1-2):123-163.

Pentland, B. T., Liu, P., Kremser, W., & Hærem, T. (2020). The dynamics of drift in digitized processes. *MIS Quarterly*, 44(1):19-47.

Peters, L., & Saidin, H. (2000). IT and the mass customization of services: The challenge of implementation. *International Journal of Information Management*, 20(2):103-119.

Peterson, M. (2015). *82 percent of companies still spending billions on paper*. Retrieved November 22, 2021, from https://www.corpmagazine.com/industry/technology/82-percent-companies-still-spending-billions-paper/

Phillips E. M., & Pugh, D. S. (2015). *How to get a PhD: A handbook for students and their supervisors* (6th ed.). Glasgow: Open University Press.

Phung, T. D., Hardeweg, B., Praneetvatakul, S., & Waibel, H. (2015). Non-sampling error and data quality: What can we learn from surveys to collect data for vulnerability measurements?. *World Development*, 71:25-35.

Pickering, B., Bartholomew, R., Janian, M. N., Moreno, B. L., & Surridge, M. (2020). Ask me no questions: Increasing empirical evidence for a qualitative approach to technology acceptance. In *International Conference on Human-Computer Interaction.* Retrieved March 19, 2023, from https://eprints.soton.ac.uk/443247/1/Pickering_etal_AskNoQuestions.pdf

Pietilä, A. M., Nurmi, S. M., Halkoaho, A., & Kyngäs, H. (2020). Qualitative research: Ethical considerations. In H. Kyngäs, K. Mikkonen, & M. Kääriäinen (Eds.), *The application of content analysis in nursing science research* (pp. 49-69). Cham: Springer.

Pillai, R., & Sivathanu, B. (2018). An empirical study on the adoption of M-learning apps among IT/ITeS employees. *Interactive Technology and Smart Education*, 15(3):182-204.

Pimple, K. D. (2002). Six domains of research ethics. *Science and Engineering Ethics*, 8(2):191-205.

Pinder, C., Vermeulen, J., Cowan, B. R., & Beale, R. (2018). Digital behaviour change interventions to break and form habits. *ACM Transactions on Computer-Human Interaction*, 25(3):15.

Pinem, A. A., Immanuella, I. M., Hidayanto, A. N., Phusavat, K., & Meyliana, ź. (2018). Trust and its impact towards continuance of use in government-to-business online service. *Transforming Government: People, Process and Policy*, 12(3/4):265-285.

Pinnington, B. D., & Scanlon, T. J. (2009). Antecedents of collective-value within business-to-business relationships. *European Journal of Marketing*, 43(1/2):31-45.

Plano Clark, V. L., & Creswell, J. W. (2015). *Understanding research: A consumer's guide* (2nd ed.). Boston: Pearson Education Limited.

Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: Myths and strategies. *International Journal of Nursing Studies*, 47(11):1451-1458.

Pollet, T. V., & van der Meij, L. (2017). To remove or not to remove: The impact of outlier handling on significance testing in testosterone data. *Adaptive Human Behavior and Physiology*, 3:43-60.

Pollock, K., & Hauseman, D. C. (2019). The use of e-mail and principals' work: A double-edged sword. *Leadership and Policy in Schools*, 18(3):382-393.

Poorhosseinzadeh, M., & Strachan, G. (2021). Straightjackets of male domination in senior positions: Revisiting acker's 'ideal worker'and the construction of the 'ideal executive'. *British Journal of Management*, 32(4):1421-1439.

Popovič, A. (2017). If we implement it, will they come? User resistance in postacceptance usage behaviour within a business intelligence systems context. *Economic Research-Ekonomska Istraživanja*, 30(1):911-921.

Porter, C. M., & Woo, S. E. (2015). Untangling the networking phenomenon: A dynamic psychological perspective on how and why people network. *Journal of Management*, 41(5):1477-1500.

Prabhu, S. (2019). Impact of information technology on public administration. *Global Journal for Research Analysis*, 8(3):26-27.

Prajapati, K., Jasani, R., Patel, A., & Sharma, K. (2020). Review paper on automatic engraver. *International Journal of Engineering Research and Technology*, 9(10):491-495.

Prasanthi, M. (2016). A study on e-development of paperless management. *International Journal of Business and Administration Research Review*, 3(14):179-182.

Prasetyo, S. E., Damaraji, G. M., & Kusumawardani, S. S. (2021). A Review of the challenges of paperless concept in Indonesia in the society 5.0. *International Journal of Industrial Engineering and Engineering Management*, 2(1):15-23.

Preston, C. C., & Colman, A. M. (2000). Optimal number of response categories in rating scales: reliability, validity, discriminating power, and respondent preferences. *Acta Psychologica*, 104(1):1-15.

Priyono, A., Moin, A., & Putri, V. N. A. O. (2020). Identifying digital transformation paths in the business model of SMEs during the COVID-19 pandemic. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(4):104.

Protection of Personal Information Act, nr 4. (2013). Cape Town: Government Printer.

Prudon, P. (2015). Confirmatory factor analysis as a tool in research using questionnaires: A critique. *Comprehensive Psychology*, 4:10.

Pupulin, F. (2018). A paperless journal, but still on paper nevertheless. *Lankesteriana*, 18(3):1-2.

Purarjomandlangrudi, A., Chen, D., & Nguyen, A. (2016). Investigating the drivers of student interaction and engagement in online courses: A study of state-of-the-art. *Informatics in Education*, 15(2):269-286.

Purwanto, A. (2021). Partial least squares structural squation modeling (PLS-SEM) analysis for social and management research: A literature review. *Journal of Industrial Engineering and Management Research*, 2(4):114-123.

Puteh, F., & Azman Ong, M. H. (2017). Quantitative data analysis: Choosing between SPSS, PLS and AMOS in social science research. *International Interdisciplinary Journal of Scientific Research*, 3(1):14-25.

Putintseva, V. (2023). A paperless office: A dream or reality?. *Бизнес -Образование в Экономике Знаний*, 9(1):48-53.

Putri, C. W., & Hariyanto, O. I. (2022). Analysis of the effect of destination image, attitude, and subjective norms on tourist visit intention to beach tourism in Batam. *CoMBInES-Conference on Management, Business, Innovation, Education and Social Sciences*, 2(1):332-339.

Qian, K. (2021). Environmental Concerns of the pulp and paper industry: Focusing on household and sanitary paper products. In T. Yahara (Ed.), *Decision science for future earth* (pp. 181-195). Singapore: Springer.

Queirós, A., Faria, D., & Almeida, F. (2017). Strengths and limitation of qualitative and quantitative research methods. *European Journal of Education Studies*, 3(9):369-387.

QuestionPro. (2022). *Survey software for everyone: Design, send and analyze online surveys*. Retrieved January 18, 2022, from https://www.questionpro.com

Quinlan, C., Babin, B., Carr, J., & Griffin, M. (2019). *Business research methods* (2nd ed.). Andover: South Western Cengage.

Raddats, C., Kowalkowski, C., Benedettini, O., Burton, J., & Gebauer, H. (2019). Servitization: A contemporary thematic review of four major research streams. *Industrial Marketing Management*, 83:207-223.

Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics and Management Sciences*, 6(2):403.

Rahman, M. H., Redwanuzzaman, M., Masud-Ul-Hasan, M., & Rahman, M. A. (2014). Factors affecting customer satisfaction on grameenphone users in Bangladesh. *Global Journal of Management and Business Research*, 14(3):57-66.

Rahman, M. S. (2017). The advantages and disadvantages of using qualitative and quantitative approaches and methods in language "testing and assessment" research: A literature review. *Journal of Education and Learning*, 6(1):102-112.

Ramavhona, T., & Mokwena, S. (2016). Factors influencing Internet banking adoption in South African rural areas. *South African Journal of Information Management*, 18(2):1-8.

Ramayah, T., Cheah, J., Chuah, F., Ting, H., & Memon, M. A. (2018). *Partial least squares structural equation modeling (PLS-SEM) using smartPLS 3.0: An updated and practical guide to statistical analysis* (2nd ed.). Singapore: Pearson Education Limited.

Ramayah, T., Ling, N. S., Taghizadeh, S. K., & Rahman, S. A. (2016). Factors influencing SMEs website continuance intention in Malaysia. *Telematics and Informatics*, 33(1):150-164.

Ranatunga, R. V. S. P. K., Priyanath, H. M. S., & Megama, R. G. N. (2020). Methods and rules-of-thumb in the determination of minimum sample size when applying structural equation modelling: A review. *Journal of Social Science Research*, 15(2):102-109.

Rao, S. S., Truong, D., Senecal, S., & Le, T. T. (2007). How buyers' expected benefits, perceived risks, and e-business readiness influence their e-marketplace usage. *Industrial Marketing Management*, 36(8):1035-1045.

Rashid, Y., Rashid, A., Warraich, M. A., Sabir, S. S., & Waseem, A. (2019). Case study method: A step-by-step guide for business researchers. *International Journal of Qualitative Methods*, 18:1609406919862424.

Ratten, V. (2016). Continuance use intention of cloud computing: Innovativeness and creativity perspectives. *Journal of Business Research*, 69(5):1737-1740.

Rayburn, K. (2020). *How the IoT is improving paper workflows*. Retrieved October 18, 2023, from https://www.alarisworld.com/en-za/insights/articles/how-the-iot-is-improving-paper-workflows#section%201

Raza, S. A., Umer, A., & Shah, N. (2017). New determinants of ease of use and perceived usefulness for mobile banking adoption. *International Journal of Electronic Customer Relationship Management*, 11(1):44-65.

Recker, J. (2016). Reasoning about discontinuance of information system use. *Neuropsychology Review*, 17(1):41-66.

Regnault, A., Willgoss, T., & Barbic, S. (2018). Towards the use of mixed methods inquiry as best practice in health outcomes research. *Journal of Patient-Reported Outcomes*, 2(1):19.

Reportlinker. (2020). *Document management systems market - Growth, trends, forecasts (2020 - 2025).* Retrieved January 14, 2023, from https://www.reportlinker.com/p05891592/Document-Management-Systems-Market-Growth-Trends-and-Forecast.html

Resnik, D. B. (2011). What is ethics in research & why is it important. *National Institute of Environmental health sciences*, 1(10):49-70.

Resnik, D. B. (2015). Unequal treatment of human research subjects. *Medicine, Health Care and Philosophy*, 18(1):23-32.

Resnik, D. B. (2018). *The ethics of research with human subjects: Protecting people, advancing science, promoting trust* (Vol. 74). New York: Springer.

Restuccia, M., & Legoux, R. (2019). B2B relationships on the fast track: An empirical investigation into the outcomes of solution provision. *Industrial Marketing Management*, 76:203-213.

Rezvani, A., Dong, L., & Khosravi, P. (2017). Promoting the continuing usage of strategic information systems: The role of supervisory leadership in the successful implementation of enterprise systems. *International Journal of Information Management*, 37(5):417-430.

Richard, J., & Purnell, F. (2017). Rethinking catalogue and online B2B buyer channel preferences in the education supplies market. *Journal of Interactive Marketing*, 37(1):1-15.

Richardson, L. (2021). Coordinating office space: Digital technologies and the platformization of work. *Environment and Planning D: Society and Space*, 39(2):347-365.

Ricoh. (2020). *What will office print look like in 2025?* Retrieved December 14, 2020, from https://blog.ricoh.ca/2020/01/03/what-will-office-print-look-like-in-2025/

Rights, J. D., & Sterba, S. K. (2019). Quantifying explained variance in multilevel models: An integrative framework for defining R-squared measures. *Psychological Methods*, 24(3):309-338.

Rindfuss, R. R., Choe, M. K., Tsuya, N. O., Bumpass, L. L., & Tamaki, E. (2015). Do low survey response rates bias results? Evidence from Japan. *Demographic Research*, 32:797-828.

Ringle, C. M., Wende, S., & Becker, J-M. (2022). *SmartPLS 4. Boenningstedt: SmartPLS.* Retrieved September 15, 2022, from https://www.smartpls.com

Roberts, L. (2019). *HP podcast: Episode 1: What is a "self-healing" printer?.* Retrieved January 20, 2023, from https://www.brighttalk.com/webcast/14095/369316

Roberts-Lombard, M., Mpinganjira, M., & Svensson, G. (2017). Antecedents and outcomes of satisfaction in buyer–supplier relationships in South Africa: A replication study. *South African Journal of Economic and Management Sciences*, 20(1):a1497.

Roberts-Lombard, M., Mpinganjira, M., & Svensson, G. (2019). The antecedents and postcedents of satisfaction in business-to-business relationships in South Africa. *South African Journal of Business Management*, 50(1):a212.

Roch, S., Smith, B., & Fowler, J. (2022). *Information systems for business and beyond Canadian edition.* London: Fanshawe College Pressbooks.

Roger, H., & Berwyn, C. (2018). Editorial: the importance of skills - but which skills?. *International Journal of Training Research*, 16(3):195-199.

Rogers, D., & Euchner, J. (2022). Digital transformation: An interview with David Rogers Jim Euchner talks with David Rogers about the ways digital technology is changing strategy and what leaders can do to manage the pace and complexity of the digital world. *Research-Technology Management*, 65(5):11-17.

Rogers, E. M. (1962). *Diffusion of innovations* (1st ed.). New York: Free Press.

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press.

Rojas-Méndez, J. I., Parasuraman, A., & Papadopoulos, N. (2017). Demographics, attitudes, and technology readiness: A cross-cultural analysis and model validation. *Marketing Intelligence and Planning*, 35(1):18-39.

Rönkkö, M., & Cho, E. (2022). An updated guideline for assessing discriminant validity. *Organizational Research Methods*, 25(1):6-14.

Rosli, M. S., Saleh, N. S., Md. Ali, A., Abu Bakar, S., & Mohd Tahir, L. (2022). A Systematic review of the technology acceptance model for the sustainability of higher education during the COVID-19 pandemic and identified research gaps. *Sustainability*, 11389.

Ross, P. T., & Bibler Zaidi, N. L. (2019). Limited by our limitations. *Perspectives on Medical Education*, 8(4):261-264.

Rossi, M., Festa, G., Devalle, A., & Mueller, J. (2020). When corporations get disruptive, the disruptive get corporate: Financing disruptive technologies through corporate venture capital. *Journal of Business Research*, 118:378-388.

Rossignac-Milon, M., & Tory Higgins, E. (2018). Beyond intrapersonal cognitive consistency: Shared reality and the interpersonal motivation for truth. *Psychological Inquiry*, 29(2):86-93.

Ryan, G. (2018). Introduction to positivism, interpretivism and critical theory. *Nurse Researcher*, 25(4):41-49.

Sadoughi, F., Khodaveisi, T., & Ahmadi, H. (2019). The used theories for the adoption of electronic health record: A systematic literature review. *Health and Technology*, 9(4):383-400.

Safari, H., & Javadi, M. H. (2013). Assessing office automation effect on innovation case study: Education organizations and schools in Esfahan Province, Iran. *International Journal of Academic Research in Business and Social Sciences*, 3(9):285-295.

Sahu, A. K., Padhy, R. K., & Dhir, A. (2020). Envisioning the future of behavioral decision-making: A systematic literature review of behavioral reasoning theory. *Australasian Marketing Journal*, 28(4):145-159.

Sakaluk, J. K., & Short, S. D. (2017). A methodological review of exploratory factor analysis in sexuality research: Used practices, best practices, and data analysis resources. *The Journal of Sex Research*, 54(1):1-9.

Sakao, T., Shimomura, Y., & Tsuboi, Y. (2009). Proposal of module for self-maintenance: Methods of fault diagnosis by module and design support of system. *Journal of Japan Society of Mechanical Engineering*, 75(749):229-237.

Saleh, A., & Bista, K. (2017). Examining factors impacting online survey response rates in educational research: Perceptions of graduate students. *Online Submission*, 13(2):63-74.

Saleh, M. A., & Ali, M. Y. (2009). Determinants of importer commitment in international exchange: An agenda for future research. *Journal of Management and Organization*, 15(2):186-205.

Saleh, M. A., Ali, M. Y., & Mavondo, F. T. (2014). Drivers of importer trust and commitment: Evidence from a developing country. *Journal of Business Research*, 67(12):2523-2530.

Salem, S. F. (2021). Do relationship marketing constructs enhance consumer retention? An empirical study within the hotel industry. *SAGE Open*, 11(2):21582440211009224.

Sales-Vivó, V., Gil-Saura, I., & Gallarza, M. G. (2020). Value co-creation and satisfaction in B2B context: A triadic study in the furniture industry. *Sustainability*, 13(1):152.

Salmons, J. E. (2015). Conducting multimethod and mixed methods research online. In S. N. Hesse-Biber, & R. B. Johnson (Eds.), *The Oxford handbook of multimethod and mixed methods research inquiry* (pp. 522-547). New York: Oxford University Press.

Samani, S. A. (2016). Steps in research process (partial least square of structural equation modeling). *International Journal of Social Science and Business*, 1(2):55-66.

Sammut, R., Griscti, O., & Norman, I. J. (2021). Strategies to improve response rates to web surveys: A literature review. *International Journal of Nursing Studies*, 123:104058.

Samsudin, S. S. M., & Bakar, N. A. A. (2018). A study on implementation of PKI towards paperless and digitization hospital in Malaysia. *Open International Journal of Informatics*, 6(2):111-120.

Sandhu, U., & Seth, R. (2014). Paperless office: A new name to technology. *Management and Business Studies*, 4(2):34-36.

Sao Joao, E. A., Spowart, J., & Taylor, A. (2019). Employee training contributes to service quality and therefore sustainability. *Tourism and Leisure*, 8:1-15.

Saprikis, V. (2013). Suppliers' behavior on the post-adoption stage of business-to-business e-reverse auctions: An empirical study. *Telematics and Informatics*, 30(2):132-143.

Saprikis, V., & Vlachopoulou, M. (2012). Determinants of suppliers' level of use of B2B e-marketplaces. *Industrial Management and Data Systems*, 112(4):619-643.

Sarstedt, M., & Cheah, J. H. (2019). Partial least squares structural equation modeling using SmartPLS: A software review. *Journal of Marketing Analytics*, 7:196-202.

Sarstedt, M., Hair Jr, J. F., Nitzl, C., Ringle, C. M., & Howard, M. C. (2020). Beyond a tandem analysis of SEM and PROCESS: use of PLS-SEM for mediation analyses! *International Journal of Market Research*, 62(3):288-299.

Sarstedt, M., Hair, J. F., Pick, M., Liengaard, B. D., Radomir, L., & Ringle, C. M. (2022). Progress in partial least squares structural equation modeling use in marketing research in the last decade. *Psychology and Marketing*, 39(5):1035-1064.

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Partial least squares structural equation modeling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of market research* (pp. 1-40). Heidelberg: Springer.

Satish, K. H. (2019). Challenges and opportunities in e-office implementation: A study with reference to government institution. *International Journal of Science Technology, Engineering and Management-A VTU Publication*, 1(3):51-56.

Sato, T. (2017). *The 'less paper' office future*. Retrieved Spetember 02, 2020, from https://www.itproportal.com/features/the-less-paper-office-future/

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Harlow: Pearson Education Limited.

Sayar, D., & Er, Ö. (2019). The transformative effects of digital technologies on the product design practices of servitizing manufacturers. *The Design Journal*, 22(1):2007-2017.

Scanlon, T. (2006). *What we owe to each other.* Cambridge: Belknap Press.

Schamberger, T., Schuberth, F., Henseler, J., & Dijkstra, T. K. (2020). Robust partial least squares path modeling. *Behaviormetrika*, 47(1):307-334.

Schnackenberg, A. K., & Tomlinson, E. C. (2016). Organizational transparency: A new perspective on managing trust in organization-stakeholder relationships. *Journal of Management*, 42(7):1784-1810.

Schneck, T. (2015). *Top 7 obstacles between you and a paperless office*. Retrieved January 29, 2021, from https://start.docuware.com/blog/document-management/top-7-obstacles-between-you-and-a-paperless-office

Schneider, A., Karapanos, M., Wendeborn, T., Uhlig, S., & Günther, S. (2018). Online teaching: A behavioral reasoning theory approach. In *Proceedings of EDULEARN18 Conference.* Retrieved December 03, 2022, from https://library.iated.org/view/SCHNEIDER2018ONL

Schniederjans, D. G., Ozpolat, K., & Chen, Y. (2016). Humanitarian supply chain use of cloud computing. *Supply Chain Management: An International Journal*, 21(5):569-588.

Schoonenboom, J., & Johnson, R. B. (2017). How to construct a mixed methods research design. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 69(2):107-131.

Schoorman, F. D., Mayer, R. C., & Davis, J. H. (2007). An integrative model of organizational trust: Past, present, and future. *The Academy of Management Review*, 32(2):344-354.

Schrag, Z. M. (2011). The case against ethics review in the social sciences. *Research Ethics*, 7(4):120-131.

Schultheiss, O. C., & Brunstein, J. C. (2010). *Implicit motives.* New York: Oxford University Press.

Schwab, K. (2016). *The fourth industrial revolution.* Geneva: World Economic Forum.

Schwertner, K. (2017). Digital transformation of business. *Trakia Journal of Sciences*, 15(1):388-393.

Sdegno, A. (2017). For an archeology of the digital iconography. In *Multidisciplinary Digital Publishing Institute Proceedings.* Retrieved November 16, 2020, from https://www.mdpi.com/2504-3900/1/9/1093/pdf

Sebetci, Ö. (2018). Enhancing end-user satisfaction through technology compatibility: An assessment on health information system. *Health Policy and Technology*, 7(3):265-274.

Sekaran, U., & Bougie, R. (2019). *Research methods for business: A skill building approach* (8th ed.). Hoboken: John Wiley and sons.

Sellen, A. J., & Harper, R. H. R. (2003). *The myth of the paperless office.* Cambridge: MIT Press.

Selznick, L. F., & LaMacchia, C. (2017). Cybersecurity liability: How technically savvy can we expect small business owners to be. *Journal of Business and Technology Law*, 13(2). Retrieved January 03, 2023, from https://digitalcommons.law.umaryland.edu/jbtl/vol13/iss2/4

Seppanen, R., & Blomqvist, K. (2006). It is not all about trust-the role of distrust in inter-organizational relationships. In L. Camarinha-Matos, H. Afsarmanesh, & M. Ollus (Eds.), *Network-centric collaboration and supporting frameworks* (pp. 181-188). Boston: Springer.

Setyowati, W., Widayanti, R., & Supriyanti, D. (2021). Implementation of e-business information system in Indonesia: Prospects and challenges. *International Journal of Cyber and IT Service Management*, 1(2):180-188.

Shah, I. A., Amjed, S., & Alkathiri, N. A. (2019). The economics of paper consumption in offices. *Journal of Business Economics and Management*, 20(1):43-62.

Shah, T. H., & Irfan, S. (2017). Office automation system & the LAN. *International Journal of Computer Science and Mobile Computing*, 6(7):69-72.

Sharma, A., & Singh, B. J. (2020). Evolution of industrial revolutions: A review. *International Journal of Innovative Technology and Exploring Engineering*, 9(11):66-73.

Sharp, K. (2021). *6 reasons why companies don't update their technology*. Retrieved 05 28, 2023, from https://www.perillon.com/blog/6-reasons-why-companies-dont-update-their-technology

Sheeran, P., & Webb, T. L. (2016). The intention–behavior gap. *Social and Personality Psychology Compass*, 10(9):503-518.

Shenoy, P., & Aithal, P. S. (2016). A study on history of paper and possible paper free world. *International Journal of Management, IT and Engineering*, 6(1):337-355.

Sheth, J. N., & Parvatlyar, A. (1995). Relationship marketing in consumer markets: antecedents and consequences. *Journal of the Academy of Marketing Science*, 23(4):255-271.

Shibata, H. (2017). Why does not paperless office come? Where is paper used in the future. *Journal of the Imaging Society of Japan*, 56(5):538-533.

Shibata, H., & Omura, K. (2018). Reconsideration of the effects of handwriting: Comparing cognitive load of handwriting and typing. *ITE Transactions on Media Technology and Applications*, 6(4):255-261.

Shibata, H., & Omura, K. (2020). *Why digital displays cannot replace paper: The cognitive science of media for reading and writing.* Singapore: Springer.

Shibata, H., Fukase, Y., Hashimoto, K., Kinoshita, Y., Kobayashi, H., Nebashi, S., Omodani, M., & Takahashi, T. (2016). A proposal of future electronic paper in the office. *ITE Transactions on Media Technology and Applications*, 4(4):308-315.

Shimomura, Y., Tanigawa, S., Umeda, Y., & Tomiyama, T. (1995). Development of self-maintenance photocopiers. *AI Magazine*, 16(4):41-41.

Shodiya, O. A., & Adekunle, T. A. (2022). Reliability of research instruments in management sciences research: An explanatory perspective. Retrieved August 19, 2023, from https://managementpapers.polsl.pl/wp-content/uploads/2023/01/166-Shodiya-Adekunle.pdf

Siegfried, W. (2014). The formation and structure of the human psyche. Retrieved May 13, 2021, from https://www.fau.edu/athenenoctua/pdfs/William%20Siegfried.pdf

Siemieniako, D., & Urban, W. (2011). Dynamics of customer loyalty in the aspect of attitude variability. *International Business: Innovation, Psychology, Economics*, 3(1):120-134.

Sil, B. K. (2022). An overview of green human resource management practices. *International Journal for Research in Applied Science & Engineering Technology*, 10(6):2689-2693.

Sila, I. (2015). The state of empirical research on the adoption and diffusion of business-to-business e-commerce. *International Journal of Electronic Business*, 12(3):258-301.

Sinanian, M. (2022). *Unsecured printers are a potential data risk*. Retrieved October 12, 2023, from https://www.securityinfowatch.com/cybersecurity/information-security/article/21285270/unsecured-printers-are-a-potential-data-risk

Singh, A. (2021). An introduction to experimental and exploratory research. *SSRN Electronic Journal*. Retrieved December 29, 2022, from https://ssrn.com/abstract=3789360

Singh, A. S. (2017). Common procedures for development, validity and reliability of a questionnaire. *International Journal of Economics, Commerce and Management*, 5(5):790-801.

Singla, N., Jain, K., & Sharma, S. K. (2016). Goodness of fit tests and power comparisons for weighted gamma distribution. *REVSTAT–Statistical Journal*, 14(1):29-48.

Sitkin, S. B., & Roth, N. L. (1993). Explaining the limited effectiveness of legalistic "remedies" for trust/distrust. *Organization Science*, 4(3):367-392.

Sivam, A., Dieguez, T., Ferreira, L. P., & Silva, F. J. (2019). Key settings for successful open innovation arena. *Journal of Computational Design and Engineering*, 6(4):507-515.

Sivathanu, B. (2018). Adoption of online subscription beauty boxes: A behavioural reasoning theory (BRT) perspective. *Journal of Electronic Commerce in Organizations*, 16(4):19-40.

Skard, S., & Nysveen, H. (2016). Trusting beliefs and loyalty in B-to-B self-services. *Journal of Business-to-Business Marketing*, 23(4):257-276.

Slabbinck, H., & Van Witteloostuijn, A. (2020). Explicit and implicit basic human motives, and public service motivation. *Frontiers in Psychology*, 11:1542.

Slack, R. E., Corlett, S., & Morris, R. (2015). Exploring employee engagement with (corporate) social responsibility: A social exchange perspective on organisational participation. *Journal of Business Ethics*, 127(3):537-548.

So, K. K. F., Oh, H., & Min, S. (2018). Motivations and constraints of Airbnb consumers: Findings from a mixed-methods approach. *Tourism Management*, 67:224-236.

Soland, J., Wise, S. L., & Gao, L. (2019). Identifying disengaged survey responses: New evidence using response time metadata. *Applied Measurement in Education*, 32(2):151-165.

Soliman, W., & Rinta-Kahila, T. (2020). Toward a refined conceptualization of IS discontinuance: Reflection on the past and a way forward. *Information and Management*, 57(2):103167.

Soltani, S., Elkhani, N., & Bardsiri, V. K. (2014). The effects of perceived organizational support and organizational citizenship behaviors on continuance intention of enterprise resource planning. *International Journal of Enterprise Information Systems*, 10(2):8-102.

Somekh, B., & Lewin, C. (Eds.). (2011). *Research methods in the social sciences.* Thousand Oaks: Sage publications.

Sonne, J. W., & Gash, D. M. (2018). Psychopathy to altruism: Neurobiology of the selfish–selfless spectrum. *Frontiers in Psychology*, 9:575.

Srimathi, H., & Krishnamoorthy, A. (2019). Paperless administration in Indian higher education. *International Journal of Engineering and Advanced Technology*, 8(4):760-764.

Statista. (2021). *Printers & copiers, worldwide: Price per unit in US$*. Retrieved February 14, 2021, from https://www.statista.com/outlook/15030500/100/printers-copiers/worldwide

Statista. (2023). *Printers & copiers - Worldwide*. Retrieved January 22, 2023, from https://www.statista.com/outlook/cmo/consumer-electronics/computing/printers-copiers/worldwide#volume

Stephen, D. (2016). Data screening using spss for beginner: Outliers, missing values and normality. *Institute of Borneo Studies Workshop Series*, 2(3):14-19.

Steyn, R. A. (2018). Changing thoughts towards digital literacy interventions for South African entrepreneurs. *Reading and Writing*, 9(1):a172.

Stieninger, M., Nedbal, D., Wetzlinger, W., Wagner, G., & Erskine, M. A. (2014). Impacts on the organizational adoption of cloud computing: A reconceptualization of influencing factors. *Procedia Technology*, 16:85-93.

Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society: Series B (Methodological)*, 36(2):111-133.

Streukens, S., & Leroi-Werelds, S. (2016). Bootstrapping and PLS-SEM: A step-by-step guide to get more out of your bootstrap results. *European Management Journal*, 34(6):618-632.

Strode, A., Slack, C., & Essack, Z. (2010). Child consent in South African law: Implications for researchers, service providers and policy-makers. *South African Medical Journal*, 100(4):247-249.

Suárez-Álvarez, J., Pedrosa, I., & Lozano, L. M. (2018). Using reversed items in Likert scales: A questionable practice. *Psicothema*, 30(2):149-158.

Sugandini, D., Purwoko, P., Pambudi, A., Resmi, S., Reniati, R., Muafi, M., & Adhyka Kusumawati, R. (2018). The role of uncertainty, perceived ease of use, and perceived usefulness towards the technology adoption. *International Journal of Civil Engineering and Technology*, 9(4):660-669.

Sugiura, L., Wiles, R., & Pope, C. (2016). Ethical challenges in online research: Public/private perceptions. *Research Ethics*, 13(3-4):184-199.

Suk-Joo, L., Ahn, C., Song, K. M., & Ahn, H. (2018). Trust and distrust in e-commerce. *Sustainability*, 10(4):1015.

Šuleř, P., & Machová, V. (2020). The possibilities of a paperless company concept. In S. Ashmarina, M. Vochozka, & V. Mantulenko (Eds.), *Digital age: Chances, challenges and future: Lecture notes in networks and systems* (Vol. 84, pp. 198-202). Cham: Springer.

Sumer, B. (2018). Impact of Industry 4.0 on occupations and employment in Turkey. *European Scientific Journal*, 14(10):1-17.

Sürücü, L., & Maslakçi, A. (2020). Validity and reliability in quantitative research. *Business and Management Studies: An International Journal*, 8(3):2694-2726.

Susarla, A., & Mukhopadhyay, T. (2019). Can outsourcing of information technology foster innovations in client organizations? An empirical analysis. *MIS Quarterly*, 43(3):929-949.

Szajna, B. (1996). Empirical evaluation of the revised technology acceptance model. *Management Science*, 42(1):85-92.

Szalavetz, A. (2020). Digital transformation-enabling factory economy actors' entrepreneurial integration in global value chains?. *Post-Communist Economies*, 32 (6):771-792.

Tabachnick, B. G., & Fidell, L. S. (2019). *Using multivariate statistics* (7th ed.). New York: Pearson Education Limited.

Taherdoost, H. (2016). Validity and reliability of the research instrument: How to test the validation of a questionnaire/survey in a research. *International Journal of Academic Research in Management*, 5(3):28-36.

Taherdoost, H. (2018). A review of technology acceptance and adoption models and theories. *Procedia Manufacturing*, 22(2018):960-967.

Taherdoost, H. (2019). What is the best response scale for survey and questionnaire design; Review of different lengths of rating scale/attitude scale/likert scale. *International Journal of Academic Research in Management*, 8(1). Retrieved August 20, 2020, from https://hal.science/hal-02557308

Taherdoost, H. (2021). Data collection methods and tools for research; A step-by-step guide to choose data collection technique for academic and business research projects. *International Journal of Academic Research in Management*, 10(1):10-38.

Taherdoost, H. (2022). What are different research approaches? Comprehensive Review of qualitative, quantitative, and mixed method research, their applications, types, and limitations. *Journal of Management Science and Engineering Research*, 5(1):53-63.

Tariq, N., Yousuf, I., & Ajmal, F. (2021). The impact of administrators on teacher retention at private secondary schools in Pakistan. *Gomal University Journal of Research*, 37(3):337-349.

Tashakkori, A., Johnson, R. B., & Teddlie, C. (2020). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences.* Thousand Oaks: Sage publications.

Teeselink, E., Somers, L., Basten, T., Trcka, N., & Hendriks, M. (2011). A visual language for modeling and analyzing printer data path architectures. In *Proceedings of the Industry Track of Software Language Engineering.* Retrieved September 01, 2021, from https://www.es.ele.tue.nl/~tbasten/papers/itsle2011_final.pdf

Tehseen, S., Ramayah, T., & Sajilan, S. (2017). Testing and controlling for common method variance: A review of available methods. *Journal of Management Sciences*, 4(2):142-168.

Tesler, L. G. (2018). How modeless editing came to be. *IEEE Annals of the History of Computing*, 40(3):55-67.

Thatcher, J., Wright, R., Sun, H., Zagenczyk, T. J., & Klein, R. (2018). Mindfulness in information technology use: Definitions, distinctions, and a new measure. *MIS Quarterly*, 42(3):831-847.

Theofanidis, D., & Fountouki, A. (2018). Limitations and delimitations in the research process. *Perioperative Nursing-Quarterly Scientific, Online Official Journal of GORNA*, 7(3):155-163.

Theron, E., Terblanche, N. S., & Boshoff, C. (2008). The antecedents of relationship commitment in the management of relationships in business-to-business (B2B) financial services. *Journal of Marketing Management*, 24(9-10):997-1010.

Theron, E., Terblanche, N. S., & Boshoff, C. (2013). Building long-term marketing relationships: New perspectives on B2B financial services. *South African Journal of Business Management*, 44(4):33-46.

Thibaut, J. W., & Kelley, H. H. (1959). *The social psychology of groups.* New York: John Wiley and sons.

Thiese, M. S. (2014). Observational and interventional study design types: An overview. *Biochemia Medica*, 24(2):199-210.

Thimbleby, H. (2019). Three laws for paperlessness. *Digital Health*, 5:2055207619827722.

Thompson, R. L., & Higgins, C. A. (1991). Personal computing: Toward a conceptual model of utilization. *MIS Quarterly*, 15(1):125.

Tien, N. H., Diem, P. T., Vu, N. T., Dung, H. T., Dat, N. V., & Duc, P. M. (2021). The process of CRM system implementation at Dien May Xanh in Vietnam. *International Journal of Research and Growth Evaluation*, 2(4):761-768.

Tiwari, U., Diwan, T. D., & Sahu, N. (2017). Save green, go green through paperless. *International Journal of Recent Trends in Engineering and Research*, 3(1):64-70.

TMR. (2020). *Copier paper market - Global industry analysis, size, share, growth, trends, and forecast 2018 – 2026*. Retrieved January 04, 2021, from https://www.transparencymarketresearch.com/copier-paper-market.html

Tornatzky, L. G., Eveland, J. D., Boylan, M. G., Hetzner, W. A., Johnson, E. C., Roitman, D., & Schneider, J. (1983). *The process of technological innovation: Reviewing the literature.* Washington: National Science Foundation.

Tornatzky, L., & Fleischer, M. (1990). *The process of technology innovation.* Lexington: Lexington Books.

Trafford, V., Leshem, S., & Bitzer, E. (2014). Conclusion chapters in doctoral theses: Some international findings. *Higher Education Review*, 46(3):52-81.

Tran, P. N., Gorton, M., & Lemke, F. (2022). Buyers' perspectives on improving performance and curtailing supplier opportunism in supplier development: A social exchange theory approach. *Industrial Marketing Management*, 106:183-196.

Trevarthen, L. (2017). *How the MFP contributes to the paperless and paper efficient office*. Retrieved August 19, 2022, from https://www.theimagingchannel.com/epson-1017/

Triandis, H. C. (1977). *Interpersonal behaviour.* Monterey: Brook/Cole.

Troshina, E. P., & Mantulenko, V. V. (2020). Influence of digitalization on motivation techniques in organizations. In S. Ashmarina, M. Vochozka, & V. Mantulenko (Eds.), *Digital age: chances, challenges and future: Lecture notes in networks and systems* (Vol. 84, pp. 317-323). Cham: Springer.

Truong, D. (2019). Distrust issues in business-to-business e-procurement decisions. *Journal of Enterprise Information Management*, 32(6):1071-1088.

Tsang, S., Royse, C. F., & Terkawi, A. S. (2017). Guidelines for developing, translating, and validating a questionnaire in perioperative and pain medicine. *Saudi Journal of Anaesthesia*, 11(1):80-89.

Tsichritzis, D. (Ed.). (1985). *Office automation: Concepts and tools.* New York: Springer-Verlag.

Tully, M. (2015). Investigating the role of innovation attributes in the adoption, rejection, and discontinued use of open source software for development. *Information Technologies and International Development*, 11(3):55-69.

Turpin, M. (2018). Assessing South African ICT4D research outputs: A journal review. *South African Computer Journal*, 30(1):108-127.

Tyhulu, L., Sibande, B., Zilwa, N., Langa, S., Hollis-Turner, S., & Bruwer, J. P. (2016). The influence of a paperless office environment on the sustainability of the Master of the High Court in Cape Town. *Environmental Economics*, 7(3):33-44.

Udende, P., Yusuf, T. O., & Aderinoye, G. O. (2021). Diffusion of innovation theory and senior staff attitude toward paperless information processing and communication in the town planning and development authority, Ilorin, Kwara State. *Journal of Media, Communication and Languages*, 6(2)50-57.

Umaima, F. F., & Hutabarat, E. (2021). Bekasi regency workforce readiness to work in the paperless office. *FIRM Journal of Management Studies*, 6(2):202-213.

Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Procedia Economics and Finance*, 20:679-686.

Vakola, M. (2016). The reasons behind change recipients' behavioral reactions: A longitudinal investigation. *Journal of Managerial Psychology*, 31(1):202-215.

Valcik, J., & Indyk, W. (2019). *Generic data imputation and feature extraction for signals from multifunctional printers*. Retrieved August 19, 2022, from http://ceur-ws.org/Vol-2322/dsi4-1.pdf

van den Broek, E. L. (2017). ICT: Health's best friend and worst enemy? In E. L. van den Broek, A. Fred, H. Gamboa, & M. Vaz (Eds.), *BioSTEC 2017: 10th International Joint Conference on Biomedical Engineering Systems and Technologies* (pp. 611-616). Porto: Science and Technology Publications.

Vanclay, F., Baines, J. T., & Taylor, C. N. (2013). Principles for ethical research involving humans: Ethical professional practice in impact assessment Part I. *Impact Assessment and Project Appraisal*, 31(4):243-253.

Velardo, S., & Elliott, S. (2018). Prioritising doctoral students' wellbeing in qualitative research. *The Qualitative Report*, 23(2):311-318.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2):186-204.

Venkatesh, V., Brown, S. A. & Sullivan, Y. W. (2016). Guidelines for conducting mixed-methods research: An extension and illustration. *Journal of the Association for Information Systems*, 17(7):435-495.

Venkatesh, V., Brown, S. A., & Bala, H. (2013). Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems. *MIS Quarterly*, 37(1):21-54.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3):425-478.

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1):157-178.

Verma, G., & Sharma K. (2017). The role of quantitative techniques in business and management. *Journal of Humanities Insights*, 1(1):24-26.

Vermeulen, B., Kesselhut, J., Pyka, A., & Saviotti, P. P. (2018). The impact of automation on employment: Just the usual structural change?. *Sustainability*, 10(5):1661.

Vicente, P., & Reis, E. (2013). The “frequency divide”: Implications for internet-based surveys. *Quality and Quantity*, 47(6):3051-3064.

Vidotto, G., Massidda, D., Noventa, S., & Vicentini, M. (2012). Trusting beliefs: A functional measurement study. *Psicòlogica*, 33(3):575-590.

Vieira, A. L., Winklhofer, H., & Ennew, C. (2014). The effects of relationship marketing on share of business: A synthesis and comparison of models. *Journal of Business-to-Business Marketing*, 21(2):85-110.

Villena, V. H., Revilla, E., & Choi, T. Y. (2011). The dark side of buyer–supplier relationships: A social capital perspective. *Journal of Operations management*, 29(6):561-576.

Viluksela, P., Kariniemi, M., & Nors, M. (2010). *Environmental performance of digital printing.* Oulu: VTT Technical Research Center of Finland.

Visintin, F. (2012). Providing integrated solutions in the professional printing industry: The case of Océ. *Computers in Industry*, 63(4):379-388.

Visintin, F. (2014). Photocopier industry: At the forefront of servitization. In G. Lay, *Servitization in industry* (pp. 23-45). London: Springer.

Walker, R. S., & Brown, I. (2019). Big data analytics adoption: A case study in a large South African telecommunications organisation. *South African Journal of Information Management*, 21(1):a1079.

Walla, P. (2014). The human mind and the behavior it generates are relevant to everything that is important: Psychology is more crucial than ever before. *Cogent Psychology*, 1(1):980557.

Wallrodt, J. (2016). Why paperless: Technology and changes in archaeological practice, 1996–2016. In E. W. Averett, J. M. Gordon, & D. B. Counts (Eds.), *Mobilizing the past for a digital future: The potential of digital archaeology* (pp. 33-50). Grand Forks: The Digital Press.

Walther, S., Sedera, D., Urbach, N., Eymann, T., Otto, B., & Sarker, S. (2018). Should we stay, or should we go? Analyzing continuance of cloud enterprise systems. *Journal of Information Technology Theory and Application*, 19(2):57-88.

Wang, D. (2013). Influences of cloud computing on e-commerce businesses and industry. *Journal of Software Engineering and Applications*, 6(6):313-318.

Wang, D. S., & Hsieh, C. C. (2013). The effect of authentic leadership on employee trust and employee engagement. *Social Behavior and Personality: An International Journal*, 41(4):613-624.

Wang, Q., Li, J. J., Ross, W. T., & Craighead, C. W. (2013). The interplay of drivers and deterrents of opportunism in buyer–supplier relationships. *Journal of the Academy of Marketing Science*, 41(1):111-131.

Wang, X., & Kattan, M. W. (2020). Cohort studies: design, analysis, and reporting. *Chest*, 158(1):72-78.

Wang, X., & Yang, Z. (2013). Inter-firm opportunism: A meta-analytic review and assessment of its antecedents and effect on performance. *Journal of Business and Industrial Marketing*, 28(2):137-146.

Wang, Y. C., & Beise-Zee, R. (2013). Service responses to emotional states of business customers. *Managing Service Quality: An International Journal*, 23(1):43-61.

Wang, Y. M., Wang, Y. S., & Yang, Y. F. (2010). Understanding the determinants of RFID adoption in the manufacturing industry. *Technological Forecasting and Social Change*, 77(5):803-815.

Wantania, L. J., Hidayanto, A. N., Ruldeviyani, Y., & Kurnia, S. (2021). Analysis of user satisfaction factors of E-Kinerja application as utilization of the paperless office system: A case study in Regional Civil Service Agency, North Sulawesi Province. *IOP Conference Series: Earth and Environmental Science*, 700(1):012011.

Warganegara, D. L., & Babolian Hendijani, R. (2022). Factors that drive actual purchasing of groceries through e-commerce platforms during COVID-19 in Indonesia. *Sustainability*, 14(6):3235.

Wathne, K. H., & Heide, J. B. (2000). Opportunism in interfirm relationships: Forms, outcomes, and solutions. *Journal of Marketing*, 64(4):36-51.

Webster, A., & Gardner, J. (2019). Aligning technology and institutional readiness: The adoption of innovation. *Technology Analysis and Strategic Management*, 31(10):1229-1241.

Weinbaum, C., Landree, E., Blumenthal, M. S., Piquado, T., & Gutierrez, C. I. (2018). *Ethics in scientific research: An examination of ethical principles and emerging topics.* Santa Monica: The RAND Corporation.

West, R., & Turner, L. H. (2018). *Introducing communication theory: Analysis and appliaction* (6th ed.). New York: McGraw-Hill.

Westaby, J. D. (2005). Behavioral reasoning theory: Identifying new linkages underlying intentions and behavior. *Organizational Behavior and Human Decision Processes*, 98(2):97-120.

Westaby, J. D., & Fishbein, M. (1996). Factors underlying behavioral choice: Testing a new reasons theory approach. *Journal of Applied Social Psychology*, 26(15):1307-1323.

Widiantoro, A. D. (2018). Paperless mail office system and data integration at UNIKA Soegijapranata. *Journal of Information Systems*, 5(1). Retrieved November 02, 2020, from http://journal.unika.ac.id/index.php/sisforma/article/view/1526

Wiffler, R. (2016). *History of the photocopier machine*. Retrieved August 12, 2020, from https://commonsensebusinesssolutions.com/history-of-the-photocopier-machine/

Wikström, S. (1996). Value creation by company-consumer interaction. *Journal of Marketing Management*, 12(5):359-374.

Wilder, T. (2022). *Uncovering the truth behind going paperless*. Retrieved August 22, 2022, from https://domaonline.com/2022/03/29/myths-vs-facts-going-paperless/

Williams, M. L., Burnap, P., Sloan, L., Jessop, C., & Lepps, H. (2017). Users' views of ethics in social media research: Informed consent, anonymity, and harm. In K. Woodfield (Ed.), *The ethics of online research: Advances in research ethics and integrity* (Vol. 2, pp. 27-52). Bingley: Emerald Publishing Limited.

Williamson, O. E. (1975). *Markets and hierarchies.* New York: Free Press.

Williamson, O. E. (2005). Transaction cost economics and business administration. *Scandinavian Journal of Management*, 21(1):19-40.

Willis, J. W. (2007). *Foundations of qualitative research.* London: Sage publications.

Wilson, D. T. (1995). An integrated model of buyer-seller relationships. *Journal of the Academy of Marketing Science*, 23(4):335-345.

Wilson, R. D., & Stephens, A. M. (2022). The challenges of B2B innovation: Using marketing analytics to plan and implement a successful digital catalog adoption. *Journal of Business and Industrial Marketing*, 38(2):290-302.

Wilson, T. D. (2016). A general theory of human information behaviour. Retrieved Septermber 09, 2020, from http://informationr.net/ir/21-4/isic/isic1601.html

Wisker, G. (2017). *The postgraduate research handbook: Succeed with your MA, MPhil, EdD and PhD* (2nd ed.). London: Bloomsbury Publishing.

Witkowski, T. H., & Jones, D. B. (2006). Qualitative historical research in marketing. In R. W. Belk (Ed.), *Handbook of qualitative research methods in marketing* (pp. 70-82). Cheltenham: Edward Elgar Publishing.

Wolcott, E. L. (2020). Employment inequality: Why do the low-skilled work less now? *Journal of Monetary Economics*, 118:161-177.

Wolfe, J. (1996). How to write a PhD thesis. Retrieved October 24, 2022, from https://mdthinducollege.org/ebooks/statistics/How_To_Write_A_PhD_Thesis_WoeWolf_UNSW.pdf

Wong, K. K. K. (2019). *Mastering partial least squares structural equation modeling (PLS-Sem) with Smartpls in 38 Hours.* Bloomington: IUniverse.

Wood, L. (2020). *World printing market outlook and forecast 2020-2030 (COVID-19 adjusted)*. Retrieved January 04, 2021, from https://www.prnewswire.com/news-releases/world-printing-market-outlook-and-forecast-2020-2030-covid-19-adjusted-301080248.html

World Economic Forum. (2018). *The future of jobs report 2018.* Geneva: World Economic Forum.

Wright, S. (1921). Correlation and causation. *Journal of Agricultural Research*, 20(7):557-585.

Wu, B., & Zhang, C. (2014). Empirical study on continuance intentions towards E-Learning 2.0 systems. *Behaviour and Information Technology*, 33(10):1027-1038.

Wu, J. H., & Wang, S. C. (2005). What drives mobile commerce?: An empirical evaluation of the revised technology acceptance model. *Information and Management*, 42(5):719-729.

Wu, L., Chen, P., & Chen, K. (2015). Why does loyalty–cooperation behavior vary over buyer–seller relationship? *Journal of Business Research*, 68(1):2322-2329.

Wu, M. J., Zhao, K., & Fils-Aime, F. (2022). Response rates of online surveys in published research: A meta-analysis. *Computers in Human Behavior Reports*, 7:100206.

Xerox. (2019). *2019 annual report: Making every day work better*. Retrieved September 01, 2020, from https://www.annualreports.com/HostedData/AnnualReports/PDF/NYSE_XRX_2019.pdf

Xiong, E. (2020). *Going paperless: A journey worth taking*. Retrieved January 25, 2022, from https://www.forbes.com/sites/forbestechcouncil/2020/04/02/going-paperless-a-journey-worth-taking/?sh=3cc3955e5ca1

Xiong, E. (2021). *The sustainable impact of a paperless office*. Retrieved August 21, 2022, from https://www.forbes.com/sites/forbestechcouncil/2021/05/11/the-sustainable-impact-of-a-paperless-office/?sh=443627ef1095

Yaghoubi, N. M., & Sargazi, A. A. (2014). Investigating the effect of office automation on organizational excellence. *International Journal of Academic Research in Business and Social Sciences*, 4(8):367-375.

Yahya, A. H., & Sukmayadi, V. (2020). A review of cognitive dissonance theory and its relevance to current social issues. *MIMBAR: Jurnal Sosial dan Pembangunan*, 36(2):480-488.

Yang, J. Y. (2020). We love dynamic pricing. In *The Pricing Puzzle* (pp. 81-87). Cham: Springer.

Yang, Y. S., Kull, T. J., Nahm, A. Y., & Li, B. (2017). Attitudes toward supplier integration: the USA vs China. *International Journal of Operations and Production Management*, 37(8):1094-1116.

Yeh, R. K. J., & Teng, J. T. (2012). Extended conceptualisation of perceived usefulness: Empirical test in the context of information system use continuance. *Behaviour and Information Technology*, 31(5):525-540.

Yen, D. A., & Barnes, B. R. (2011). Analyzing stage and duration of Anglo-Chinese business-to-business relationships. *Industrial Marketing Management*, 40(3):346-357.

Yousufi, M. K. (2023). Exploring paperless working: A step towards low carbon footprint. *European Journal of Sustainable Development Research*, 7(4):em0228.

Yu, C. S., & Tao, Y. H. (2009). Understanding business-level innovation technology adoption. *Technovation*, 29(2):92-109.

Zafari, K., Biggemann, S., & Garry, T. (2020). Mindful management of relationships during periods of crises: A model of trust, doubt and relational adjustments. *Industrial Marketing Management*, 88:278-286.

Zahedi, F. M., Bansal, G., & Ische, J. (2010). Success factors in cooperative online marketplaces: Trust as the social capital and value generator in vendors-exchange relationships. *Journal of Organizational Computing and Electronic Commerce*, 20(4):295-327.

Zahl-Thanem, A., Burton, R. J., & Vik, J. (2021). Should we use email for farm surveys? A comparative study of email and postal survey response rate and non-response bias. *Journal of Rural Studies*, 87:352-360.

Zhang, J. Z., Watson, G. F., Palmatier, R. W., & Dant, R. P. (2016). Dynamic relationship marketing. *Journal of Marketing*, 80(5):53-75.

Zhao, J., Fang, S., & Jin, P. (2018). Modeling and quantifying user acceptance of personalized business modes based on TAM, trust and attitude. *Sustainability*, 10(2):356.

Zolfagharian, M., Walrave, B., Raven, R., & Romme, A. G. L. (2019). Studying transitions: Past, present, and future. *Research Policy*, 48(9):103788.

Zunic, E., Djedovic, A., & Zunic, B. (2016). Paperless, optimized and intelligent business by using successful business process management concepts. *Journal of Communication and Computer*, 13(5):234-243.

Appendix A: Ethical clearance

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS UV

GENERAL/HUMAN RESEARCH ETHICS COMMITTEE (GHREC)

06-Dec-2021

Dear Mr Langton Gore

Application Approved

Research Project Title:
A model of paperless technology continuance use intention by business end-users: A dyadic perspective

Ethical Clearance number:
UFS-HSD2021/1602/21

We are pleased to inform you that your application for ethical clearance has been approved. Your ethical clearance is valid for twelve (12) months from the date of issue. We request that any changes that may take place during the course of your study/research project be submitted to the ethics office to ensure ethical transparency. furthermore, you are requested to submit the final report of your study/research project to the ethics office. Should you require more time to complete this research, please apply for an extension. Thank you for submitting your proposal for ethical clearance; we wish you the best of luck and success with your research.

Yours sincerely

Dr Adri Du Plessis
Chairperson: General/Human Research Ethics Committee

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Appendix B: Summary of technology continuance of use studies in a business context

Author(s)	Context	Main theories (*and Method*)	Dependent variable(s)	Independent variables	Moderators
Lutfi (2022)	Accounting information system	UTAUT (*Quantitative*)	Continuance use intention	1. Effort expectancy 2. Performance expectancy 3. Social Influence 4. Facilitating conditions 5. Top management Support 6. Self-efficacy	
Wantania *et al.* (2021)	e-government	E-ECM, DMM (*Quantitative*)	Continuance use intention	1. Perceived ease of use 2. Perceived usefulness 3. Confirmation 4. User satisfaction (with technology) 5. Net benefit 6. Use	
Alsharo *et al.* (2020)	Health information system (HIS)	TAM (*Quantitative*)	Continuance use intention	1. Attitude (technology) 2. Habit 3. Perceived usefulness 4. Perceived ease of use	

Amade *et al.* (2020)	Geographical information technologies	DOI, TOE, Institutional theory (*Quantitative*)	Intention to increase the level of use	1. Relative advantage 2. Compatibility 3. Complexity 4. Organisation size 5. Geographic scope 6. Expansion opportunities 7. Coercive pressure 8. Normative pressure 9. Mimetic pressure 10. Technology use
Hussein *et al.* (2020)	Electronic commerce	DOI, TOE (*Quantitative*)	Continuance use intention	1. Compatibility 2. Information intensity 3. Outsourcing IT support 4. Security
Meske *et al.* (2019)	Social Media at the Workplace	MM (*Quantitative*)	Continuance use intention	1. Perceived versatility 2. Perceived adaptability 3. Perceived invisibility-in-use 4. Perceived interconnectedness 5. Perceived reflexivity 6. Perceived usefulness 7. Perceived enjoyment
Pala *et al.* (2019)	e-Marketplace systems	DMM (*Mixed*)	1. Adoption 2. Continuance use	1. System quality 2. Information quality 3. Service quality

				4. Intention to use 5. Use 6. User satisfaction 7. Net benefits	
Cheng (2018)	Cloud enterprise resource planning system	ECM, TTF, DMM (*Quantitative*)	Continuance use intention	1. Task-Technology Fit 2. System quality 3. Information quality 4. Satisfaction 5. Confirmation 6. Perceived Usefulness	
Gholami *et al.* (2018)	Green IS (eco-localisation website)	UGT (*Quantitative*)	Continuance use intention	1. Performance gratification 2. Content gratification 3. Social gratification 4. Environmental concerns	
Matikiti *et al.* (2018)	Social media marketing	TAM, TOE (*Quantitative*)	1. Continuance use intention 2. Level of usage	1. Attitude (technology) 2. Managerial support 3. Pressure from competitors 4. Perceived ease of use 5. Pressure from customers 6. Perceived benefits 7. Time constraints 8. Manager's level of education 9. Age of manager	1. Technical knowledge

Pinem *et al.* (2018)	Government-to-business online service	ECM (*Quantitative*)	Continuance use intention	1. Efficiency 2. Privacy 3. User support 4. Reliability 5. Information quality 6. Perceived usefulness 7. Satisfaction 8. Trust (technology) 9. Familiarity 10. Disposition to trust 11. Trust in government 12. Recommendation 13. E-service quality
Thatcher *et al.* (2018)	Information technology	TAM, ECM, Trait mindfulness scale (*Multiple*)	Continuance use intention / Deep structure usage / Trying to innovate	1. Perceived Ease of Use 2. Perceived Usefulness 3. Self-efficacy 4. IT Mindfulness 5. Alertness to Distinction 6. Awareness of Multiple Perspectives 7. Openness to Novelty 8. Orientation in the Present

Walther *et al.* (2018)	Cloud enterprise systems	TPB, PCIT, Discontinuance model (*Quantitative*)	Continuance use intention	1. System quality 2. Information quality 3. Net benefits 4. System investment 5. Technical integration	
Ocloo *et al.* (2018)	Electronic commerce	TOE (*Quantitative*)	Adoption level	1. Intensity of competition 2. Top management support 3. Organisational readiness 4. Employee IT Knowledge 5. Government support 6. Relative advantage 7. Compatibility 8. Complexity 9. Business partner's pressure	
Dennis *et al.* (2017)	Enterprise systems	Structuration Model (*Quantitative*)	Loyal use	1. Signification structures 2. Domination structures 3. Legitimation structures	
Gharib *et al.* (2017)	B2B Online Communities	SET, DMM (*Quantitative*)	Active participation	1. Generalised reciprocity 2. Affective commitment 3. Ability based trust (members) 4. Integrity based trust (members) 5. Benevolence based trust (members)	1. Community age 2. Community size

				6. Information quality 7. System quality 8. Service quality 9. Trusting beliefs (members)
Rezvani *et al.* (2017)	Strategic information systems	ISC, TLT (*Quantitative*)	Continuance use intention	1. Transformational leadership 2. Transactional leadership 3. Perceived usefulness 4. Satisfaction
Hoque and Boateng (2017)	e-commerce	Perceived eReadiness Model (*Quantitative*)	Institutionalisation	1. Awareness 2. Resources 3. Commitment (managerial) 4. Governance 5. Government eReadiness 6. Market forces eReadiness 7. Supporting industries eReadiness 8. Initial adoption
Richard and Purnell (2017)	Paper-based catalogue and online catalogue	Channel theory (*Quantitative*)	Technology preference (paper-based or online)	1. Channel convenience 2. Channel experience 3. Channel assurance 4. Channel Satisfaction Check B2B & b2c supplier diffrences

Iranmanesh *et al.* (2017)	Radio-frequency identification	TCT (*Quantitative*)	Continuance use intention	1. Confirmation 2. Perceived ease of use 3. Perceived usefulness 4. Satisfaction (technology) 5. Attitude (technology)
Hassan *et al.* (2017)	e-procurement	TOE, DOI (*Quantitative*)	1. Breadth of use 2. Depth of use	1. Relative advantage 2. Compatibility 3. Complexity 4. Top management support 5. Employee knowledge 6. External pressure
Hou (2016)	Business intelligence systems	TAM, ECM (*Quantitative*)	Continuance use intention	1. Confirmation of expectation 2. Perceived Ease of Use 3. Perceived Usefulness 4. Satisfaction
Hussein and Baharudin (2016)	e-Commerce	DOI, TOE (*Quantitative*)	Continuance use intention / Continuance use	1. Competitive pressure 2. Security 3. Compatibility 4. Organisation Support
Lutfi *et al.* (2016)	Accounting information system	TOE (*Quantitative*)	Continuance use	1. Compatibility 2. Relative advantage 3. Owner/manager commitment 4. Organisational readiness 5. Competitive pressure

				6. Government support 7. Networking	
Ramayah *et al.* (2016)	Websites	ECM (*Quantitative*)	Continuance use intention	1. CEO IT knowledge 2. CEO innovativeness 3. CEO IT adoption attitude 4. Organisational size 5. Employee information systems knowledge 6. Relative Advantage 7. Compatibility 8. Cost 9. Security 10. External Pressure 11. External Support	1. Web adoption level
Ratten (2016)	Cloud computing	SCT (*Quantitative*)	Continuance use intention	1. Personal attitude (technology) 2. Perceived behavioral control 3. Risk 4. Innovativeness 5. Creativity	
Lacka & Chong (2016)	Social media sites for B2B marketing purposes	TAM (*Quantitative*)	Adoption and continuance use	1. Intention to use 2. Satisfaction, 3. Perceived usefulness 4. Usability 5. Utility	

				6. Learnability 7. Memorability 8. Errors 9. Efficiency
Recker (2016)	Promotional planning routines	TAM, RCT, ISD (*Quantitative*)	Discontinuance intention	1. Continuance intention 2. Perceived ease of use 3. Perceived usefulness 4. Perceived work impediment 5. Perceived costs of compliance
Dutta and Ahmed (2016)	Enterprise resource planning system	TAM, ERP (*Qualitative*)	Perceived individual performance	1. Organisation commitment (technology) 2. Communication / management support 3. Perceived ease of use 4. Perceived usefulness 5. Trust (technology) 6. Readiness for change 7. Perceived work compatibility 8. Use intention
Abu *et al. (*2015)	Food processing and packaging	UTAUT (*Quantitative*)	Continuance use intention	1. Performance expectancy 2. Social influence 3. Resistance to use 4. Facilitating condition

Li *et al.* (2015)	e-procurement system	TOE	Organisation intention (adoption or continuance use)	1. Management support 2. B2B commerce expertise 3. Information sharing culture 4. Business partner pressure 5. Perceived efficiency benefit 6. Perceived ease to implement/continue	
Assensoh-Kodua and Lekhanya (2014)	Business online social network	ECM (*Quantitative*)	Business online social network continuance use intention	1. Perceived Usefulness 2. Satisfaction 3. Social Norm 4. Perceived behavioural control 5. Perceived Trust (technology) 6. Habit 7. Expected Benefit 8. Confirmation	
Bhattacherjee and Lin (2014)	Information technology continuance use	TAM, UTAUT, ECM (*Quantitative*)	Continuance use	1. Subjective norm 2. Perceived usefulness 3. Disconfirmation 4. Habit 5. Satisfaction 6. Continuance intention	1. Habit
Soltani *et al.* (2014)	Enterprise Resource Planning	SET (*Quantitative*)	Continuance use intention	1. Perceived organisational support 2. Altruism 3. Conscientiousness	

				4. Courtesy 5. Civic virtue 6. Sportsmanship 7. Satisfaction	
Wu & Zhang (2014)	E-Learning 2.0 systems	UTAUT, TAM (*Quantitative*)	Continuance use intention	1. Perceived usefulness 2. Perceived ease of use 3. System reliability 4. System accessibility 5. Information accuracy 6. Information completeness	
Ajjan *et al.* (2014)	Enterprise instant messaging	TPB	1. Knowledge management creation 2. Knowledge management transfer 3. Knowledge management retention	1. Continuance use intention 2. Personal attitude (technology) 3. Perceived usefulness 4. Perceived enjoyment 5. Self-efficacy 6. Behavioural control 7. Superior and co-workers influence	1. Organisation size 2. Time since adoption 3. Critical mass
Saprikis (2013)	e-reverse auctions	Not Specified (*Quantitative*)	Level of use	1. Funds' dispensation availability 2. Organisational e-readiness 3. Top management strategic support 4. Governmental pressure	

				5. Partners' pressure 6. Competitive pressure
Saprikis and Vlachopoulou (2012)	E-marketplaces	DOI (*Quantitative*)	Level of use	1. Funds' availability 2. Organisational e-readiness 3. Top management strategic support 4. Products' characteristics and demand uncertainty 5. Governmental pressure 6. Partners' pressure 7. Competitive pressure 8. B2B e-marketplace's mission and provided e-services 9. Operational rules 10. Ownership status 11. Profile and extent of participating firms
Banerjee and Ma (2012)	E-commerce	TOE (*Qualitative*)	Increased usage (Routinisation), Discontinuation of Usage	1. Organisational Characteristics (type of goods traded, IT infrastructure, innovativeness, relational norms) 2. Environmental Characteristics (B2B E-business usage in industry {Subjective Norm},

				competitive pressure, regulatory environment) 3. Initial perceptions (benefit and risk) 4. Initial usage 5. Positive cues from initial usage 6. Negative cues from initial usage 7. Changed perceptions of E-business transactions on B2B e-market (perceived benefit and trust) 8. Changed organisational characteristics 1. Changed environmental characteristics	
Lip-Sam and Hock-Eam (2011)	E-commerce	TOE (*Quantitative*)	E-commerce adoption level	1. Internet service quality 2. IT cost 3. IT security 4. Organisational readiness 5. IT strategy 6. External pressure 7. External support 8. Experience 9. Level of education	

				9. Skill
Hernández-Ortega (2011)	E-invoicing	TAM. DOI, DTPB (*Quantitative*)	Continuance use intention	1. Post-use-trust (technology) 2. Manager's attitude (technology) 3. Supplier influence 4. Customer influence 5. Perceived security 6. Perceived compatibility 7. Perceived ease of Use 10. Performance
Yu and Tao (2009)	Internet-based information system and technology	TAM (*Quantitative*)	Continuance use intention, Adoption Intention	1. Perceived ease of use 2. Perceived usefulness 3. Attitude (technology) 8. Subjective norm
				4.

DMM=DeLone and McLean's Information Systems Success Model, DOI=Diffusion of Innovations, ECM=Expectation-Confirmation Model, E-ECM= Extended Expectation-Confirmation Model, ISC=Information Systems Continuance Model, MM=Motivational Model, ERP=Enterprise Resource Planning, TAM=Technology Acceptance Model, TLT=Transformational Leadership Theory, TOE=Technology-Organisation-Environment ,TPB=Theory of Planned Behavior, TTF=Task-technology Fit Model, SET=Social exchange theory, SCT=Social Cognitive Theory, PCIT=Perceived, Characteristics of Innovating, Theory UGT=Uses and Gratification Theory, UTAUT=Unified Theory of Acceptance and Use of Technology

Appendix C: Summary of buyer-supplier studies on technology use continuance

Author(s)	Context	Main theories (*and Method*)	Dependent variable(s)	Independent variables	Moderators/control variables
Claybaugh *et al.* (2022)	Customer relationship management (CRM) systems	Not specified (*Quantitative*)	Customer loyalty (technology)	1. Positive prior experience (technology) 2. Quality of technology 3. Economic value (technology) 4. Relationship satisfaction 5. Trust in provider 6. Provider reputation 7. Perceived risk (relationship)	
Nawaz and Naheed (2020)	E-commerce	ECM (*Quantitative*)	Online repurchase intention (continuance use intention)	1. Buyers' perception of suppliers' ethics (*privacy, security, non-deception, reliability, service recovery, shared values, communication*) 2. Perceived usefulness 3. Confirmation 4. E-satisfaction (technology)	
Gu, Yang and Huo (2021)	Information technology	Information processing theory (*Quantitative*)	Supply chain performance	1. Customer resilience 2. Supplier resilience 3. Customer IT use for exploitation	1. Company size

				4. Customer IT use for exploration 5. Supplier IT use for exploitation 6. Supplier IT use for exploration	2. Marker variable (Respondent's character)
Truong (2019)	e-Procurement	TCT[1] (*Quantitative*)	Supplier integration	1. Distrust (supplier) 2. Level of technology usage	1. Company size 2. Industry sector 3. Time in business
Francisco and Swanson (2018)	Blockchain for Supply Chain Transparency	UTAUT (Qualitative)	Use behaviour	1. Performance expectancy 2. Social influence 3. Effort expectancy 4. Facilitating condition 5. Behavioural intention	1. Technology trust 2. Inter-organisational trust
Jayashankar *et al.* (2018)	Internet of Things	TAM, DOI, Value-based adoption model, Service-dominant logic (*Quantitative*)	Adoption (actual usage)	1. Perceived risk (supplier) 2. Perceived value (technology) 3. Trust (supplier)	1. Farm size 2. Age
Zhao *et al.* (2018)	Personalised Business Modes	TAM (*Quantitative*)	Intention (continuance use / use)	1. Trust (technology and supplier support) 2. Perceived ease of use 3. Perceived usefulness 4. Attitude (technology)	
McKnight *et al.* (2017)	Data exchange system	Two-factor theory, trust theory (*Quantitative*)	Continuance use intention	1. Perceived risk (technology) 2. Relationship commitment 3. Distrusting beliefs (supplier) 4. Trusting beliefs (supplier)	1. Disposition to trust 2. Disposition to distrust

				5. Service outcome quality 6. System quality 7. Information quality (technology)	3. Familiarity (technology)
Schniederjans *et al.* (2016)	Cloud computing	TAM, Social capital theory (*Mixed*)	Agility	1. Cloud computing level of use 2. Collaboration	1. Interorganisational trust
Skard and Nysveen (2016)	Self-service technologies	TAM (*Quantitative*)	Technology loyalty (continuance use intention)	1. Trust (supplier ability) 2. Trust (supplier benevolence) 3. Perceived ease of use 4. Perceived usefulness 5. Trust (technology) 6. IT Support	1. Self efficacy 2. Experience
Sila (2015)	e-commerce	RBV, DOI, TAM, TOE, TRA, TPB, Institutional Theory, TCT^2, Relational view, Knowledge-based view, Contingency Theory, Interactionism (*Qualitative*)	Adoption / Diffusion	1. Technological factors (*cost, risk, technology competence, relative advantage, compatibility, complexity, trialability, observability, network reliability, data security, scalability*) 2. Organisational factors (*capabilities, size, resources, learning ability, management support, processes, communication, strategy, awareness, strategic IT stance, product characteristics, firm*	

				characteristics, formalisation, firm demographics, centralisation) 3. Environmental factors (*external pressure {normative, mimetic, coercive}, regulatory environment, uncertainty*) 4. Interorganisational factors (*customer orientation, dependency on partner, cooperative norms with customers, customer relationship management, relationship commitment, level of collaboration, integration, trust, partner readiness*)	
Stieninger *et al.* (2014)	Cloud computing	DOI, TAM (*Qualitative*)	Adoption (intended and actual usage)	1. Compatibility *(Data exchangeability, process integrability, vendor interoperability)* *2.* Relative advantage *(usefulness, quality, convenience, costs, speed, performance)* 3. Complexity *(expectation conformity, task adequacy, flexibility, use frustration)* 4. Image *(innovativeness, reputation of the innovation,*	

				reputation of the service provider) 5. Security *(data security, geographical location)* *6.* Trust *(trustfulness of the service provider, contractual agreements)*	
Nicolaou *et al.* (2013)	Data exchange system	ECM, DMM (*Quantitative*)	Continuance use intention	1. Information quality (technology) 2. Competence-trust 3. Goodwill-trust 4. Expected transaction performance 5. Exchange-risk (technology) 6. Performance-risk (supplier)	
Obal (2013)	CRM Software-as-a-Service	TAM (*Quantitative*)	Adoption intention (increase usage)	1. Interorganisational trust 2. Perceived ease of use 3. Perceived usefulness 4. Perceived value 5. Perceived financial stability	
Saprikis (2013)	e-reverse auctions	Not Specified (*Quantitative*)	Level of technology use	7. Funds' dispensation availability 8. Organisational e-readiness 9. Top management strategic support 10. Governmental pressure 11. Partners' pressure 12. Competitive pressure	

Chong *et al.* (2013)	C-commerce	Institutional theory (*Quantitative*)	Improved adoption	1. Trust (supplier) 2. Communication 3. Collaboration 4. Information sharing 5. Trading partners' power 6. Knowledge acquisition 7. Knowledge dissemination 8. Knowledge application	
Chien *et al.* (2012)	e-marketplaces	TAM, Relational embeddedness theory, Trust theory (*Quantitative*)	Relationship performance (competitiveness)	1. Perceived Usefullness 2. Perceived ease of use 3. Trust (supplier) 4. Relational embeddedness	
Kim *et al.* (2011)	Application service	ECM, SET, Agency theory (*Quantitative*)	Continuance use intention	1. System quality 2. Information quality (technology) 3. Service quality (supplier) 4. Satisfaction (technology) 5. Trust (supplier)	
Zahedi *et al.* (2010)	Online exchange	Social capital theory (*Quantitative*)	Vendor-Exchange Continuance	1. Partnership's value 2. Community building 3. Switching cost 4. Time investment 5. Technology satisfaction 6. Relationship satisfaction 7. Trust 8. Technology competitiveness 9. Quality	1. Reputation

				10. Mutual understanding 11. Fair treatment 12. Innovativeness 13. Communication	
Farn and Huang (2009)	Application service (logistics information)	TCT[1], SET (*Quantitative*)	Loyalty (to the supplier)	1. Affective commitment 2. Switching barriers 3. Service quality 4. Continuous commitment 5. Trust (supplier)	1. Business types
Rao *et al.* (2007)	e-marketplace	Not Specified (*Quantitative*)	Technology use	1. Expected benefits (*inter-firm collaboration, market aggregation*) 2. Perceived risks (*technology financial risks, supplier trust barriers*)	1. E-business readiness
Lippert (2007)	Supply chain management technology	TAM (*Quantitative*)	Utilisation (level of use)	1. Inter-organisational trust 2. Technology trust 3. Perceived ease of use 4. Perceived usefulness	
Lippert and Davis (2006)	Information technology (IT)	TRA (*Qualitative*)	Internalisation (*satisfaction (with IT), utilisation, realised benefits, technology performance*)	1. Trust (interpersonal, technology) 2. Planned change activities (readiness, acceptance, institutionalisation) 3. Adoption process (initiation, adoption, implementation)	

Nicolaou and McKnight (2006)	Data exchange system	DMM (*Quantitative*)	Continuance use intention	1. Trusting beliefs (supplier) 2. Perceived information quality (technology) 3. Perceived risk (technology) 4. Outcome feedback (technology) 5. Control transparency (technology)	1. Risk propensity 2. Disposition to trust 3. Situational importance
Chae *et al*. (2005)	Information technology	TCT[2] (Qualitative)	Level of collaboration	1. Technology capabilities 2. Interdependance (B2B) 3. Trust (B2B) 4. Long term orientation (B2B) 5. Information sharing (B2B)	
Lin *et al*. (2005)	e-Commerce	Not specified (*Quantitative*)	Benefits (informational, transactional, strategic)	1. Partner interdependence (B2B) 2. Partner coordination (B2B) 3. Partner trust (B2B) 4. Partner commitment (B2B)	
Gefen (2004)	Enterprise resource planning	TAM, Zucker's Theory (*Quantitative*)	Assessment that the business relationship is worthwhile	1. Perceived Usefullness 2. Perceived ease of use 3. Trust (supplier) 4. Institution-based mode (certification) 5. Characteristics-based mode (*shared cultural characteristics*) 6. Process-based mode (*constructive experience*)	

Gefen and Keil (1998)	Sales expert system (CONFIG)	TAM, SET (*Mixed*)	Level of use	1. Perceived ease of use 2. Perceived usefulness 3. Perceived developer responsiveness	

DMM=DeLone and McLean's Information Systems Success Model, DOI=Diffusion of Innovations theory, DTPB=Decomposed Theory of Planned Behavior, ISD= Information Systems Discontinuance framework, PAM=Post-Acceptance Model, TAM=Technology Acceptance Model, RCT= Rational Choice Theory, SET=Social Exchange Theory, TCT^1=Trust-Commitment Theory, TCT^2=Technology Continuance Theory, TOE=Technology-Organisation-Environment, TRA=Theory of Reasoned Action

Appendix D: Prominent technology adoption models and theories

Theory	Author(s) (Year)	Key constructs
Diffusion of Innovations Theory (DOI)	Rogers (1962)	The technology, communication channels, time and the social system
Uses and Gratification Theory (UGT)	Katz *et al.* (1973)	Behavioural usage, motivations and gratifications/satisfaction
Theory of Reasoned Action (TRA)	Fishbein and Azjen (1975)	Subjective norms, attitude and behavioural intention
Theory of Interpersonal Behaviour (TIB)	Triandis (1977)	Subjective norms, habits, emotions and social factors
Theory of Planned Behaviour (TPB)	Ajzen (1985)	Subjective norms, attitude and perceived behavioural control
Social Cognitive Theory (SCT)	Bandura (1986)	Environment factors, personal factors, and behavioural factors
Technology Acceptance Model (TAM)	Davis *et al.* (1989)	Ease of use, usefulness, attitude and intention
Technology-organisation-environment framework (TOE)	Depietro *et al.* (1990)	Technological factors, organisational factors, environmental factors
Perceived Characteristics of Innovating Theory (PCIT)	Moore and Benbasat (1991)	Relative advantage, visibility, ease of use, results voluntariness image, compatibility, demonstrability and trialability
The Model of PC Utilisation (MPCU)	Thompson and Higgins (1991)	Job-fit, facilitating conditions, social factors, complexity, affect and long-term consequences
Motivational Model (MM)	Davis *et al.* (1992)	Intrinsic and extrinsic motivation
Igbaria's Model (IM)	Igbaria *et al.* (1994)	Complexity, usefulness, enjoyment, skills, social pressure and organisational support
Task-technology Fit Model (TTF)	Goodhue and Thompson (1995)	Task characteristics, technology characteristics and Task technology fit

Expectation-Confirmation Model (ECM)	Bhattacherjee (2001)	Confirmation, satisfaction and usefulness
Unified Theory of Acceptance and Use of Technology (UTAUT)	Venkatesh *et al.* (2003)	Performance expectancy, effort expectancy, facilitating conditions, social influence and intention
Behavioural Reasoning Theory (BRT)	Westaby (2005)	Values, global motives, reasons for and reasons against behaviour

Appendix E: Summary of technology adoption studies underpinned by the BRT theory

Author(s)	Context	Main theories (*and Method*)	Dependent variable(s)	Independent variables	Moderators
Ajina *et al.* (2023)	Mobile wallet	BRT, GST	1. Adoption intention	1. Attitude (technology) 2. Openness to change 3. Perceived usefulness 4. Perceived severity 5. Perceived susceptibility 6. Perceived ease of use 7. Value barrier 8. Tradition barrier 9. Risk barrier 10. Usage barrier	
Mobarak *et al.* (2022)	Mobile payment services	BRT	1. Continuance use intention	1. Attitude (technology) 2. Relative advantage 3. Mobility 4. Gamification 5. Service quality 6. Image barriers 7. Anxiety 8. Scepticism 9. Perceived time risk	

Juliana *et al*. (2022)	Vending machine	BRT, TAM (*Quantitative*)	1. Continuance use intention	1. Attitude (technology) 2. 4Ps Marketing mix (Product, Price, Place, Promotion) 3. Technology Acceptance Model (Perceived ease of use, Perceived usefulness)	
Hajiheydari *et al.* (2021)	Internet of Medical Things	BRT (*Quantitative*)	1. Resistance to use	1. Scepticism 2. Perceived security risk 3. Perceived complexity 4. Effort redundancy 5. Process uncertainty 6. Information overload 7. Deceptiveness 8. Individual inertia 9. Psychological reactance 10. Compatibility 11. Convenience 12. Reliability 13. Flexibility 14. Information accuracy 15. Information currency 16. Information completeness 17. Perceived enjoyment 18. Need for uniqueness 19. Self-efficacy	

Myin and Watchravesringkan (2020)	Artificial intelligence (AI) chatbot	BRT, TAM (*Quantitative*)	Intention (use / continuance use)	1. Perceived ease of use 2. Perceived usefulness 3. Attitude (technology) 4. Optimism 5. Innovativeness 6. Discomfort 7. Insecurity 8. Convenience 9. Relative advantage 10. Complexity 11. Resistance to change	
Chouk and Mani (2019)	Smart services (IoT-based services)	BRT (*Quantitative*)	Resistance to use	1. General scepticism 2. Perceived security 3. Perceived complexity 4. Self-congruence 5. Technological innovativeness 6. Government surveillance 7. Individual mobiquity	
Schneider *et al.* (2018)	Online Teaching	BRT (*Qualitative*)	Adoption intention	1. Attitude (towards technology) 2. Perceived behavioural control 3. Subjective norm 4. Didactical variety seeking 5. Incentives (cash awards, reduction of teaching scope) 6. Risk of failure 7. Lack of expertise	

				8. Lack of resources 9. Improvement of the teaching quality 10. Efficiency 11. Loss of personal contact	
Claudy *et al.* (2015)	Micro wind turbines and car sharing	BRT (*Quantitative*)	Adoption intention	1. Attitude (towards technology) 2. Openness to change 3. Value compatibility 4. Environmental benefit 5. Independence benefit 6. Flexibility 7. Convenience 8. Financial benefit 9. Incompatibility 10. Risk barrier 11. Availability barrier 12. Safety barrier 13. Cost barrier	
Sivathanu (2018)	Beauty box subscription-based online services	BRT (*Quantitative*)	Adoption intention	1. Attitude (towards technology) 2. Hedonic shopping motives 3. Social influence 4. Price consciousness 5. Openness to change 6. Convenience 7. Ubiquitous 8. Relative advantage 9. Choice and variety	

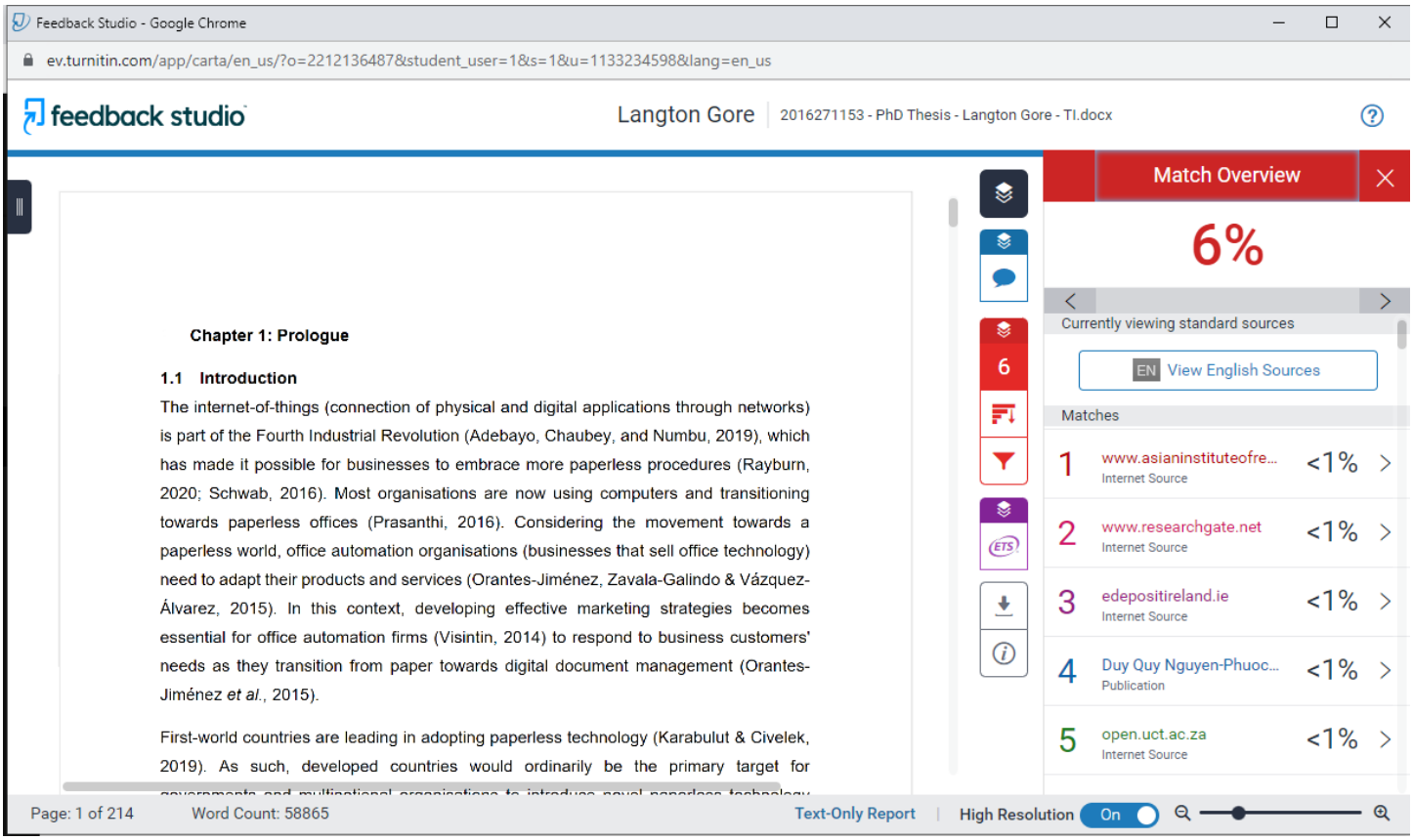
				10. Perceived risk 11. Tradition barrier	
Pillai and Sivathanu (2018)	M-learning apps	BRT (*Quantitative*)	Adoption intention	1. Attitude (towards technology) 2. Openness to change 3. Hedonic motivation 4. Traditional barrier 5. Image barrier 6. Relative advantage 7. Autonomy 8. Efficacy 9. Usage barrier 10. Learning ubiquitous	
Gupta and Arora (2017)	Mobile shopping	BRT (*Quantitative*)	Adoption Intention	1. Attitude (towards technology) 2. Openness for change 3. Variety / choice 4. Consumer anxiety 5. Self-efficacy 6. Relative advantage 7. Convenience 8. Price saving	
Vakola (2016)	Information Technology at a bank	BRT (*Qualitative*)	Reaction to implementation (support / resistance)	1. Participation in the change 2. Job satisfaction 3. Anticipated benefits 4. Competencies related to the change 5. Self-esteem 6. Open communication	

				7. Lack of alternatives 8. Lack of support 9. Team climate 10. Cost of reaction 11. Young age 12. Old age 13. Trust in management 14. High cost-low benefit 15. Alternatives 16. Supervisory support 17. Satisfaction with previous system 18. Disatisfaction with previous system 19. Satisfaction with change results 20. Training and support	
Claudy *et al.* (2013)	Renewable energies	BRT (*Quantitative*)	Adoption Intention	1. Attitude (towards technology) 2. Value alignment 3. Environmental benefits 4. Independence benefits 5. Economic benefits 6. Cost barrier 7. Incompatibility 8. Risk barrier	1. Gender 2. Education

BRT=Behavioural Reasoning Theory, GST=Gender Schema Theory, TAM=Technology Acceptance Model,

Appendix F: Turnitin Submission

Ref submission ID: 2212136487



Appendix G: Consent form and questionnaire

RESEARCH STUDY ON THE CONTINUANCE USE INTENTION OF OFFICE PAPERLESS TECHNOLOGY

Dear respondent

You are invited to participate in this research project. The study investigates the use of office paperless technology (using a multi-function printer (MFP) to scan, store and share documents for work). To participate in the study, you must meet the following criteria:

- You must be 18 years of age or older.
- You must have used your MFP for office paperless functions at work.

The main aspects relating to the study discussed in the information sheet are the following:

Title of the research project

A model of paperless technology continuance use intention by business end-users: A dyadic perspective

Principal investigator / researcher(s) name(s) and contact number(s):

Langton Gore Student number: 2016271153 Contact number: 065 863 6339

Faculty and department:

Faculty: Economic and Management Sciences

Department: Business School

Promotor(s) name and contact number:

Promotor 1: Professor J. Nel *Promotor 2: Professor G. J. P. Human*

Contact number: 051 401 2272 *Contact number: +27 21 808 2218*

What is the aim / purpose of the study?

Aim of the study: To investigate the factors that lead to the continuance use intention of office paperless technology. The findings of the study will only be used for academic purposes.

Who is doing the research?

My name is Langton Gore, I am an employee of 'Organisation A' and a student at the University of the Free State. I am conducting this project to fulfill the requirements for the Philosophiae Doctor (Business Administration) degree at the University of the Free State.

Has the study received ethical approval?

This study has received approval from the Research Ethics Committee of UFS. A copy of the approval letter can be obtained from the researcher.

Approval number *UFS-HSD2021/1602/21*

Why are you invited to take part in this research project?

You were chosen as one of the customers of 'Organisation A', that has a multifunction printer and an email registered with Organisation A'. Your contact information (email) was obtained from the database of 'Organisation A'. The approximate number of participants is 24600 (all of Organisation A's customers with emails registered with the organisation)

What is the nature of participation in this study?

Your participation only requires you to complete the online questionnaire if you consent to participate in the study. Mainly multiple choice questions and two open-response questions (age and experience) are in the questionnaire. Participation in the study is voluntary and you are under no obligation to consent to participation. There is no penalty or loss of benefit for non-participation. If you do decide to take part, you can keep this information sheet and indicate consent before proceeding.

Can the participant withdraw from the study?

You are free to withdraw at any time (before submission) and without giving a reason during the completion of the questionnaire by clicking the 'Exit survey' link on any page or by closing the browser window. However, it will not be possible to withdraw once you have submitted the questionnaire.

What are the potential benefits of taking part in this study?

This study will contribute to theory building, and the results can enable organisations to improve paperless technology, develop marketing strategies for paperless technology and lead to the improvement of the relationship between the service providers and end-users' business organisations.

What is the anticipated inconvenience of taking part in this study?

It will take less than 30 minutes to complete the questionnaire. No personal information of respondents will be shared, as such information is not required for the study. The completion of the questionnaire poses no inconvenience or any risk to a respondent. Respondents can complete the online questionnaire at a time that does not lead to loss of work time.

Will what I say be kept confidential?

Because no identifying personal data is required, information received in this research will be treated as confidential and anonymous. The study will be kept confidential, and information obtained from this study will be shared with the study promotors.

How will the information be stored and ultimately destroyed?

The electronic information obtained in this study will be stored on a password-protected computer for five years. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. The information will be deleted on the computer after this period has passed.

Will I receive payment or any incentives for participating in this study?

There are no benefits, payments or rewards for participating in this study.

How will the participant be informed of the findings/results of the study?

If you would like to be informed of the final research findings, please contact you can contact Mr. Langton Gore (the principal investigator) at 0658636339 or langtongore@gmail.com / 2016271153@ufs4life.ac.za. The findings are accessible for one year. Should you require any further information or want to contact the researcher about any aspect of this study, please contact Mr. Langton Gore.

Thank you for taking the time to read this information sheet and for participating in this study.
Sincerely,

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CONSENT TO PARTICIPATE IN THIS STUDY

I, the under-consented participant confirm that I voluntarily agree to participate in the research study referred to as *"A model of paperless technology continuance use intention by business end-users: A dyadic perspective"* in relation to the continuance use intention of office paperless technology, being conducted by Langton Gore.

I, the under-consented participant, further confirm that:

1. the Researcher has explained the nature, procedure, potential benefits and anticipated inconvenience of my participation in the Study;
2. I have read (or had explained to me) and understood the Study as explained in the attached information sheet;
3. I have had sufficient opportunity to ask questions and am prepared to participate in the Study;
4. I understand that my participation in the Study is entirely voluntary and that I am free to withdraw at any time without penalty (if applicable);
5. I voluntarily provide the UFS and the Researcher with my personal information and consent to the UFS and the Researcher collecting, disclosing and processing my personal information in order to conduct the Study and any related activities in relation thereto;
6. I hereby acknowledge and confirm that I understand the purpose for which the UFS and the Researcher may collect, store, use, delete, destroy, outsource, transfer or otherwise process, as the context and circumstances may require and as contemplated in terms of POPIA, my personal information as set out herein;
7. I am aware that the findings of the Study will be anonymously processed into a research report, journal publications and/or conference proceedings and that my personal information will be aggregated and deidentified at such stage;
8. I also give the UFS permission to share, without notification, the collected data with other researchers at the UFS or other Higher Education Institutions. This permission is dependent on the same principles of ethical research practices, anonymity/confidentiality, safekeeping of information, and other issues listed above applying.

☐ Please check the following box to indicate that you consent to participate in the study.

SCREENING QUESTIONS

Do you make use of office paperless technology (using a multi-function printer (MFP) to scan, store and share documents for work)?

Yes	1
No (*would terminate the survey*)	2

Is the organisation that employs you a client of "Organisation A"?

Yes	1
No (*would terminate the survey*)	2

SECTION A – Background Questions

1. What is your gender?

Male	1
Female	2
Other	3

2. What is your age? _____

3. For how many years have you used a multi-function printer (MFP) to scan, store and share scanned documents for work? _____

4. In which industry is your organisation?

Agriculture / Food	1
Construction / Transport	2
Education	3
Energy / Mining	4
Entertainment / Media	5
Healthcare / Hospitality	6
Manufacturing / Trade / Retail	7
Technological / Communications	8
Government services (general)	9
Other	10

5. What is the size of the organisation that employs you?

Microenterprise (1-10 employees)	1
Small enterprise (11-50 employees)	2
Medium enterprise (51-250 employees)	3
Large enterprise (251 or more employees)	4

SECTION B – OFFICE PAPERLESS TECHNOLOGY BELIEFS

1. Indicate your level of agreement with each of the statements in this section.
2. Answer from your experience of using a multi-function printer for paperless work (scanning, storage and sharing documents)

Continuance use intention

CUI1	I intend to continue using a multi-function printer for paperless work rather than discontinue its use for paperless work	1	2	3	4	5
CUI2	My intentions are to continue using a multi-function printer for paperless work than paper-based work (printing documents)	1	2	3	4	5
CUI3	If I could, I would like to discontinue the use of a multi-function printer for paperless work - (*reversed*)	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Attitude towards paperless technology (ATT)

ATT1	Generally, I have positive feelings towards using a multi-function printer for paperless work	1	2	3	4	5
ATT2	Using a multi-function printer for paperless work is a good idea	1	2	3	4	5
ATT3	Using a multi-function printer for paperless work is worthwhile	1	2	3	4	5
ATT4	The thought of using a multi-function printer for paperless work is appealing (attractive)	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Compatibility (COMP)

COMP1	Using a multi-function printer for paperless work is compatible with all aspects of my work	1	2	3	4	5
COMP2	Using a multi-function printer for paperless work is compatible with my ways of doing business	1	2	3	4	5
COMP3	Using a multi-function printer for paperless work is compatible with the way I like to work	1	2	3	4	5
COMP4	Using a multi-function printer for paperless work is compatible with my work style	1	2	3	4	5
COMP5	Using a multi-function printer for paperless work is compatible with existing information technology in my organisation	1	2	3	4	5
COMP6	Using a multi-function printer for paperless work is compatible with my organisation's values	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Perceived usefulness (PU)

PU1	Using a multi-function printer for paperless work improves my job performance	1	2	3	4	5
PU2	Using a multi-function printer for paperless work increases my productivity at work	1	2	3	4	5
PU3	Using a multi-function printer for paperless work enhances my effectiveness at work	1	2	3	4	5
PU4	Generally, using a multi-function printer for paperless work is useful in performing my duties at work	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Perceived ease of use (PEOU)

PEOU1	Generally, I believe that using a multi-function printer for paperless work is easy	1	2	3	4	5
PEOU2	Learning to use a multi-function printer for paperless work is easy	1	2	3	4	5
PEOU3	It is easy to become skillful at using a multi-function printer for paperless work	1	2	3	4	5
PEOU4	It is easy to perform the steps required to use a multi-function printer for paperless work	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Reliability shortcomings (RS)

RS1	I consider a multi-function printer to be reliable for paperless work - (reversed)	1	2	3	4	5
RS2	A multi-function printer is dependable for paperless work - (reversed)	1	2	3	4	5
RS3	A multi-function printer cannot be counted on to perform paperless work as needed	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Capability shortcomings (CS)

CS1	The performance and functionality of a multi-function printer is highly inadequate for paperless work	1	2	3	4	5
CS2	There are notable limitations in the ability of a multi-function printer to meet my paperless work needs	1	2	3	4	5
CS3	I would like to have many paperless capabilities for work purposes that are not supported by a multi-function printer	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

SECTION C: RELATIONAL FACTORS

1. Indicate your level of agreement with each of the statements in this section.
2. Answer from your experience of interacting with 'Organisation A' (the supplier of the multi-function printer you use)

Attitude towards the supplier (ASP)

ASP1	Generally, I have positive feelings toward Organisation A (the supplier of the multi-function printer I use)	1	2	3	4	5
ASP2	Having 'Organisation A' as the supplier of the multi-function printer I use is a good idea	1	2	3	4	5
ASP3	Having 'Organisation A' as the supplier of the multi-function printer I use is worthwhile	1	2	3	4	5
ASP4	The thought of having 'Organisation A' as the supplier of the multi-function printer I use is appealing	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Goal congruence (GC)

GC1	My organisation and 'Organisation A' (the supplier of the multi-function printer I use) support each other's objectives in the relationship	1	2	3	4	5
GC2	My organisation and 'Organisation A' (the supplier of the multi-function printer I use) have compatible goals in the relationship	1	2	3	4	5
GC3	My organisation and 'Organisation A' (the supplier of the multi-function printer I use) share the same goals in the relationship	1	2	3	4	5
GC4	My organisation and 'Organisation A' (the supplier of the multi-function printer I use) have different goals in the relationship - (*reversed*)	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Trust (TR)

TR1	If I required help, 'Organisation A' (the supplier of the multi-function printer I use) would do its best to help me	1	2	3	4	5
TR2	'Organisation A' (the supplier of the multi-function printer I use) is interested in my well-being, not just its own	1	2	3	4	5
TR3	I would characterise 'Organisation A' (the supplier of the multi-function printer I use) as honest	1	2	3	4	5
TR4	'Organisation A' (the supplier of the multi-function printer I use) keeps its commitments	1	2	3	4	5
TR5	'Organisation A' (the supplier of the multi-function printer I use) performs its role of providing the office paperless technology very well	1	2	3	4	5
TR6	Generally, 'Organisation A' (the supplier of the multi-function printer I use) is a capable and proficient office paperless technology provider	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Commitment (CM)

CM1	The relationship that my organisation has with 'Organisation A' (the supplier of the multi-function printer I use) is something we are very committed to	1	2	3	4	5
CM2	I expect my organisation's relationship with 'Organisation A' (the supplier of the multi-function printer I use) to last a long time	1	2	3	4	5
CM3	The relationship that my organisation has with 'Organisation A' (the supplier of the multi-function printer I use) deserves maximum effort to maintain	1	2	3	4	5
CM4	My organisation intends to maintain the relationship it has with 'Organisation A' (the supplier of the multi-function printer I use) indefinitely (forever)	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Opportunism (OPP)

OPP1	Sometimes 'Organisation A' (the supplier of the multi-function printer I use) changes the facts slightly to accomplish their own objectives	1	2	3	4	5
OPP2	Sometimes 'Organisation A' (the supplier of the multi-function printer I use) promises to do things without actually doing them later	1	2	3	4	5
OPP3	Given the chance, 'Organisation A' (the supplier of the multi-function printer I use) might try to take unfair advantage of my organisation	1	2	3	4	5
OPP4	I can depend on 'Organisation A' (the supplier of the multi-function printer I use) to always treat my organisation fairly - (*reversed*)	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Distrust (DT)

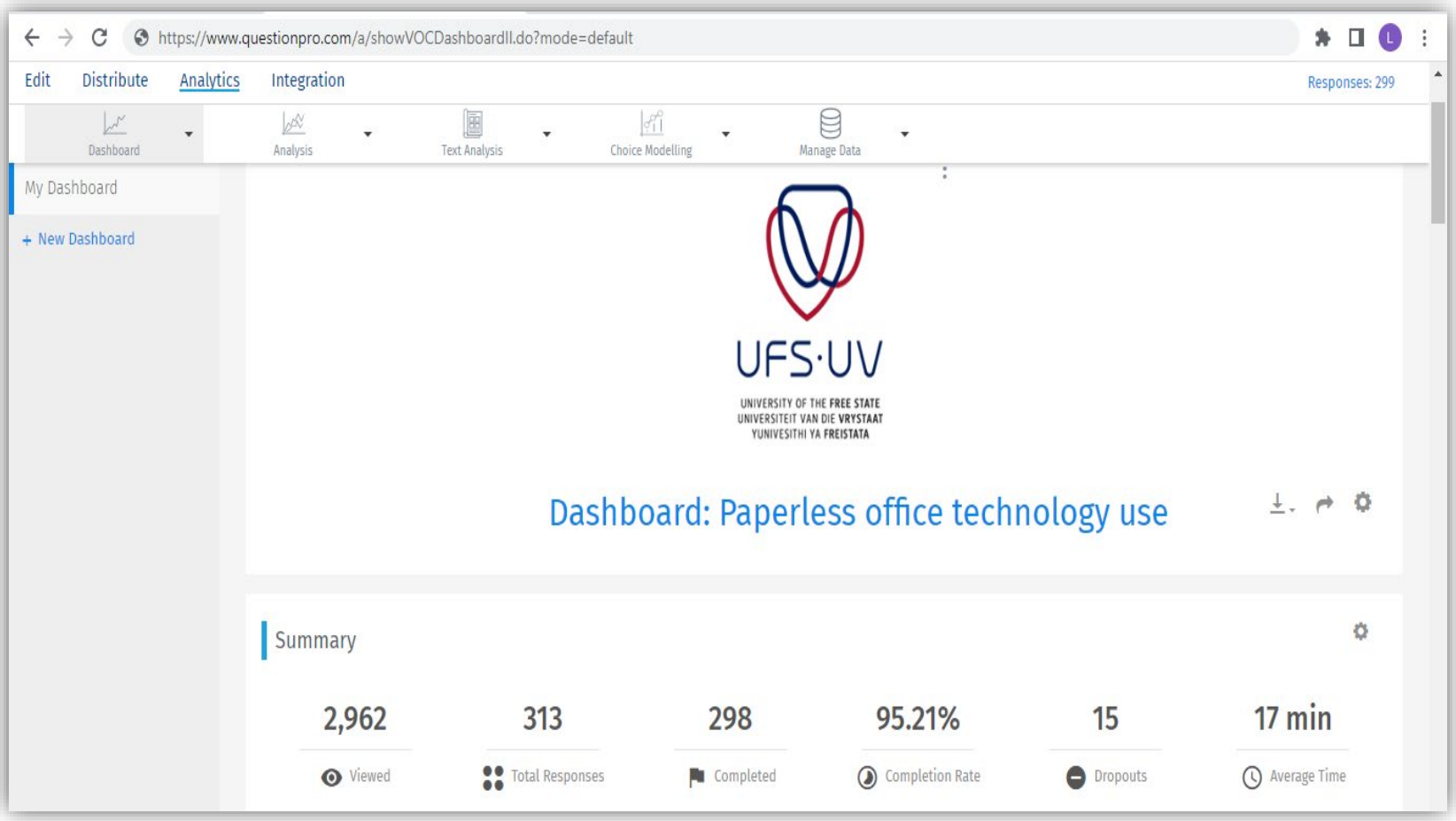
DT1	I am not sure that 'Organisation A' (the supplier of the multi-function printer I use) would act in my organisation's best interest	1	2	3	4	5
DT2	I suspect that 'Organisation A' (the supplier of the multi-function printer I use) is interested in just its own well-being, not in my organisation's well-being	1	2	3	4	5
DT3	I am worried about whether 'Organisation A' (the supplier of the multi-function printer I use) would be truthful in its dealings with our organisation	1	2	3	4	5
DT4	It is uncertain whether 'Organisation A' (the supplier of the multi-function printer I use) would keep its commitments	1	2	3	4	5

DT5	I am skeptical (doubtful) about whether 'Organisation A' (the supplier of the multi-function printer I use) is competent and effective, concerning the use of multi-function printers for paperless work	1	2	3	4	5
DT6	I feel nervous (worried) about how knowledgeable 'Organisation A' (the supplier of the multi-function printer I use) is, regarding the use of multi-function printers for paperless work	1	2	3	4	5

Please note: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5= strongly agree

Thank you for completing this survey.

Appendix H: Survey dashboard



Appendix I: Standard deviation of responses

Responses	Standard deviation	Comment
1	0,912	Response retained for analysis
2	0,757	Response retained for analysis
3	1,262	Response retained for analysis
4	0,764	Response retained for analysis
5	1,262	Response retained for analysis
6	0,187	Response retained for analysis
7	Not applicable	Terminated response
8	1,292	Response retained for analysis
9	0,861	Response retained for analysis
10	1,207	Response retained for analysis
11	0,684	Response retained for analysis
12	1,440	Response retained for analysis
13	1,420	Response retained for analysis
14	Not applicable	Terminated response
15	1,189	Response retained for analysis
16	0,587	Response retained for analysis
17	1,125	Response retained for analysis
18	1,155	Response retained for analysis
19	1,436	Response retained for analysis
20	1,276	Response retained for analysis
21	0,616	Response retained for analysis
22	1,549	Response retained for analysis
23	0,533	Response retained for analysis
24	1,092	Response retained for analysis
25	0,863	Response retained for analysis
26	0,985	Response retained for analysis
27	0,134	Response retained for analysis
28	1,073	Response retained for analysis

29	1,397	Response retained for analysis
30	Not applicable	Terminated response
31	0,828	Response retained for analysis
32	0,804	Response retained for analysis
33	1,113	Response retained for analysis
34	1,104	Response retained for analysis
35	0,914	Response retained for analysis
36	1,841	Response retained for analysis
37	1,095	Response retained for analysis
38	1,095	Response retained for analysis
39	0,894	Response retained for analysis
40	0,772	Response retained for analysis
41	1,354	Response retained for analysis
42	1,042	Response retained for analysis
43	0,755	Response retained for analysis
44	0,869	Response retained for analysis
45	1,485	Response retained for analysis
46	1,204	Response retained for analysis
47	0,644	Response retained for analysis
48	0,706	Response retained for analysis
49	0,826	Response retained for analysis
50	0,854	Response retained for analysis
51	1,293	Response retained for analysis
52	0,531	Response retained for analysis
53	Not applicable	Terminated response
54	1,225	Response retained for analysis
55	1,585	Response retained for analysis
56	1,173	Response retained for analysis
57	1,397	Response retained for analysis
58	0,733	Response retained for analysis
59	Not applicable	Terminated response

60	1,289	Response retained for analysis
61	0,951	Response retained for analysis
62	0,912	Response retained for analysis
63	Not applicable	Terminated response
64	0,562	Response retained for analysis
65	1,719	Response retained for analysis
66	0,496	Response retained for analysis
67	0,726	Response retained for analysis
68	0,760	Response retained for analysis
69	0,892	Response retained for analysis
70	0,810	Response retained for analysis
71	1,373	Response retained for analysis
72	1,349	Response retained for analysis
73	0,828	Response retained for analysis
74	1,205	Response retained for analysis
75	0,988	Response retained for analysis
76	0	Disengaged response
77	1,166	Response retained for analysis
78	1,021	Response retained for analysis
79	Not applicable	Terminated response
80	0,870	Response retained for analysis
81	0,814	Response retained for analysis
82	0,828	Response retained for analysis
83	1,118	Response retained for analysis
84	0,591	Response retained for analysis
85	0,875	Response retained for analysis
86	0,740	Response retained for analysis
87	1,779	Response retained for analysis
88	Not applicable	Terminated response
89	0,970	Response retained for analysis
90	Not applicable	Terminated response

91	1,526	Response retained for analysis
92	0,958	Response retained for analysis
93	0,869	Response retained for analysis
94	0,466	Response retained for analysis
95	1,093	Response retained for analysis
96	1,140	Response retained for analysis
97	0,987	Response retained for analysis
98	1,654	Response retained for analysis
99	1,408	Response retained for analysis
100	0,995	Response retained for analysis
101	1,657	Response retained for analysis
102	0,852	Response retained for analysis
103	0,719	Response retained for analysis
104	0,968	Response retained for analysis
105	0,697	Response retained for analysis
106	1,135	Response retained for analysis
107	1,108	Response retained for analysis
108	1,475	Response retained for analysis
109	1,331	Response retained for analysis
110	0,987	Response retained for analysis
111	1,425	Response retained for analysis
112	1,411	Response retained for analysis
113	1,670	Response retained for analysis
114	0,830	Response retained for analysis
115	1,385	Response retained for analysis
116	0,726	Response retained for analysis
117	1,412	Response retained for analysis
118	1,425	Response retained for analysis
119	Not applicable	Terminated response
120	0,919	Response retained for analysis
121	1,269	Response retained for analysis

122	1,263	Response retained for analysis
123	1,045	Response retained for analysis
124	1,402	Response retained for analysis
125	1,073	Response retained for analysis
126	1,412	Response retained for analysis
127	1,640	Response retained for analysis
128	1,376	Response retained for analysis
129	1,248	Response retained for analysis
130	1,618	Response retained for analysis
131	0,949	Response retained for analysis
132	1,341	Response retained for analysis
133	0,850	Response retained for analysis
134	1,313	Response retained for analysis
135	1,176	Response retained for analysis
136	Not applicable	Terminated response
137	1,973	Response retained for analysis
138	1,817	Response retained for analysis
139	1,212	Response retained for analysis
140	1,263	Response retained for analysis
141	0,932	Response retained for analysis
142	1,063	Response retained for analysis
143	1,056	Response retained for analysis
144	1,155	Response retained for analysis
145	1,073	Response retained for analysis
146	1,126	Response retained for analysis
147	1,256	Response retained for analysis
148	1,411	Response retained for analysis
149	0,931	Response retained for analysis
150	1,504	Response retained for analysis
151	1,187	Response retained for analysis
152	1,189	Response retained for analysis

153	1,368	Response retained for analysis
154	1,274	Response retained for analysis
155	1,450	Response retained for analysis
156	1,232	Response retained for analysis
157	1,140	Response retained for analysis
158	1,013	Response retained for analysis
159	1,279	Response retained for analysis
160	1,142	Response retained for analysis
161	1,303	Response retained for analysis
162	1,173	Response retained for analysis
163	1,027	Response retained for analysis
164	1,104	Response retained for analysis
165	0,871	Response retained for analysis
166	1,040	Response retained for analysis
167	1,077	Response retained for analysis
168	1,005	Response retained for analysis
169	1,014	Response retained for analysis
170	1,059	Response retained for analysis
171	1,242	Response retained for analysis
172	1,341	Response retained for analysis
173	1,249	Response retained for analysis
174	1,087	Response retained for analysis
175	1,052	Response retained for analysis
176	1,285	Response retained for analysis
177	1,263	Response retained for analysis
178	1,347	Response retained for analysis
179	1,222	Response retained for analysis
180	1,227	Response retained for analysis
181	1,245	Response retained for analysis
182	1,187	Response retained for analysis
183	1,298	Response retained for analysis

184	1,122	Response retained for analysis
185	1,343	Response retained for analysis
186	0,802	Response retained for analysis
187	1,302	Response retained for analysis
188	1,570	Response retained for analysis
189	1,397	Response retained for analysis
190	1,123	Response retained for analysis
191	1,045	Response retained for analysis
192	1,152	Response retained for analysis
193	1,179	Response retained for analysis
194	0,891	Response retained for analysis
195	0,970	Response retained for analysis
196	1,361	Response retained for analysis
197	1,277	Response retained for analysis
198	1,202	Response retained for analysis
199	1,065	Response retained for analysis
200	Not applicable	Terminated response
201	1,204	Response retained for analysis
202	1,324	Response retained for analysis
203	1,587	Response retained for analysis
204	1,446	Response retained for analysis
205	1,387	Response retained for analysis
206	1,598	Response retained for analysis
207	0,896	Response retained for analysis
208	1,248	Response retained for analysis
209	1,478	Response retained for analysis
210	1,051	Response retained for analysis
211	1,432	Response retained for analysis
212	1,000	Response retained for analysis
213	1,303	Response retained for analysis
214	1,313	Response retained for analysis

215	1,380	Response retained for analysis
216	1,179	Response retained for analysis
217	1,183	Response retained for analysis
218	1,344	Response retained for analysis
219	1,346	Response retained for analysis
220	1,340	Response retained for analysis
221	1,345	Response retained for analysis
222	1,140	Response retained for analysis
223	1,397	Response retained for analysis
224	1,333	Response retained for analysis
225	1,284	Response retained for analysis
226	1,433	Response retained for analysis
227	0,907	Response retained for analysis
228	1,387	Response retained for analysis
229	1,384	Response retained for analysis
230	1,344	Response retained for analysis
231	1,400	Response retained for analysis
232	1,384	Response retained for analysis
233	1,277	Response retained for analysis
234	1,440	Response retained for analysis
235	1,212	Response retained for analysis
236	1,246	Response retained for analysis
237	1,358	Response retained for analysis
238	1,522	Response retained for analysis
239	1,016	Response retained for analysis
240	1,326	Response retained for analysis
241	1,201	Response retained for analysis
242	1,381	Response retained for analysis
243	1,291	Response retained for analysis
244	1,123	Response retained for analysis
245	1,438	Response retained for analysis

246	1,372	Response retained for analysis
247	1,292	Response retained for analysis
248	1,290	Response retained for analysis
249	1,277	Response retained for analysis
250	1,305	Response retained for analysis
251	0,912	Response retained for analysis
252	1,219	Response retained for analysis
253	1,512	Response retained for analysis
254	1,173	Response retained for analysis
255	1,420	Response retained for analysis
256	1,332	Response retained for analysis
257	1,373	Response retained for analysis
258	1,056	Response retained for analysis
259	1,113	Response retained for analysis
260	1,492	Response retained for analysis
261	1,422	Response retained for analysis
262	1,024	Response retained for analysis
263	1,376	Response retained for analysis
264	1,270	Response retained for analysis
265	1,242	Response retained for analysis
266	1,318	Response retained for analysis
267	1,312	Response retained for analysis
268	0,951	Response retained for analysis
269	1,419	Response retained for analysis
270	1,087	Response retained for analysis
271	1,319	Response retained for analysis
272	1,417	Response retained for analysis
273	1,170	Response retained for analysis
274	0,863	Response retained for analysis
275	1,036	Response retained for analysis
276	1,242	Response retained for analysis

277	1,099	Response retained for analysis
278	1,412	Response retained for analysis
279	1,516	Response retained for analysis
280	1,274	Response retained for analysis
281	1,163	Response retained for analysis
282	1,192	Response retained for analysis
283	1,060	Response retained for analysis
284	1,378	Response retained for analysis
285	0,888	Response retained for analysis
286	1,251	Response retained for analysis
287	1,031	Response retained for analysis
288	1,290	Response retained for analysis
289	0,617	Response retained for analysis
290	1,498	Response retained for analysis
291	1,230	Response retained for analysis
292	1,092	Response retained for analysis
293	1,370	Response retained for analysis
294	1,389	Response retained for analysis
295	1,438	Response retained for analysis
296	Not applicable	Terminated response
297	1,254	Response retained for analysis
298	1,093	Response retained for analysis
299	1,353	Response retained for analysis
300	Not applicable	Terminated response
301	Not applicable	Terminated response
302	1,157	Response retained for analysis
303	1,142	Response retained for analysis
304	1,140	Response retained for analysis
305	1,376	Response retained for analysis
306	1,219	Response retained for analysis
307	0,933	Response retained for analysis

308	1,373	Response retained for analysis
309	1,373	Response retained for analysis
310	1,083	Response retained for analysis
311	1,092	Response retained for analysis
312	0,912	Response retained for analysis
313	1,535	Response retained for analysis

Appendix J: Language editors letter

LANGUAGE PRACTITIONER: Anneke-Jean Diesel

BA Communication Science (Corporate and Marketing Communications)*
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October 2023

DECLARATION

I, Anneke-Jean Diesel, hereby declare that I did the language editing of the thesis of Langton Gore (title: *A MODEL OF PAPERLESS TECHNOLOGY CONTINUANCE USE INTENTION BY BUSINESS END-USERS: A DYADIC PERSPECTIVE*). This thesis is submitted in fulfilment of the requirements for the degree Philosophiae Doctor (Business Administration) at the UFS Business School, Faculty of Economic and Management Sciences at the University of the Free State. All the suggested changes, including the implementation thereof, were left to the discretion of the student.

Please note:

The language editing did not include reference editing/checking or formatting. Also, the editor will not be held accountable for any later additions or changes to the document that the editor did not edit, nor if the student rejects/ignores any of the changes, suggestions or queries, which he/she is free to do. It remains the student's responsibility to ensure that the similarity index is according to the University's regulations. The editor can also not be held responsible for errors in the content of the document or whether or not the student passes or fails. It is the student's responsibility to review the edited document before submitting it for evaluation.

Sincerely

SATI Registration #: 1003466