

# Factors Affecting Digital Transformation in the Retail Supply Chain

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## Abstract

The digital transformation, introduced by the fourth industrial revolution, has significantly transformed the value proposition of supply chain organisations. However, there is limited extant literature based on factors that influence the adoption of digital supply chain within the retail industries. The objective of the study was to explore the factors that influence digital transformation in retail supply chain. The study adopted systematic literature review of all pertinent articles, published during the period 2010-2019. The study adopted Technology-Organizational-Environmental (TOE) framework as a lens to explore factors that influence the adoption of digital supply chain within the retail industries. The study results suggest that most technological factors influence the adoption of digital supply chains within the retail industries compared to organisational and environmental factors. The study contribute to the body on knowledge on the factors that influence the adoption of digital supply chain within the retail industries.

**Keywords:** digital transformation, supply chain, adoption, TOE framework, inventory management, retail industries, fourth industrial revolution

## 1. Introduction

Chiu (2019) defined traditional inventory management as the use of information management features, often stored in isolation forgoing immediate integration into the scope of the company. As a result, tantamount of organisational management inefficiencies arise such as untraceable record of data due to silo-based tracking, and colossal amounts of unstructured data. Traditional supply chains do not keep abreast with the changing environmental demand for optimization and innovation, while executing with accuracy and expenditure minimization.

Sunil and Sameer (1998) critically underpins the fundamental issue in the management of inadequate inventories, which emphasise not only inventory 'stockouts' but wasted obsolete inventory as well. These issues spread across functional activities of the organisation whether it be the logistics, unrecalled

products, etc. There are numerous reasons responsible for this error handling, but the frequent intercepting outlier that has led to the investigation of this study is traditional inventory management inability to compete with big data. In the modern-day societal adoption to the 4<sup>th</sup> Industrial Revolution, where technology-based market competition has progressively grown, retail organisations are battling to strengthen their competitive capacity which is detrimental to manual inventory management.

Research conducted by Chen and Xie (2009) favours the implementation of digital supply chains, which enables managers to achieve enhanced inventory control and operational efficiency. In general authors such as Bahroun, Campagne and Rached (2016) debate that warehouse significance resides in the movement of product information to retail supply beneficiaries. Non-empirical evidence suggests that warehouse inventory is the integral component of current assets in retail organization, as it comprises of high capacity inventories; a considerable amount of funding dedicated to management. Dimitrios (2008) noted inventory management systems deserve more than adequate attention. Nguegan (2017) argues that major negative effects such as unsatisfactory.

## 2. Literature Review

The 3<sup>rd</sup> Industrial revolution focused on the automation of single machines and manual processes which effectively allowed supply chains to carry out traditional inventory models of mass production. However, the fourth industrial revolution has shifted the focus onto 'customer pull' influence on inventory demand. This revolution has brought about the need for the end-to-end digitisation of all physical assets and integration into digital ecosystems with value chain partners. Generating, analysing and communicating data generated by customer involvement seamlessly underpins the gains promised by the fourth industrial, which integrates real time data into the inventory scope of retail industries. Figure 1 below shows the impact of digitalization on supply chain management.

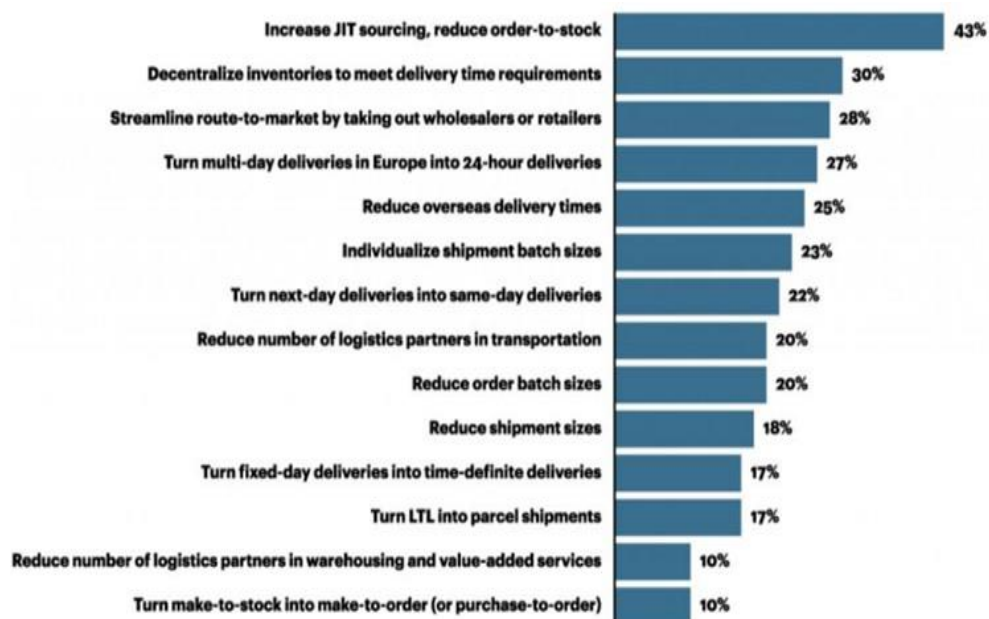


Figure 1: Impact of digitalization on supply chain management (Chung et al., 2018)

## Technology Factors

According to the Technology-Organisation-Environment (TOE) framework, technology factors encompass both internal and external technology at the disposal of the organization (Ngah, Zainuddin & Thurasamy, 2017). Furthermore, the innate attributes i.e. complexity, usability and learnability of a particular technology plays a pivotal role in its adoption (Ngah et al., 2017). Currently, the companies' internal processes, product components, communication channels and all other key aspects of the supply chain processes are undergoing an accelerated digitalization process through 4<sup>th</sup> industrial revolution concepts such as SMAC (Social, Mobile, Big Data Analytics and Cloud computing) (Geisberger & Broy, 2012). However, if customers and other stakeholders to these processes within retail industries perceive the adoption of such technology to be complex, this lack of trust and co-operation can directly affect the adoption of digital supply chains. For instance, according to Michel (2017), cloud-based systems and analytic solutions that incorporate flexibility and agility into the management of inventory and customer demand would be effectively inefficient to adopt if retail industries learnability are relatively low. However, authors Mell & Grance (2011) counter this argument by discussing how this configurable computing resource requires minimal management effort or service provider interaction; which once again focuses on perceived complexity making the adoption of digital supply chains less than probable.

Another barrier to the adoption of digital supply chains within retail industries is the financial capacity organisations possess. According to the Harvard Business Review (2015), retail industries may forgo the deployment of SMAC-IT technologies due to the high levels of expenditure incurred. Despite digital supply chains ability to reduce implementation and management costs around inventory, retailers adopting to a digital transformation commit to a high investment as they transition from their existing systems which are often predominately paper-based (traditional supply chain).

This capital venture of course varies from installation, acquiring new resources, start-up costs etc (Ghobakhloo et al., 2012). Essentially, this implies that the cost of technology can have a prohibiting effect on the adoption of financial technology within retail industries (Ghobakhloo et al., 2012). Adoption of a digital supply chain also includes implementing Internet of Things within retail industries, which exposes them, like many cloud services-based companies, to security risks. Cyber intrusion is a growing concern for many retailers in developing countries who lack the infrastructure for responsive security protocols and tools. Potential security vulnerability like this diminishes the likelihood of digital supply chain adoption. However, Balakrishnan and Cheng (2005) highlights that collaborating with cybersecurity providers could bolster retailers defence against threats.

According to Rogers (2003), relative advantage refers to the degree to which a technological innovation exceeds the tangible and intangible expectations of the initial idea. Moreover, Wang, Li and Zhang (2015), states that organisations are more likely to adopt an innovation if they observe the relative advantages associated with that

particular innovation. Rogers (2003) defines compatibility as the extent to which a technological innovation consistently aligns with the values of the incumbent organisation. Thus, it is more likely for an organisation to adopt an innovation if it consistently aligns with the incumbent organisation's values, practice, scope and IT infrastructure (Wang et al., 2015). Figure 2 shows the relative advantages and opportunities of digital supply chain (Bagri, Ghai, Oka & Venkatesan, 2017).

### Collaborative Mindset for Digital

Collaboration Type	Key Collaboration Areas leading to higher value creation	Select Examples
Supplier – Supplier	<ul style="list-style-type: none"> <li>Coopetition (Collaboration with competition)</li> </ul>	<ul style="list-style-type: none"> <li><b>Microsoft and Intel</b> tie up leading to a synergistic growth in sales for both software as well as the chips</li> <li><b>Google and Mozilla</b> working together (Google funded Mozilla's free, open-source Firefox web browser – a Chrome rival – to limit the influence of rival browsers, Microsoft's Internet Explorer and Apple's Safari)</li> <li><b>Refrigerants Naturally</b> is a non-profit that was established by fierce competitors <b>Coca-Cola, Pepsi Co, Red Bull, Unilever</b> and others to work jointly to develop sustainable refrigeration technologies to combat climate change and ozone depletion</li> </ul>
Supplier – Retailer	<ul style="list-style-type: none"> <li>Revenue Margin Enhancement</li> <li>Process Improvement</li> <li>Cost Reduction</li> <li>Sharing of POS data real time</li> <li>Creation of ecosystems</li> </ul>	<ul style="list-style-type: none"> <li><b>Kellogg with Tesco</b>: Examining real time POS data to identify purchasing patterns at certain Tesco supermarkets. Adjustment in its shipping schedule helped Tesco recapture more than £2 million (US\$4 million) in lost sales and improve customer satisfaction</li> <li><b>Kraft Foods Inc. used U.K. food retailer J Sainsbury PLC's</b> POS data to improve in-store availability of cheeses during promotional periods</li> <li><b>Apple</b> ties up with <b>Reliance Retail</b> for special offers and plans</li> </ul>
Retailer – Retailer	<ul style="list-style-type: none"> <li>Extended networks</li> <li>New channels</li> </ul>	<ul style="list-style-type: none"> <li><b>Walmart</b> plans tie ups with <b>Flipkart, Amazon</b> to tap the online retail opportunity</li> <li><b>Paytm</b> ties up with offline electronic stores to list them on their online platform</li> </ul>
Retailer – Customer	<ul style="list-style-type: none"> <li>Co-creation of consumer focused content</li> <li>Crowdsourcing for innovation</li> </ul>	<ul style="list-style-type: none"> <li><b>LEGO Ideas</b> is an online community where members can discover creations by other fans and submit their own designs for new sets</li> </ul>
Retailer – Digital Ecosystem Player	<ul style="list-style-type: none"> <li>Consumer centric solution development</li> </ul>	<ul style="list-style-type: none"> <li><b>Walmart</b> and <b>Google</b> tie up for voice controlled shopping - Google, will offer hundreds of thousands of Walmart items on its voice-controlled Google Assistant platform</li> </ul>

Figure 2: Collaborative Mindset for Digital (Bagri et al., 2017).

### Organisational factors

According to the Technology-Organisation-Environment (TOE) framework, organisational context provides a description of the characteristics (i.e. organisation size and structure) inherent of the organisation that influence technology adoption (Nghah et al., 2017). An organisation cannot successfully advocate digital transformation supply chain without the direct support of executive management, who would communicate the vision of a digital transformation and its alignment to strategic objectives across departments (Maduka, Mpinganjira & Duh, 2016). It is imperative for operational change management to support programs be rolled out to address the 'fear' of complexity IoT other fourth industrial revolution technologies bring to the retail industry. Wade and Marchant (2014) highlights that without human resource mechanisms that help create additional value for stakeholders involved in digital processes, the adoption of digital supply chains within the retail industry may negatively influenced and could further lead to employee resistance. Hoberg, Krcmar, Oswald, and Welz (2015) however counter this argument by discussing managements increasing support in digital initiatives and SMAC-IT technologies.

Furthermore, management competency plays a leading role in the adoption of digital supply chains. Management executives have had renowned success creating a movement of collaborative planning and forecasting within the manufacturing industry of Amazon (Swaminathan & Tayur, 2003). However, if internet channels that

provide inventory and distribution management opportunities are not analysed appropriately by management, digital adoption may prove to be fatal to several retail industries. Technical skills have proven to be yet another factor influencing the adoption of digital supply chains within retail industries. Implementing analytics initiatives that comes from digital transformation requires data science qualifications with domain knowledge of supply chain functions (Hoberg, Krcmar, Oswald, and Welz, 2015).

Internal IT expertise are not prominent in most retail industries, especially in third world countries struggling to grow and retain these capabilities, which may inhibit companies from exploring the full potential of analytics. This could increase resistance in the adoption of digital supply chains within retail industries. However, the beneficial impact of the adoption of analytics on the supply chain performance has come out very strongly and emphatically in the research. Additionally, firm size can influence the adoption of technological innovations. According to Wang et al. (2015), large organisations are more likely to adopt innovations given that they have more financial resources to both support the adoption and mitigate any risks associated with the adoption of an innovation.

### **Environmental factors**

The environmental factors context includes the extent to which the organisation's industry (i.e. industry structure, regulation and availability of IT vendors), customers and competitors can influence technology adoption (Nghah et al., 2017). The marketing landscape (including retail vendor capabilities) and perception of IT vendors influences the decision-making processes surrounding digital supply adoption (Alshamaila et al., 2013). If the incumbent organisation believes that it will receive IT support during its adoption and maintenance of digital supply chain solutions in retail organisations and warehouses, then this would mitigate perceived risk associated with the innovation (Alshamaila et al., 2013).

Additionally, the pressure of perceived competitive advantage of technology adoption as well as pressure from industry competitors may influence the organisation to adopt the technology (Alshamaila et al., 2013). Moreover, organisations are more likely to adopt an innovation if the incumbent organisation perceives non-adoption to result in a competitive disadvantage such as a loss of prospective clientele (Wang et al., 2015). Furthermore, Rui (2007) suggests that the interdependence and trust shared between a firm and its customers has a profound impact on its adoption of innovative technologies.

IT Policies and regulations have a significant influence on how industries interaction with data and thus directly influences the decision to adopt a digital supply chain. Digital transformation in the 4<sup>th</sup> industrial revolution has the ability to spur innovation in retail industries by making data widely available, which can be proven quite instrumental in increasing sales, inventory management, logistics etc (Van Ark, 2016). OECD (2017) highlights that the flow of data also underpins digital enabled trade of retail goods and services, as well as trade facilitation and the ability of

companies to organise production globally through global value chains (with a resulting trade in intermediate goods). Hence, policies regarding the management of data can have important implications for market openness in the digital era.

Considering that the flow of data would be recognized as an increasing a means of production embedded in retail activities, the appropriate IT Policy design and regulations needs be established to facilitate the movement of data while respecting the need for privacy and data protection. Trade policy, in the retail sector, should therefore focus on continuing to ensure that adequate safety measures are available for pursuing legitimate public policy goals while preserving the significant benefits from an open digital environment. Finally, organisations primarily serve to satisfy the needs of their customers and this inadvertently coerces the organisation to adopt new technologies despite it being beneficial to do so because of customer expectations (Alshamaila et al., 2013).

### **3. Related Studies**

Lu, McFarlane, Giannikas and Zhang (2016) conducted an investigation, “An algorithm for dynamic order-picking in warehouse operations”, based on the adoption of IoT to address new sales channels such as online shopping and enhanced processes and systems for just-in-time procedures in the retail industry. Moreover, the study explored and mapped all the major theories that researchers have used to predict technology innovation adoption in supply chains. However, Lu, McFarlane, Giannikas, and Zhang (2016) research study differs from this study, based on factors that influence digital supply chain adoption, as this study used the TOE framework to explore and synthesize factors that affect digital supply chain adoption within retail industries.

Extensive research, by Swaminathan and Tayur (2003), hones on the expedited need for supply chains to better integrate into the digital economy. Moreover, the article addresses the need to remodel traditional supply chains to accommodate the demand for visibility, supplier relationships, distribution and pricing, customization, and real-time decision technologies that have risen to importance with the prevalence of e-business. Alternatively, another study conducted, “Impact of analytics and digital technologies on supply chain performance”, investigated how retailers and manufacturers can reinvent their supply chain models (Roy, 2018). The study employed the SCOR mode framework that provides a systematic approach to identifying, evaluating and monitoring supply chain performance, covering the four supply chain processes of Plan, Source, Make and Deliver. Nevertheless, these related studies conducted a more general study on digital supply chain adoption, where in contrast this study investigates the factors that influence of digital supply chain adoption within retail industries by using the TOE framework.

### **4. Theoretical Framework**

The theoretical framework used in this study was the Technology-Organisational-Environmental (TOE) framework; the framework provides three specific contexts through which an organisation can evaluate the process of adopting and

implementing a technology innovation (Oliveira et al., 2011). These three contexts include Technology, which serves as a lens to view the technology factors, both internal and external, that an organisation must consider (Oliveira et al., 2011). These technology factors traditionally include factors such as complexity, availability, scalability, cost and security (Nghah et al., 2017). Furthermore, the framework suggests an organisational context, which offers descriptive measures about the organisation such as scope, firm size, technical skills, organisational readiness and resources (Nghah et al., 2017).

Finally, the Environmental context concerns the industry or business landscape of the incumbent firm that can potentially influence technology adoption and implementation, and these include factors such as industry competitors, government pressure, market structure and vendor capabilities (Nghah et al., 2017). The TOE framework was used in this study because it provides a useful analytical that can be used to scrutinize both the opportunities and threats related to the acceptance, adoption and integration of technological innovations in an organisation's business model (Oliveira et al., 2011). Furthermore, the TOE framework has a solid theoretical base, offers the researcher consistent empirical support in research study and a more holistic model as it provides researchers with an enhanced ability to elucidate on intra-firm technology innovation adoption and implementation (Oliveira et al., 2011).

## **5. Research Methodology**

Cooper and Schindler (2014) defines a research design as a plan that stipulates the conditions for data collection and its analysis and measurement by a researcher in fulfilling research objectives or answering research questions. The study adopted a systematic literature to address the aforementioned research questions and objectives for this study, with a design consisting of a quantitative content analysis. The systematic literature review helped to establish the extent to which existing research has progressed, allowing researchers to identify relations, contradictions, gaps, and inconsistencies in the literature, and explore reasons for these (Baumeister & Leary, 1997; Bem, 1995; Cooper, 2003). Myers (2010) discusses content analysis as any technique for making inferences by systematically and objectively identifying special characteristics of messages, presented statically in frequencies.

Fundamentally, content analysis is both observational and narrative in nature and relies less on the experimental elements normally associated with scientific research. Furthermore, content analysis uses an iterative approach that can be either inductive or deductive in nature and thus, allowing the researcher to detect similar or dissimilar content in written text that will either approve or detest the theoretical construct being examined (Maree, 2007). The steps of a quantitative content analysis include developing a research question, formulating hypotheses, sampling, coding scheme development, data collection, statistical analysis, findings and conclusion (Amazon AWS, 2015).

## 6. Instrument Development

First, a literature search was conducted to identify all articles relevant to the research topic using key words such as “Digital Supply Chain Adoption”, “TOE Framework”, “Inventory management”, “Retail industries”, “Fourth industrial revolution”. Second, all articles relevant to the research study during the period 2010-2019 were selected. Seventy selected articles were manual coded in an excel sheet where word frequency counts to detect similarities in the qualitative data to prepare the content for categorization based on the frequency (Table 1). This served as the basis of transforming the qualitative data into quantitative data that was analysed.

Table 1: TOE factors that influence Digital Supply Chain Adoption

Technology Factors	Organisational Factors	Environmental Factors
Complexity	Organisational Readiness	Competition
Compatibility	Resource Capacity	Market Structure
Cost	Firm Size	Vendor Capabilities
Perceived Usefulness	Technical Skills	Managerial Support
Relative Advantage	Management Competency	IT Policy & Regulations
Security	Strategic Objectives	Political Dominance

### Data sources and sampling

The study adopted convenience sampling, as it constituted the search and selection of articles and other literary content relevant to the study. Convenience sampling helped to select the construct characteristics of the research population and convenient to access (Maree, 2007). The sampling method comprised of searching for keywords pertinent to the research study in various scientific databases inclusive of AIS Library, SCOPUS, ScienceDirect and Taylor & Francis Online. The entries into the search engines of these databases comprised of terms inclusive of “Digital supply chain adoption”, “TOE Framework”, “Inventory management”, “Retail industries”, “Fourth industrial revolution”. Literature, from these databases relevant to the research topic were then for the period 2010-2019. The research population comprised of articles on retail industries globally that have or have yet to adopt digital supply chain.

### Research Methods

The research method used in this study will be content analysis, more specifically a systematic literature review. This research methodology is flexible and capable of both quantitative and qualitative research methods. The research method for data collection will primarily be qualitative in nature as it uses convenience sampling to collect, gather and measure data by inserting keywords relevant to the research study into the search engines of selected scientific databases i.e. Science Direct, SCOPUS, AIS eLibrary and Taylor Francis Online. Additionally, content analysis allows for the historical comparison of digital supply chain adoption within retail industries, which offers valuable insights into how the major theme of digital supply chain adoption has evolved over the years (Allen, 2017). This method provides a simple and structured approach for the quantification of qualitative text that allows the researcher to view



the data through various lenses to identify patterns within the textual content that can be later categorized (McNabb, 2002).

## 7. Study Results

### Demographic data

#### Articles published by year

The figure below presents the frequencies of 70 articles, based on factors that influence digital supply chain adoption within retail industries, published during the period 2010-2019. The results depict that between the years 2010-2014, a cumulative of 29% published articles whereas 71% of related articles during 2015-2019. The recorded metadata suggest a progressive inclination in research output during 2010-2014, despite the fluctuation in 2011 that then lead to a downward trough in 2012. Furthermore, the lowest recorded research output occurred in 2010 and 2012 respectively at 3% whereas the results depict a significant increase in research output during the period 2015-2019 with the highest research output occurring during 2018.

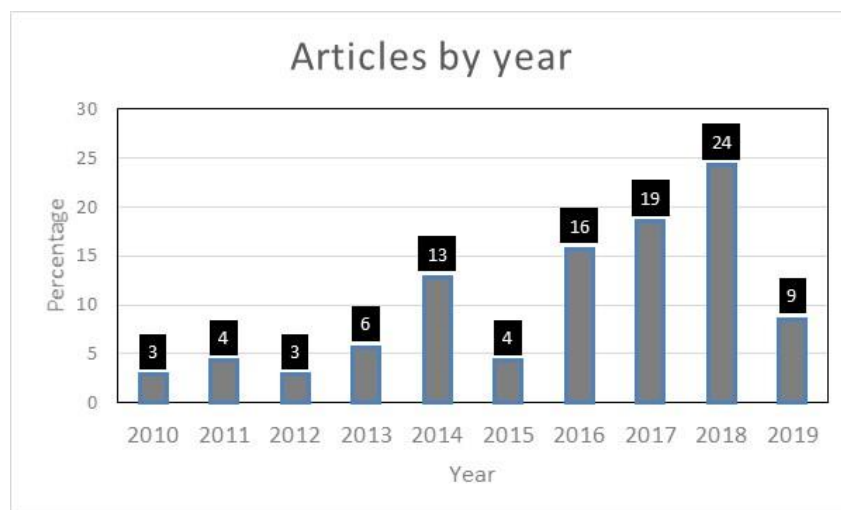


Figure 3: Article by year

#### Articles by Region

Figure below present frequencies of 70 articles, based on factors that influence digital supply chain adoption within retail industries, published during the period 2010-2019 by region. The results depict that Asia had the highest recorded number of published articles at 46% followed by Europe at 20% and North America at 11%. Additionally, Global had the lowest number of articles published at 4% with Africa placing second last at 19%. The frequency depicts that Asia accounts for nearly half of all research based on factors that influence digital transformation supply chain within retail industries, published during the period 2010-2019.

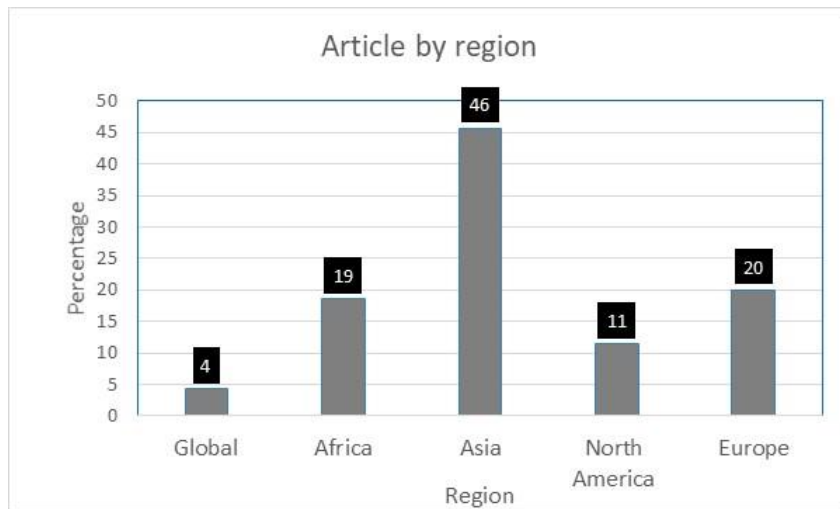


Figure 4: Article by region

### Articles by Research Method

The figure below presents the frequencies of the research methods used in all 70 articles, based on factors that influence digital supply chain adoption within retail industries, published during the period 2010-2019. Results populated indicates a 53% high conduction of qualitative research studies, followed by quantitative research studies at 33% and finally, multi-methods research studies, with the lowest frequency, at 14%. The results suggest that qualitative research studies were a prominent choice of research methodology when conducting research based on factors that influence digital supply chain adoption within retail industries during the period 2010-2019.

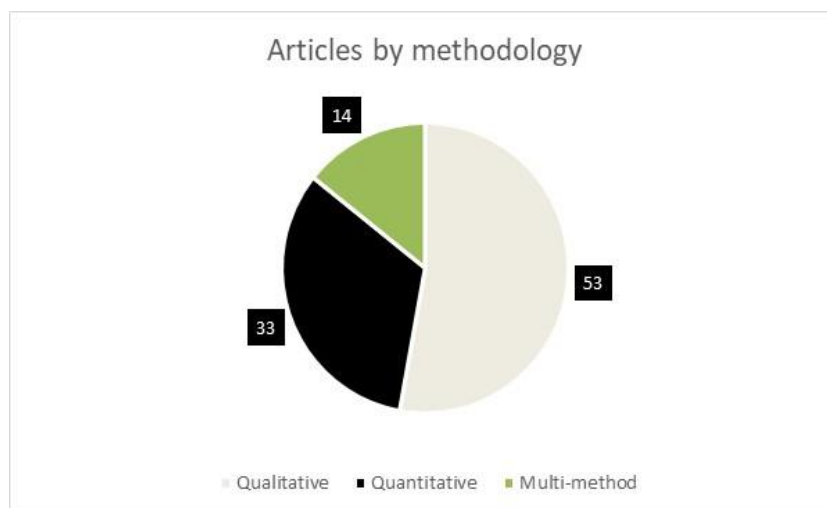


Figure 5: Article by methodology

### Articles by Research Design

Articles by research type Figure below presents an illustration of the frequency of the research design used in 70 articles, based on factors that influence digital supply chain adoption within retail industries, published during the period 2010-2019. The results depict that most articles published during 2010-2019 conducted a systematic literature review at 41%, followed by surveys coming a close second at 20% and interviews placing 3rd at 14%. Furthermore, the results suggest that that conducting case study

was the lowest preferred research type as only 9% of articles, based on factors that influence digital supply chain adoption within retail industries, published during the period 2010-2019 used this method.

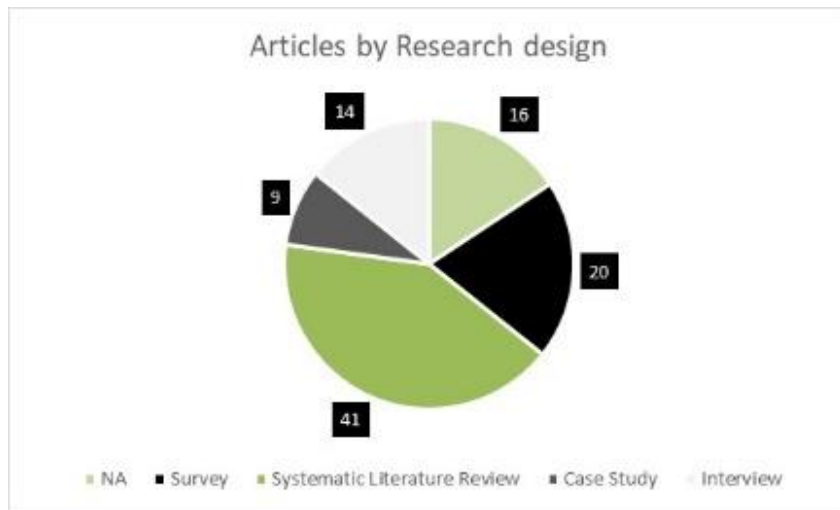


Figure 6: Article by Research Design

### Articles by Framework

Figure below presents the frequencies of the research frameworks used in 70 articles, based on factors that influence digital supply chain adoption within retail industries, published during the period 2010-2019. The frameworks include the Technology Acceptance Model (TAM), the Vendor Managed Inventory (VMI) and Technology-Organisation-Environment framework (TOE). NA represents articles that did not use a framework or rather suggested their own framework. The results depict that most articles, at 60%, did not use a framework or recommended a new framework (NA). Furthermore, the results suggest that that the TOE framework was the second preferred research framework at 11%, followed by TAM at 20%. Additionally, the results suggest that the least used framework in articles, based on factors that influence digital supply chain adoption within retail industries, published during the period 2010-2019 used this method was the TAM framework at 9%.

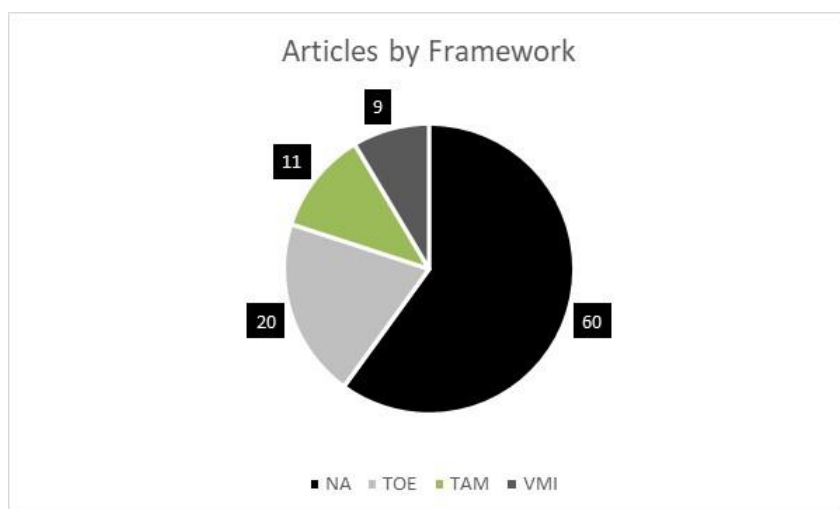


Figure 7: Article by Framework

### SMAC-IT Technologies

Figure below presents an illustration of the frequency of the SMAC-IT technologies used in 70 articles, based on factors that influence digital supply chain adoption within retail industries, published during the period 2010-2019. The SMAC-IT technologies include RFID, Cloud, Artificial intelligence and IoT. The results depict that most articles, at 33%, discuss the implementation of the cloud within retail industries. Furthermore, the results suggest that retailers are adopting IoT devices over the years, coming in second to against technologies RFID and artificial intelligence. RFID and Artificial intelligence were ranked at 13% and 7% respectively as commonly cited in articles over the years.

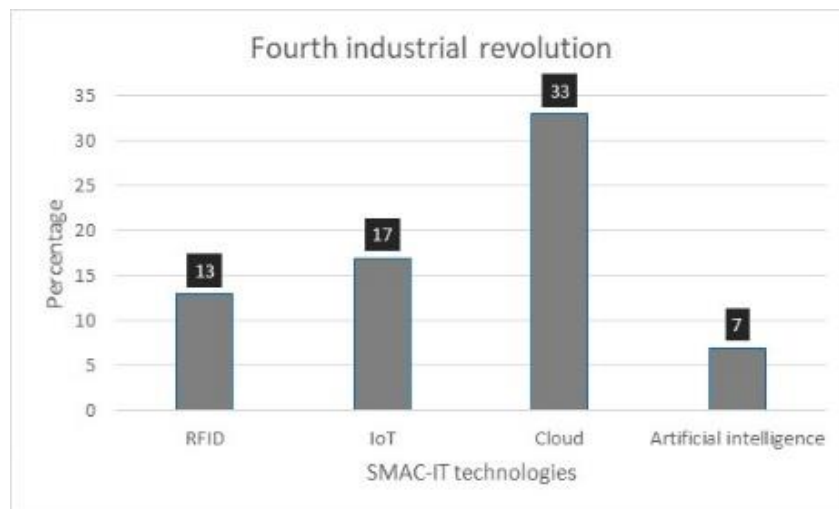


Figure 8: SMAC-IT technologies

### Factors affecting the adoption of digital supply chains

This section provides an illustration of the results of the technology, organisational and environmental factors that influence the adoption on digital supply chains within retail industries.

#### Technological Factors

The study analysed technological factors that influence the adoption of digital supply chain within retail industries, these included factors such as: complexity, compatibility, cost, perceived usefulness, relative advantage and security and reliability. Figure below presents the results of the technological factors based on 70 articles published during the period 2010-2019. The results illustrate that relative advantage was the most important technological factor that influences digital supply chain adoption within retail at 83% of the 70 articles, followed by security at 74% and cost at 69%. Furthermore, 51% of articles discussed perceived usefulness as an influencing factor, followed by complexity at 49%. Finally, compatibility was the least discussed factor at 44% of the published articles.

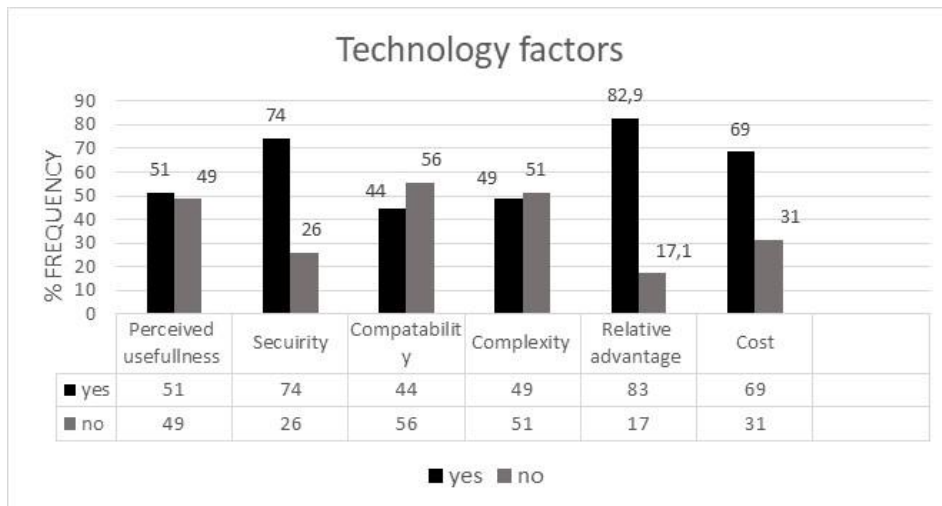


Figure 9: Technological factors

### Organisational Factors

The study analysed the organisational factors that influence the adoption of digital supply chain within retail industries, which include organisational readiness, organisational resources, firm size, technical skills, managerial/executive support and strategic objectives. Figure below presents the results of the organisational factors based on 70 articles published during the period 2010-2019. The results indicate that 60% of articles discussed resources capability of an organisation as an influencing factor, followed by strategic objectives at 57% and then technical skill at 40%. Furthermore, 39% of articles discussed management competency as an influencing factor, followed by firm size at 34%. Finally, organisational readiness was the least discussed factor that influences digital supply chain adoption within retail industries at 24% of the articles.

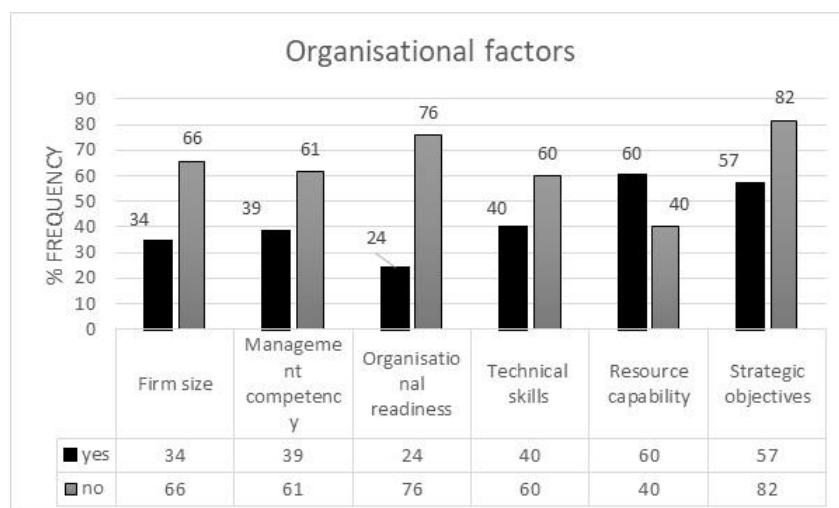


Figure 10: Organisational Factors

### Environmental Factors

The study analysed the environmental factors that influence the adoption of digital supply chain within retail industries, which include government regulation, competition, IT policy/regulation, market structure, vendor capabilities and

maintenance/support. Figure below presents the results of the environmental factors based on 70 articles published the period 2010-2019. The results show that 66% of articles discussed market structure as an influencing factor, followed by competition at 51% and then political dominance at 44%. Furthermore, 36% of articles discussed vendor capabilities as an influencing factor, followed by IT Policy and government regulations at 44%. Finally, management support was the least discussed factor that influences digital supply chain adoption within retail industries at 23% of the articles.

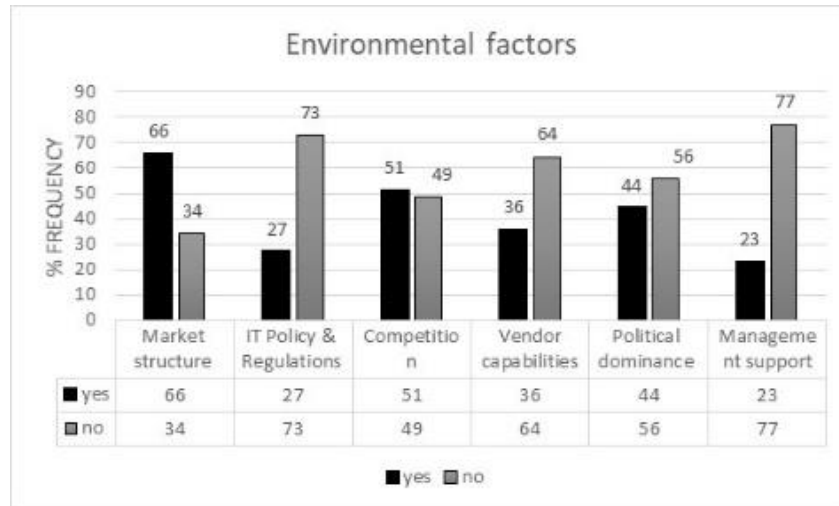


Figure 11: Environmental Factors

## 8. Discussion

The study used a systematic review to explore factors that influence the adoption of digital supply chain within retail industries. The study adopted the TOE framework to explore the factors that influence digital supply chain adoption within retail industries. The study results revealed that technological factors such as complexity, compatibility, cost, perceived usefulness, relative advantage and security influence the adoption of digital supply chain within retail industries. More specifically, relative advantage, cost and security were the most cited technological factors that influence digital supply chain adoption. The results suggests that retail industries are most likely to adopt digital supply chain if it directly benefits the organisation while simultaneously being cost-effective and offering security from cyberattacks on all retail channels. The study also presented organisational factors that influence the adoption of digital supply chain within retail industries. Resource capabilities had highest influence on digital supply chain adoption. The organisational resources include financial, human and technology infrastructure that influence the adoption of digital supply chain technology within retail industries. The resource capabilities may have a direct of influence on technological factors such as cost and security. Finally, the study analysed that environmental factors that influence the adoption of digital supply chain within retail industries such market structure, competition and political dominance. Market structure was the most important environmental factor that influence digital supply chain adoption. This suggest that organisations are more likely to digital supply chain if it is considered suitable to the current market structure, especially in mature markets that tend to be predominately found in first world countries.

## 9. Conclusion

Although the study is not exhaustive in nature, it does attempt to contribute to the understanding of the factors that influence digital supply chain adoption within retail industries. In summary, the study achieved its objective of exploring the factors that influence the adoption of digital supply chain within retail industries. This research study may serve as a catalyst for further research in understanding factors that influence the adoption of digital supply chain within retail industries. Despite the study contribution, it is worth to note that the study has also limitation as it not based on empirical data. The limitation provide as an opportunity for further research based on different research methods and strategies.

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