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Information Technology Capability, Supply Chain Practices and Leagility: A Systematic Literature Review

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Abstract

To cope with the unpredictabilities of the ever-changing modern business environment, businesses need strategies that help them maintain efficiency and flexibility. Leagility, an amalgam of "lean" and "agile", enables them to integrate both advantages. Lean strategy improves efficiency by minimizing waste and costs, while agile strategy allows businesses to rapidly adapt to market trends. Despite its importance for businesses, leagility has received little attention in the literature. Moreover, research on the relationship between IT capability, supply chain practices and leagility, is limited. This systematic literature review addresses these concerns. Based on an analysis of 30 related articles, this study finds increasing interest in the topic, but notably in China, India and the US, with fewer studies from other developing countries. Moreover, most leagility studies are quantitative. These findings challenge previous studies claiming that a majority of the studies are qualitative. Additionally, a sound majority of leagility studies relate to the manufacturing sector, which questions other studies expressing the need for more research on this sector. Further conclusions from the present study indicate that efficiency, effectiveness, responsiveness, and flexibility are the most important dimensions of leagility for successful supply chain performance. Also, leagility requires IT capability, comprising especially IT infrastructure, IT human resources, and IT integration. Also, to help businesses adjust swiftly to market changes, while being efficient, information sharing, information quality, strategic supplier partnership, and postponement, are essential to leagile supply chain practices. This study suggests the need for further research in understudied locations on leagility, IT capability, and supply chain practices, using qualitative and mixed-method approaches to fully comprehend the issue. Studying how emerging technologies and global crisis influence these interactions may also help in developing more robust, flexible and successful supply chain strategies.

Keywords: *Leagility, IT Capability, Supply Chain Practices.*

Introduction

An evident feature of today's business environment is unpredictability and rapidity of change, coupled with fierce competition among businesses. This expresses the need for adaptive and innovative capabilities, if businesses are to remain as going concerns. Not surprisingly, strategies for operational management that integrate efficiency and openness to change are gaining traction. Lean and agile supply chain management exemplifies this trend. Lean enhances the efficiency of supply chain management and overall business performance by minimizing waste and costs, while increasing value. On the other hand, agile supply chain management focuses on the ability of businesses to swiftly and effectively respond to market intelligence or information on customer needs, and act accordingly (Rahimi & Alemtabriz, 2022). Lean-agile is a hybrid technique that combines lean and agile advantages (Sreedevi & Saranga, 2017).

Leagility illuminates supply chain and operational management. Intelligently incorporating its concepts helps firms improve cost and flexibility. Lean techniques help reduce waste and optimize operations in the upstream supply chain by promoting stability and predictability. Agile techniques let downstream supply chains respond quickly to changing consumer expectations (Sahai et al., 2017). Both tactics work best in competitive, unpredictable industries like manufacturing and production. Businesses' efficiency and adaptability determine their performance in these circumstances (Sreedevi & Saranga, 2017). Academic literature focuses on agility. However, its execution is complicated and requires business knowledge. Lean adoption requires IT expertise, infrastructure, and supply chain knowledge. IT technologies, systems, and human resources, together with effective integration, allow quick data gathering, analysis, and informed

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action (Ghobakhloo & Azar, 2018). The successful integration of agile strategies into supply chain operations to improve performance requires strategic partnerships with suppliers, information exchange, and postponement, which involves tactical production delays until information is clarified (Matawale et al., 2016).

Remarkably, despite the salience of IT capability and supply chain practices, little research is, so far, devoted to how they may impact leagility. Businesses facing limitations in resources and state-of-the-art technologies, as well as difficult market environments, would find it more tasking to execute leagile strategies (Bhamra et al., 2020). Businesses often grapple with poor financial and technical resources. This, in turn, may impede their deployment of IT and supply chain efficiency, thus undermining agility. These challenges came into bold relief during the coronavirus pandemic highlighting the importance of sturdy and flexible supply chain approaches (Juergensen et al., 2020). The objective of the present study is to provide a systematic review of the current literature to strengthen existing knowledge on the interplay between IT competence and supply chain practices, on the one hand, and leagility, on the other. The analysis seeks to determine the factors that facilitate the successful operationalization of leagile strategies in businesses. In doing so, the paper contributes to the current scholarly literature on the topic.2. Theoretical Framework

It consists of concepts and, together with their definitions and reference to relevant scholarly literature, existing theory that is used for your particular study. The theoretical framework must demonstrate an understanding of theories and concepts that are relevant to the topic of your research paper and that relate to the broader areas of knowledge being considered.

Research Methodology

This systematic literature review employs a sophisticated research methodology to provide a critical analysis of IT capabilities, supply chain practices, and leagility studies. It builds on the PRISMA criteria that standardize the methodology for systematic review (Lim & Rasul, 2022). The methodology involves the formulation of the research objectives, the conduct of a systematic literature search, the evaluation and selection of relevant studies, the extraction and synthesis of data, as well as the assessment of the quality and relevance of studies.

As already clarified, this study investigates existing studies on IT capability, supply chain practices, and leagility with the central objective of determining how IT capability and supply chain practices can help position businesses in agile stead. Studies of the present nature call for a rigorous, systematic approach to the literature search. This enables researchers to uncover suitable data sources and access relevant data to achieve their research objectives. A productive approach to literature entails the choice of relevant databases, keywords, as well as filters to manage results.

The present study conducted searches of Scopus, Web of Science, and Google Scholar. These databases were chosen because they are large and widely recognized repositories of peer-reviewed journal articles in management, information systems, and supply chain management, which are related to the topic of this study. Keywords and logic were used to find relevant studies. These included “IT capability”, “supply chain practices”, and “leagility”, in addition to a combination of these terms, such as "information technology capability" “supply chain" and "leagility" and "supply chain practices". To assemble the most current and useful studies, the search focused on articles that were published between 2013 and 2024. Moreover, to permit a full search, backward and forward citation tracking was used. This approach involved looking at the reference lists of articles (reverse citation tracking) to determine other publications in which they were cited. Through this approach, it was possible to find relevant studies that were not revealed in the initial database searches. In the end, 302 articles were found.

Only articles found to be relevant and robust, based on strict criteria, were included in this review. For example, an article was included if: (I) it offered illuminating insights into IT capability, supply chain practices, and leagility and was published between 2013 and 2024 (131); (II) if it was published in a reputable database (84); and if it was written in the English language (77). Articles that failed to meet the key selection

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criteria or were not peer-reviewed were excluded (69). Others that were not full-text articles were similarly eliminated (51).

A standardized approach was applied for data extraction, with a focus on research goals, methods, results, and implications. From the synthesis of data, it was possible to detect themes, trends, and potential future research areas. The synthesis was qualitative and quantitative. The former involved the coding of themes, while the latter aggregated key findings from diverse studies. A modified Critical Appraisal Skills Programme (CASP) checklist was used to evaluate the quality of the studies, based on factors, such as research design, data collection, and analytic strength. This was with a view to determining methodological rigor, validity, and relevance (Long et al., 2020). Each article was graded on a scale of 1–5, with higher grades suggesting greater methodological strength. Only articles recording a score of 3 or higher were included in the final analysis. Using these assessment criteria resulted in the elimination of 21 articles, leaving a total of 30 articles.

Needless to reiterate, data analysis is of great importance in both academic and research work, involving, as it were, the analysis and interpretation of data to arrive at relevant conclusions. In the present study, data analysis comprised a quantitative component through descriptive analysis of the articles to demonstrate the nexus between IT capability, supply chain practices, and leagility.

Literature Review

Leagility

In supply chain management, leagility is critical. Lean strategies help businesses to enhance efficiency by curbing waste, while agile approaches enable them to adjust to rapid and unpredictable market changes. The combination of both approaches, termed "leagility", makes it possible for businesses to leverage on their strengths. In volatile market environments, agility is of the essence, as it accelerates adaptation, thus giving businesses a competitive edge (Holbeche, 2018). For example, strategic use of stock in the supply chain grants businesses the benefits of flexibility and cost-effectiveness. Flexibility in supply chain management allows them to meet customer expectations (Waqas et al., 2022). By imbibing lean strategies, businesses are able to avoid wasteful, unproductive processes under normal conditions (Qrunfleh & Tarafdar, 2014). Moreover, lean fosters effective communication and collaborative relationships among concerned stakeholders in supply chain management (Garcia-Buendia et al., 2021). When businesses combine lean and agile strategies, agility is ensured, thereby enhancing organizational efficiency and adaptability. Incontrovertibly, businesses need the capacity to carry on upstream and downstream operations to be able to thrive. They need specific strategies that help them manage costs, products, and overall operational efficiency (Matawale et al., 2016). Despite its myriad benefits, however, there is paucity of research on leagility. Thus, Panizzon et al. (2020) and Shashi et al. (2020) highlight the need for more studies on leagility in different organizational settings; a call to which the present article responds.

Information Technology Capabilities

Information Technology (IT) capability connotes organizational competence in harnessing and deploying IT-related and other resources to improve general performance (Wunnava & Ellis, 2009). It entails the capacity of businesses to effectively incorporate IT into their operations to maximize business processes, sustain IT systems, and leverage these systems for lasting organizational success (Alaneme, 2017). The importance of IT competence in enhancing leagility, as well as the efficiency of the supply chain, is well-established. Such capability is indispensable to value creation, and although generally perceived as the business of the IT department, is better viewed as an organization-wide competency (Njuguna & Wanjohi, 2021; Alenzi et al., 2023). It is only through the shared competence of all employees that IT capability can meaningfully bolster organizational knowledge (Alaarj et al., 2016).

The importance of IT capability in ensuring organizational success is specifically evident in terms of its use in enhancing the ability to swiftly respond to developments in the marketplace. Supply chains that deploy lean and agile strategies are greatly dependent on information technologies (Raji et al., 2021). However,

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even though agility in supply chains is deeply enmeshed in demand chain management, which is stirred by information technology, the existing literature continues to exhibit inconsistency and poor knowledge of the connection between IT capabilities, their use, and the agile supply chain (Shashi et al., 2020).

Equally worthy of observation is that, a sound majority of studies dwelling on IT capability and agility focus on agility, rather than leagility. Poor deployment of IT capability has proven to be a serious constraint on the use of the leagile system (Sahai et al., 2017). Through IT resources, businesses can improve on lean and agile manufacturing. Lean manufacturing strategies contribute to process optimization and waste reduction, while agile manufacturing permits timeous adaptation to the demands of the marketplace. With IT capability, businesses are able to streamline processes, engage more in data-based decision-making, and enhance communication in the supply chain. They are better able to meet customer needs, rapidly adjust to new market developments, and enjoy a competitive edge (Ghobakhloo & Azar, 2018). Nevertheless, as already noted, even amid these findings, the interplay of leagility and IT capability has received little attention among researchers.

Supply Chain Practices

Supply chains consist of a complex network of organizations engaged in production and distribution activities. This network of participants executes all functions, from the distribution of raw materials by suppliers to producers, and the delivery of products by producers to customers (Lundesjö, 2015; Ahmad et al., 2022). Supply chains consist of intricate networks of participants involved in acquiring raw materials, producing intermediate and finished products, and distributing them to consumers (Shukla et al., 2007). The interactions among producers, suppliers, and consumers, including the exchange of information within this chain, significantly influence the performance of the supply chain (Pandiyan et al., 2016).

Academic literature advances diverse perspectives of supply chain practices. These comprise processes and tools used by businesses and their subsidiaries to tackle supply chain issues, such as quality, costs, and lead time (Ageron et al., 2013). These practices are the operational activities of businesses, which have a bearing on their supply chain efficiency (Pandiyan et al. (2016). Advanced strategies can improve the supply chain competitiveness of a business. Such strategies may include assessment of supplier quality, collaborations, customer satisfaction, competitive benchmarking, and teams dedicated to ensuring continuous operational improvement. These strategies improve relationships with suppliers, customer satisfaction, as well as operational efficiency, flexibility, and performance (Gowen & Tallon, 2003).

Studies on Leagility

The importance of agility in businesses has been demonstrated by several studies. In the U.S. and Canada, strategic agility and knowledge management have been found vital to the strategic management of human capital (Ananthram et al., 2013). According to Kharabe et al. (2013), Enterprise resource planning (ERP) system agility enhances the agility of businesses. The authors further suggest that system agility moderates the impact of ERP assimilation on organizational agility. Winby and Worley (2014) conclude that adaptability is crucial in boosting innovation and ensuring lasting organizational survival, especially in the healthcare sector. In predicting the agility of the Indian worker, Muduli (2016) highlight the importance of cooperation, incentive systems, and organizational learning, with psychological empowerment as a mediator.

Several other studies have engaged in how agility may impact the performance of businesses. With an agile supply chain, businesses can enhance sales, with technological integration mediating this relationship. In their study focusing on Pakistan, Manzoor et al. (2021) report that supply chain agility and lean strategies enhance the performance of businesses. Similar findings by Panigrahi et al. (2022) suggest that supply chain agility improves the performance of businesses in India. According to the study, this relationship is mediated by cost efficiency. The role of strategic agility in enhancing business performance is further confirmed by Arokodare et al. (2019), who also add that this relationship could be mediated by organizational culture.

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The role of agility, as a mediating variable, has been the subject of numerous other countries' studies. For example, reporting in the Iranian context, Ghobakhloo and Azar (2018) maintain that lean and agile manufacturing strategies enable entities engaged in manufacturing to integrate IT resources for successful business performance. With regard to Taiwan, Chung et al. (2019) observe a connection between the knowledge creation and creative capabilities of businesses and their performance, with organizational agility mediating this connection. Similarly, in their study, Darvishmotevali et al. (2020) conclude that organizational agility affects technology, competitive uncertainty, and organizational innovation in Cyprus. Shahzad (2020) further highlights the mediating role of organizational agility by suggesting that it impacts the long-term survival of Chinese multinational companies. However, it plays no mediating role, as far the relationship between knowledge management and long-term firm survival is concerned. Another study by Nwankpa (2020) finds that organizational agility mediates the extent to which digital investment enhances IT innovation in the US.

There have also been a series of studies on supply chain and leagility. Focusing on India, Sahai et al. (2017) report as many as 17 factors that impede the application of leagility among businesses. These include IT resources, leadership, and organizational characteristics. The authors stress the significance of IT resources. This conclusion is shared by Ghobakhloo and Azar (2017), who suggest that IT resources have an impact on lean and agile manufacturing, which, in turn, determines the efficiency of business performance. Researchers, such as Sreedevi and Saranga (2017) have equally examined how the unpredictability of the business environment could affect supply chain risk. They report that such uncertainty exacerbates supply, manufacturing, and delivery risks, with the flexibility of supply mediating these effects. On their part, Lim et al. (2017) focus on how supply chain influence mediates the link between market agility and the performance of manufacturing SMEs in the US. They conclude that the supply chain mediated the effect of market agility on performance. With regard to how IT affects leagility, Oliveira-Dias et al. (2022) find a direct connection between IT, on the one hand, and lean and agile supply chains, on the other, ultimately enhancing business performance. The authors, nevertheless, acknowledge that the current literature evidences diverse interpretations of IT. Many scholars, like Bhamra et al. (2020), recommend studying leagility. According to Maharaja et al. (2018), a supply chain study on leagility may provide a competitive edge.

Scholars in different countries and businesses have found different consequences and enabling variables for leagility. Sud-on et al. (2014) examine how ITI affects agility in Thailand. These characteristics boost agility. Lin et al. (2020) study how e-commerce affects business agility in China's agriculture industry. In response to business uncertainty, agility improves. Panigrahi et al. (2022) examine supply chain agility and company success in India. Cost efficiency seems to mitigate this link. Sahai et al. (2017) note that Indian industrial sector enterprises lack IT resources, which hinders leagile strategy implementation. More research has linked agility to business advantage. Maharaja et al. (2018) show that supply chain agility gives organizations an edge. Supply chain leagility may boost competitiveness, according to the authors. The existing literature shows that leagility studies employ diverse methodologies. According to Bhamra et al. (2020), 73% of publications on leagility research apply qualitative approaches. Nevertheless, other studies, such as Ghobakhloo and Azar (2018), and Sahai et al. (2017), rely on quantitative methodologies, particularly TOPSIS, to determine IT constraints and how such resources could affect agility. This methodological diversity in leagility studies highlights the need for further research.

Findings

Profile of the Articles

This study includes 30 articles, which can be delineated based on year of publication. As can be seen in Figure 1 below, there was a clear increase in number of articles in 2017 and 2020, but a drastic decline in 2021, presumably as a result of COVID-19.

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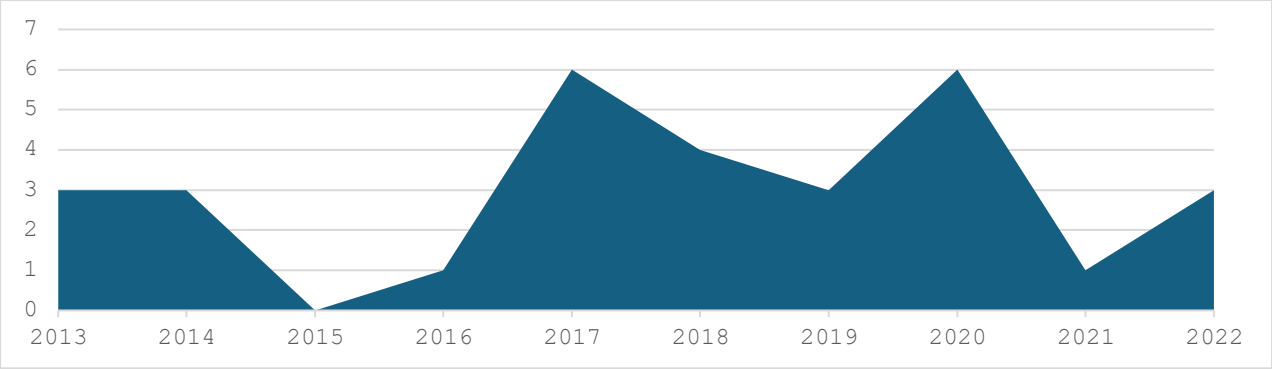

Figure 1. Year of Publication

In terms of location, Figure 2 shows that most of the studies were carried out in three countries namely, China, India and the USA. Fewer studies were conducted in Bangladesh, Canada, Cyprus, Germany, Taiwan, Tunisia, Pakistan and the UK.

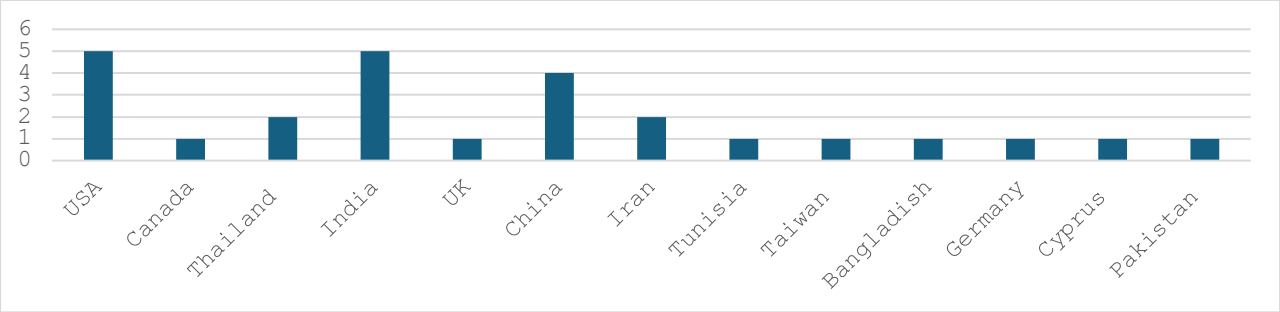

Figure 2. Countries of Studies

Figure 3 shows the distribution of studies based on research methodology. It is clear that 69% of the studies used a quantitative methodology, 13% were review studies, 9% used mixed methods, while 9% used a qualitative methodology.

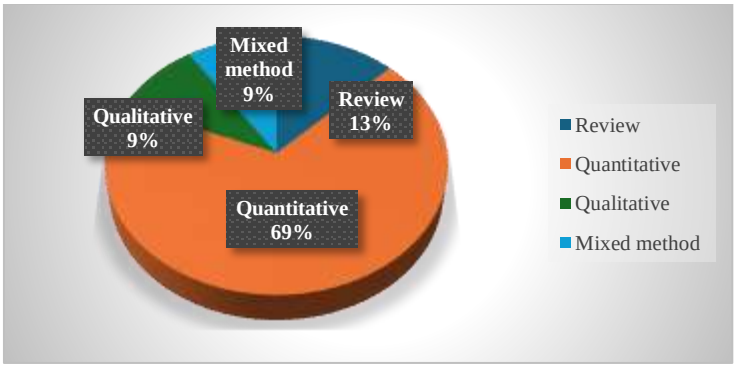

Figure 3. Research Approach

In the quantitative studies, the sample size ranged between 30 and 475 responses, with a mean of 218 responses. Figure 4 indicates that a majority of the studies focused on manufacturing companies followed by services and then large-scale companies. There were fewer studies on multinational, IT, automotive, and healthcare companies.

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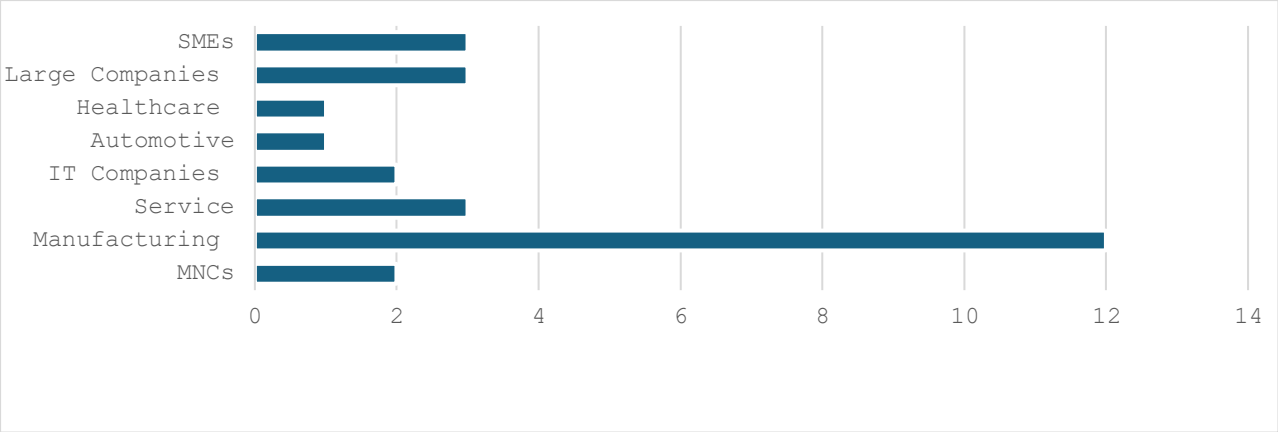

Figure 4. Industries of Reviewed Studies

Dimension of Leagility

A close examination of the articles included in this study reveals that leagility is measured based on a plurality of dimensions. Studies dedicated to the investigation of leagility measure leagility primarily based on the agility and the lean supply chain. Yoshi (2012) focuses on human resource and production as dimensions of leagility. Other studies assess leagility based on the dimensions of short term contracts and internalization (Nagaaba, 2022). Some studies consider leagility from the three dimensions of efficiency, effectiveness and responsiveness (Vaishnavi & Suresh, 2020), while others, particularly Hong-Minh (2002), examines it from four dimensions namely, customer enrichment, cooperating to enhance competitiveness, organizing to master change and uncertainty, as well as leveraging the impact of people and information. Alavi and Aghakhani (2021) identify as many as six dimensions of leagility, which are delivery time, productivity, employee empowerment, waste reduction, customer satisfaction, and reduction in resource consumption. Table 1 below provides a summary of the dimensions of leagility.

Table 1. Summary of Dimensions of Leagility

Author/ year	Dimension	
Agility		
(Van-Hoek, 2000)	Customer sensitivity Network integration Virtual integration Process integration	
Sud-on et al. (2013)	Customer responsiveness Flexibility Competency Quickness	
Sud-on et al. (2014)	Responsiveness Flexible product Innovation competency Speed in delivery	
(Vanichchinchai, 2022)	Responsiveness Capability Speed and flexibility	
(Darvazeh et al., 2022)	<u>Lean</u> Waiting time Warranty policies Eliminating waste Product life time	<u>Agility</u> Long term relationship Team structures Communication and e-commerce system

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	Timely delivery	Innovative and R&D capabilities, equipment and production capacity Quality systems, financial capabilities, information sharing level, mutual trust
Leagility		
(Yoshi, 2012)	Human resource Production aspect	
(Nagaaba, 2022)	Short term contracts Internalization	
(Vaishnavi & Suresh, 2020)	Efficiency Effectiveness Responsiveness	
(Hong-Minh, 2002)	Enriching the Customer Enhancing Competitiveness Mastering Change and Uncertainty Leveraging the Impact of People and Information	
Alavi and Aghakhani (2021)	Delivery Time Productivity Employee Empowerment Waste Reduction Customer Satisfaction Reduction in Resource Consumption	

The above examination shows that efficiency in production, delivery and handling of materials are germane to the leagile supply chain. Equally critical to the leagile supply chain, is the reduction of waste, as well as resource consumption. Being responsive to new developments in the marketplace and customer expectations, is another important dimension of the leagile supply chain. Previous studies have identified these elements. A fourth element, flexibility, can be added as an equally important dimension in a simple supply chain. Therefore, it can be shown that the most significant validity is efficiency, effectiveness, responsiveness and flexibility.

Efficiency implies "the ability of the supply chain to minimize the use of resources, eliminate waste, and optimize processes to achieve the best results with the fewest resources" (Banihashem et al., 2013; Borgström, 2005). Effectiveness is "the ability of a supply chain to achieve its goals and objectives" (Defee & Fugate, 2010). Responsiveness of the supply chain means its ability to adapt quickly and efficiently to customer demands, market changes and external influences (Jermsittiparsert et al., 2019). Supply chain flexibility refers to its openness and ability to adapt to the environment, customer needs and turbulence in the supply chain (Liao, 2020). Therefore, the evaluation of the validity of an ideal supply chain lies in the dimensions of efficiency, effectiveness, responsiveness and adaptability. In other words, a suitable supply chain integrates efficiency, responsiveness, effectiveness and flexibility.

Dimensions of IT Capability

Previous studies have examined IT capabilities, and as either a unidimensional or multidimensional component. One study that treats IT capabilities as a unidimensional element is Benitez et al. (2018), who investigates IT competence and how it impacts supply chain capabilities in China. Ghobakhloo and Azar (2017), who focus on Iranian manufacturing companies, define IT capabilities in terms of IT resources. With regard to Thailand, Sud-on et al. (2014) add IT integration in the determination of the IT capabilities of businesses. Arokodare et al. (2019) similarly employ IT capability as a unidimensional element. This

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study, which has a conceptual orientation, suggests the integration of IT capability to enhance business performance.

Other studies examine IT capabilities as a multidimensional element. Wang (2014) considers the impact of IT integration and flexibility on supply chain integration. Impliedly, IT integration and flexibility are employed as dimensions of IT capabilities. The Iranian study conducted by Ghobakhloo and Azar (2018) considers IT resources, physical IT resource and human IT resource as dimensions of IT capabilities, and investigates how this affect business performance, as well as lean and agile manufacturing. Another study by Nwankpa (2020) focuses on IT competence, digital investment and IT innovation as elements of IT capabilities. The study by Chen et al. (2015), which centers on innovative production performance, investigates how IT capabilities affect corporate entrepreneurship and innovative production performance. The authors consider IT capabilities in terms of IT infrastructure flexibility, integration, business alignment, and management.

In Nuroğlu (2016), IT capabilities are assessed based on IT management capability, IT use capability, relational IT resource, IT infrastructure, technical IT resource and managerial IT resource. Managerial IT capability, technical IT capability, and relational IT capability are similarly employed as components of IT capability in Garrison et al. (2015). In Mao et al. (2016), the authors investigate how IT capability may impact knowledge management and competitive advantage. IT capability is defined to include IT infrastructure, IT human resources and IT relationship resources. Table 2 summarizes the dimensions of IT capability.

Table 2. Dimensions of IT Capability

Author/ year	Dimensions
Ghobakhloo and Azar (2017)	IT resources
Sud-on et al. (2014)	IT Integration
Wang (2014)	IT Integration IT flexibility
Ghobakhloo and Azar (2018)	IT resource Physical IT resource Human IT resource
Nwankpa (2020)	IT competence, digital investment IT innovation
Chen et al. (2015)	IT infrastructure flexibility IT integration IT business alignment IT management
Nuroğlu (2016)	IT management capability IT use capability Relational IT resource IT infrastructure Technical IT resource Managerial IT resource
Garrison et al. (2015)	Managerial IT capability Technical IT capability Relational IT capability
Mao et al. (2016)	IT infrastructure IT human resource IT relationship resource

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IT capability has a multidimensional scope that also includes the existing IT infrastructure of a business entity. It means that IT infrastructure is indispensable to the effective deployment of technology in businesses. Application of technology is only possible, if a business entity has skilled personnel that is capable of effectively using the technology, otherwise denoted by IT human resources. Incorporation of IT capability in a business entity is cardinal to successful usage. This leads to the third dimension of IT capability, which is IT integration. It may, thus, be concluded that the dimensions of IT capabilities include IT infrastructure, IT human resource and IT integration.

IT infrastructure refers to "the underlying technology resources, systems, and networks that enable the delivery of IT services and support business operations" (Cassia et al., 2022). This definition covers hardware, software, databases, networks, servers, storage, and other IT components that constitute the ecosystem for IT operations (Elangovan & Ramaraj, 2013; Singletary & Watson, 2003). To achieve efficient and effective IT operations and deploy technology for competitive advantage, businesses need to pay attention to the quality, scalability, reliability, and security of their IT facilities and systems (Mills & Smith, 2011).

IT human resources encompass the knowledge, skills, and expertise of the personnel, who perform the IT functions or discharge IT-related tasks within a business entity (Jorfi, 2014). This includes IT professionals, IT managers, IT leaders, and other IT staff, who are charged with the planning, implementation, management, and support of IT systems and services (Mahapatro, 2022). IT integration is the incorporation of IT devices, applications, systems, processes, and data across the various functional of units of a business entity (Maiga et al., 2014). IT integration facilitates the smooth sharing of data and systems, consistency of data, and cooperation across different business units, that ensures overall efficiency and agility in organizational operations. In essence, IT enables corporate integration and creativity (Maiga et al., 2014). The connection and mutual reinforcement of these different dimensions of IT is essential. Moreover, to sustain IT operations, businesses must maintain sturdy IT facilities and systems, coupled with qualified IT personnel capable of deploying and managing them.

Dimensions of Supply Chain Practices

Studies on supply chain practices began about thirty years ago. Donlon (1996) identifies the main components of supply chain practices as supplier partnering, information sharing, process flow, and outsourcing. These practices reflect the current state in the manufacturing industry (Sundram et al., 2016). For Alvarado and Kotzab (2001), information technology and customization through postponement of activities are key aspects of supply chain practices. Min and Mentzer (2004) provide seven principal dimensions of supply chain practices, which are supply chain leadership, risk and award sharing, agreed vision and goals, information sharing, long-term relationships, process integration, and cooperation. These dimensions together enhance the understanding and evaluation of effective supply chain practices.

Supply chain practices span information quality, information sharing, incentive alignment, and collaborative decision-making (Wiengarten et al., 2010). Other studies delineate supply chain practices to include strategic partnership with suppliers, customer relationships, information sharing, information quality, postponement, agreed vision and goals, and risk and reward sharing (Sundram et al., 2016). Cook et al. (2011) consider supply chain practices to include information sharing, long-term relationships, advanced planning systems, leveraging the Internet, supply network structure, and distribution network structure. In Tarafdar and Qrunfleh (2017), strategic partnership with suppliers, customer relationships and postponement are treated as dimensions of supply chain practices, while in Reklitis et al. (2021), partner's information quality and sharing, as well as strategic partnership with suppliers are viewed as elements of supply chain practices. From these studies, the dimensions of supply chain practices can be summarized as presented in Table 3 below, which outlines the dimensions and their corresponding authors.

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Table 3. Dimension of Supply Chain Practices

Author	Dimensions
Donlon (1996)	Supplier partnering Information sharing Process flow Outsourcing
Alvarado and Kotzab (2001)	Information technology Customization Postponement
Min and Mentzer (2004)	Supply chain leadership Risk and award sharing Agreed vision and goals Information sharing Long-term relationship Process integration Cooperation
(Wiengarten et al., 2010)	Information sharing Information quality Incentive alignment Joint decision making
(Sundram et al., 2016)	Supplier strategic partnership Customer relationship Information sharing Information quality Postponement Agreed vision and goals Risk and reward sharing
Tarafdar and Qrunfleh (2017)	Strategic supplier partnership Customer relationship Postponement

From the above presentation, it can be distilled that the core dimensions of supply chain practices are information exchange, information quality, strategic supplier relationship, and delay in supply chains. Information exchange is the sharing of valuable data and information among suppliers, manufacturers, distributors, and customers (Pal, 2020). When done effectively, such sharing expands the horizon of partners in the supply chain and introduces transparency into operations, inventories, demand forecasts, and other strategic information. Supply chain coordination, communication, and decision-making contribute to the enhancement of operational efficiency, lead times, and customer service (Huong Tran et al., 2016).

Information quality is determined by its accuracy, reliability, completeness, and promptitude. To ensure informed decision-making, it is crucial to establish effective supply chain operations, risk management, as well as precise and reliable information. Where the quality of information is weak, businesses are likely to experience difficulty in supply chain communication, delays, errors, and other operational disruptions (Utami et al., 2019). Therefore, to optimize supply chain efficiency, all partners involved in the supply chain must pay premium attention to information quality. Indeed, as Jum'a et al. (2021) and Vafaei-Zadeh et al. (2020) suggest, collaboration throughout the supply chain is vital to successful business performance.

Concerning strategic partnerships with suppliers, it should be noted such partnerships must be predicated on mutual trust, as well as shared goals and values (Tarafdar & Qrunfleh, 2017). They must go beyond a mere buyer-supplier relationship. This requires deliberate engagement in collaborative planning and decision-making to innovate, minimize costs and tame risk (Reklitis et al., 2021). Maintaining strategic partnerships with suppliers is a useful way to motivate improvements in their performance, increase

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innovation and curb supply chain risks. Strategic supply chains delay value-added activities, such as product customization, packaging and labeling, until customer demand is certain (Budiman & Rau, 2019). In this sense, businesses may find it strategic to suspend product diversification until customer orders are received. This "wait and see" approach has the advantage of preventing excessive inventory of finished products, as well as reducing lead times, and costs (Alvarado & Kotzab, 2001). Therefore, postponement can allow the supply chain to meet customer demand, while enjoying flexibility and avoiding the accumulation of old stock. In today's highly volatile, ever-changing business environment, information sharing, information quality, strategic partnerships with suppliers and deferrals are key supply chain practices that are essential for improved performance, agility, efficiency and responsiveness. As reiterated, sharing information among partners in the supply chain is necessary to achieve supply chain efficiency. As well, information quality needs to be of a high standard to permit effective decision-making. This is only feasible, if there is strategic partnership among partners in the supply chain. Postponement is equally vital as it allows only part of the final product to be made, while awaiting confirmation of purchase from the customer. This facilitates effectiveness and innovation in the supply chain.

Effect of IT Capabilities on Leagility

Studies, such as Ghobakhloo and Azar (2017, 2018), suggest that IT resources and competencies contribute to enhanced agility and performance in businesses. According to Nwankpa (2020), IT skills and organizational agility are also crucial to the generation of digital investments that propel IT innovation. There is a direct, as well as an indirect relationship between IT capabilities and agility. Ghobakhloo and Azar (2017, 2018) demonstrate that proper deployment of IT resources results in better lean and agile manufacturing. There is no doubt that IT is important to industrial agility. According to (Sahai et al., 2017), maintenance of appropriate IT infrastructure enables the implementation of a leagile system The authors stress that agility requires IT expertise. Bai et al. (2022) point out that this organizational agility mediates IT capability-performance. This implies that by enabling agility, IT skills improve performance. Organizational agility also has a bearing on knowledge generation and innovation, and therefore, performance (Chung et al., 2019). Thus, IT skills improve agility and are vital for business success.

Supply Chain Practices and Leagility

Supply chain practices have an impact on leagility, which is a lean strategy for performance improvement. This study relies on relevant prior research to show how supply chain practices impact leagility. Supply chain integration, modularization and coordination provide agile capabilities that are important for leagility (Sud-on et al., 2014). This strategy minimizes lead time and increases responsiveness to market trends. As reported by Ghobakhloo and Azar (2017, 2018), IT resource management facilitates lean and agile manufacturing. Lean and agile supply chain practices can help in developing a legal system that integrates responsiveness and efficiency. Supply chain agility, i.e. the capacity for rapid reaction and change, improves performance and competitive advantage for businesses (Manzoor et al., 2021; Panigrahi, 2022). This study highlights the importance of supply chain to leagility.

Sahai et al. (2017) concluded that the absence of IT infrastructure prevents the use of leagility. To achieve leanness, there must be effective supply chain practices, especially in IT integration. As Maharaja et al. (2018) suggest, effective supply chain practices increase agility, competitiveness and business success. Indeed, effective supply chain management can give agile businesses a competitive advantage. It allows them to adapt quickly to developments in the market, while maintaining effectiveness in their operations. This is the main feature of the concept of leagility. This strategy integrates the efficiency of lean operations with agile responsiveness to achieve enhanced business performance. To achieve leagility, there must exist supply chain integration, coordination, and agility.

Discussion

This literature review involved the analysis of 30 articles concerning IT capabilities, supply chain practices, and leagility. The results indicate that there is a growing body of scholarly works, especially on leagility, compared to previous studies that have centred on either lean or agile ramification. Findings from the

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present study further show that there is still a dearth of studies on the subject from developing countries, with most of the current studies being focused on China, India and the UFS. Moreover, a large proportion of the studies on leagility are quantitative. This is a significant finding that challenges the previous study conducted by Bhamra et al. (2020), who claim that 73% of the studies are qualitative. An additional finding is that a sound majority of the studies on leagility relate to the manufacturing sector. This equally belies the conclusion from other studies expressing the need for more research focusing on this sector. It must be acknowledged though, that the conclusion from those studies was made in relation to SMEs. Further conclusions from the present study suggest that the most significant dimensions of leagility are effectiveness, efficiency, responsiveness, and flexibility. About IT capabilities, the core components are IT infrastructure, IT human resources, and IT integration. In respect of supply chain practices, the most essential components are found to be information sharing, information quality, strategic partnerships with suppliers, and postponement.

Limitations and Direction for Future Work

Despite its best efforts, this study acknowledges some limitations. One is that only 30 articles were examined. It may be queried whether this sample size is sufficient to offer a comprehensive examination of leagility, IT capability, and supply chain practices. Moreover, considering that this study restricted its coverage to articles published in the English language, there is a distinct possibility that otherwise valuable research published in other languages, has been omitted, thus undermining the generalizability of findings. Further, this study covered only articles published between 2013 and 2024, which is far from the full range articles available online.

In terms of future research direction, it is suggested that future studies should investigate the impact of leagility, IT capability, and supply chain practices in different geographical locations, especially the understudied countries of the Middle East, Africa, and Latin America. By examining supply chain performance across varying economic and cultural environments, it may be possible to gain a global view of these relationships. Focusing the research on services, retail and other sectors, may also produce different revelations about them. This will also provide new knowledge on how legality, IT and supply chain practices differ across industries. Future research should consider using qualitative and mixed methods approaches to better appreciate the impact of IT capabilities and supply chain practices on legitimacy. This is important, given that there are already many quantitative studies on this subject. The use of case studies, interviews, and ethnographic research may offer additional illumination.

Longitudinal studies show how IT capabilities and supply chain practices can impact leagility. By reviewing the data over time, researchers may be able to better understand their long-term implications. This is a productive approach that can allow the investigation of these relationships across time as technology and markets evolve. It is useful, for example, to study the potential of Artificial Intelligence (AI), blockchain, and IoT in improving leagility. Further studies may usefully integrate these technologies as part and parcel of IT capabilities and supply chain practices to improve business performance. Another potentially fertile ground for future research relates to how global crisis may impact leagility, IT capabilities, and supply chain practices. This suggestion gains salience from the significant decline in publications recorded in 2021, as reported in this study, ostensibly due to the COVID-19 pandemic. Such studies may enable the adoption of sturdy and flexible supply chain strategies.

Conclusion

This literature review demonstrates the importance of leagility, IT capabilities, and supply chain practices in boosting supply chain performance. Supply chains must integrate efficiency, effectiveness, responsiveness, and flexibility if leagility is achieved. Leagile supply networks demand appropriate IT Integration, IT infrastructure, and IT human resources. Maintaining the right supply chain strategies including information sharing, strategic alliances, and postponement, is crucial to help businesses in managing turbulence in the marketplace and achieve a competitive edge. This study establishes the groundwork for future research on these relationships, despite the prevalence of quantitative studies and

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regional focus. Surely, more research is needed to illuminate the complex interplay among agility, IT capabilities, and supply chain strategies. Such research should ideally be qualitative, mixed-method, and longitudinal investigations to properly capture continuing changes in the field. It is certainly important for businesses to keep track of these dynamics to improve their supply chain performance and achieve a competitive edge in the constantly evolving global market.

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