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Digital procurement in buyer-supplier relationships: the impact on operative excellence and supplier satisfaction

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Abstract

Purpose – As firms increasingly recognise the strategic role of purchasing, digital transformation is reshaping the purchasing function. Yet, since it is still unclear how this reshaping happens, this research delves into the influence of digital procurement practices on supplier satisfaction and operative excellence.

Method - Empirical quantitative data was collected from the suppliers of a company in the chemical industry (N = 119). This study employs partial least square structural equation modelling to scrutinise the impact of digital procurement practices on supplier satisfaction, taking into account potential moderating effects and antecedents grounded in literature.

Findings - The model supports the findings of previous research, providing additional proof that relational behaviour and growth opportunity have a positive effect on supplier satisfaction. Moreover, the latter is confirmed to be essential to explain the preferred customer status and, consequently, preferential treatment. Contrary to the hypothesis of this study, both profitability and operative excellence were found to have a nonsignificant relationship with supplier satisfaction. Digital procurement practices positively influence operative excellence but do not affect supplier satisfaction. Digital readiness is not identified as a critical antecedent for digital procurement practices, and digital capability asymmetry does not moderate the relationship between digital procurement practises and supplier satisfaction.

Research limitations - The sector-specific nature of the data and the restricted sample size might limit its generalisability. Some factors could be prone to measurement errors. Furthermore, the model does not account for contextual factors, which could be pertinent.

Practical and Theoretical implications - This thesis advances the field of procurement and supply chain management by updating supplier satisfaction models and making a pioneering contribution to the study of digitalisation in purchasing. This study advises leaders to prioritise relational behaviour by implementing comprehensive supplier relationship management. Companies are encouraged to keep abreast of the escalating demand for the adoption of digital practises. The research offers a visual tool to enhance decision-making in digital procurement practises.

Originality/value – This thesis stands as one of the pioneering contributions that seeks to analyse digital procurement practises using a quantitative approach. Additionally, the research augments the prior literature, updating satisfaction studies, and integrating insights from the digital transformation realm.

Table of Content

Index of abbreviations

DPP	Digital procurement practices
DT	Digital transformation
e.g.	for example
Fig.	Figure
H	Hypothesis
HTMT	Heterotrait-monotrait
i.e.	that is
ICT	Information, communication and technology
PCS	Preferred customer status
PLS	Partial least squares
P&SCM	Purchasing and supply chain management
RBV	Resource based view
RPA	Robotic Process Automation
SCM	Supply chain management
SCPV	Supply chain practice view
SEM	Structural equation modelling
SET	Social exchange theory
SMEs	Small-medium enterprises

Index of figures

Index of tables

1 Introduction: the role of digital procurement in the context of supplier satisfaction and the preferred customer status

1.1 Supplier satisfaction and preferred customer status represent key elements to ensure competitive advantage

Purchasing and supply chain management have transformed from a mere supportive activity (Porter, 1998, p. 37) to a strategic position that nurtures organisational efficiency, effectiveness, and profitability (Bienhaus & Haddud, 2018, p. 996). Purchasing and supply chain managers have assumed a strategic role due to two major phenomena. First, an average industrial firm spends about 60% of its turnover on purchases, implying that its economic result would be heavily based on smart purchases (Schiele, 2019, p. 46). Second, globalisation and the consequent increase in competition have dramatically reduced the supply base (Hüttinger et al., 2014, p. 697).

The considerable incidence of procurement on revenue and the consolidation of the supplier market have led companies to compete to partner with the most capable suppliers. Competition is usually motivated by customers, but in this case it is the opposite. Buyers (i.e. customers) compete for the best suppliers (Moody, 1992, p. 53), in the logic of the so-called "reverse marketing" (Leenders & Blenkhorn, 1988, p. 2). In fact, suppliers are responsible for non-core activities and open innovation, which represent key resources for buyers to flourish in the long term, thus creating competitive advantage (Schiele, 2012, p. 1178). In the same vein, research has observed that not only buyers seek the most capable suppliers, but they seek the preferred customer status (PCS), leading to a preferential treatment in terms of resource allocation (Steinle & Schiele, 2008, p. 4).

PCS is widely recognised in the academic literature as a key driver of innovation and competitive advantage (Schiele et al., 2011, p. 17). However, suppliers must be able to distinguish 'regular buyers' from preferred customers within their customer base. Studies have shown that being granted the PCS and receiving preferential treatment are closely related to supplier satisfaction (Huttinger et al., 2012, p. 1202). Hence, ensuring supplier satisfaction should be a top priority for practitioners in the "buy-side" field.

The significance of supplier satisfaction in purchasing practise has also caught the attention of scholars. Schiele et al. (2012) define supplier satisfaction as the instance in which the outcomes of the buyer-supplier relationship meet or exceed the supplier's expectations in terms of quality. Furthermore, factors that contribute to the fulfilment of supplier expectations can be divided into relationship quality and economic value (Huttinger et al., 2012, p. 1202). As a result, supplier satisfaction is considered to have both relational and economic antecedents, which have been found to explain most of supplier satisfaction variance (Vos et al., 2016, p. 4620). In particular, Vos et al. (2016), building on the work of Hüttinger et al. (2014), found relational behaviour and operative excellence as significant relational antecedents, and profitability and economic growth as economic ones.

The economic and relational antecedents have been shown to be significant in different contexts and study designs (Hüttinger et al., 2014; Vos et al., 2016, pp. 4618, 711). However, there have been limited contributions on the role of digital procurement practices with respect to preferred customership and its antecedents (first and second tiers), despite the fact that the impact on supply chain management is disruptive (Stock & Boyer, 2009, p. 173). The digital advent has a real influence on purchasing (Bienhaus & Haddud, 2018, p. 974) and will last for the next 15 to 30 years (Preindl et al., 2020, p. 30). Therefore, an examination of the digital procurement practices with respect to the PCS is deemed relevant.

1.2 Research focus: the importance of digital procurement practices in satisfaction and preferred customership research

A possible reason for the lack of research on the impact of digital procurement practices on preferred customership could be the nuances in the definition of digital phenomena, which have prevented many authors from researching the topic consistently (Srai & Lorentz, 2019; Stock & Boyer, 2009, pp. 707, 79). Furthermore, a recent contribution by Kosmol et al. (2019) has shed light on the lack of common theoretical underpinnings to contribute to the digital literature within the purchasing function. To address murky definitions and the missing theoretical basis in the field of purchasing and supply chain management, Kosmol et al. (2019) argue that research in purchasing and supply chain management needs to adopt a supply chain practice view (SCPV)

to investigate how digital procurement practices (i.e., "the use of advanced 'digital technologies' for procurement purposes" (Srai & Lorentz, 2019, p. 15)) are impacting the purchasing function. The theoretical framework and the definition of digital procurement practices not only allow for the investigation of the digital phenomenon from the buyer-side, but they also consider the role played by suppliers in the digitalisation processes, given that the procurement department acts as an interface between internal and external partners, and between inner capacities and external accomplices (van Weele & van Raaij, 2014, p. 63).

Adopting the SCPV in examining digital procurement practices allows for a comprehensive analysis of the digital transformation within purchasing units, taking into account the interrelational aspects (Kosmol et al., 2019, p. 3). This perspective aligns well with the literature on PCS. On one hand, PCS is driven by supplier satisfaction, which serves as an indicator of the quality of buyer-supplier relationships and is influenced, among other factors, by operational excellence (Vos et al., 2016, p. 4620). On the other hand, digital procurement practices are predicated upon the digital integration between buyers and suppliers, which subsequently affects both operational performance and relationship quality (Nasiri et al., 2020; Srai & Lorentz, 2019, pp. 80, 5). Consequently, the interconnected nature of digital procurement practices and PCS necessitates further exploration in order to better understand and quantify the underlying interrelationships at play.

The aim of this thesis is to find out how digital procurement practices can be traced out in the preferred customership framework. Indeed, this stream of research is far from complete, and an investigation of the role of digitalisation gives a sensible contribution to this field. Indeed, as underlined by Vos (2017), increasing the knowledge about the impact of digitalisation on the supplier satisfaction is an absolute priority, given its disruptive potential. Therefore, the following research question is addressed:

How do digital procurement practices impact operative excellence and supplier satisfaction in the buyer-supplier relationship?

1.3 Contribution to the literature and implication for practise: a digital addendum

The paper contributes to purchasing theory and practice in several ways.
Concerning the theoretical implication, the goal of the paper is three-fold. Firstly, drawing upon the SCPV and the conceptualisation of digital procurement practices put forth by Kosmol et al. (2019), this thesis represents one of the initial contributions to quantitatively investigate the role of such practices while incorporating the social exchange theory (SET) with the supply chain practice view (SCPV). Secondly, this paper extends the conceptual model proposed by Vos et al. (2016) by integrating the prevalent phenomenon of digital procurement practices, thereby offering additional empirical support to enhance the model's explanatory and predictive capabilities. Thirdly, the thesis makes a significant contribution to the broader discourse on digital transformation. It provides a comprehensive review of literature related to digital transformation, aiming to offer a consolidated overview of key definitions associated with digital phenomena in business studies. The research underscores the critical importance of employing precise definitions and focused operationalisation of variables when investigating digital phenomena in purchasing and supply management studies.

With respect to practitioners, this work also has managerial implications. First, it provides to purchasing professionals actionable insights to exploit buyer-supplier relationships in the digital age, providing results that enrich the information set to leverage the digital disruption for a long-term competitive advantage. Second, the paper enlightens practitioners to direct resources towards strategic areas that are crucial for maximising the chances of being the preferred customer in a digitally transforming business environment.

The rest of this paper is organised as follows. The next section provides a brief overview of the key theoretical foundations of preferred customer status, including the benefits that result from it. This is followed by a review of the literature on digital transformation and its relationship with preferred customership. On the basis of this theory, a set of hypotheses is formulated. The methodology section then details the methods used in the analysis. The results are finally presented and discussed.

2 Theoretical background: supplier satisfaction theory and the role of digital procurement

2.1 Supplier satisfaction and the preferred customer status: social exchange theory, benefits and antecedents

2.1.1 Social exchange theory and the preferred customer concept: a theoretical framework

Traditionally, suppliers try to persuade the buying firm to effectuate the purchases of goods. However, in recent time the buyer-supplier relationship is often inverted. In marketing literature, the shift of focus is defined as "reverse marketing in which '(...) the buyer tries to persuade the supplier to provide exactly what the buyer's organisation needs.' (Blenkhorn & Banting, 1991, p. 187). The main phenomena that help explain the rise of "reverse marketing" are the change in the competitive landscape, the transformation of the purchasing organisation, and the economic shocks that have led buyers to look for the best supplier.

Firstly, 'in current supply markets, customers often face the challenge of a decreasing number of potential suppliers.' (Hüttinger et al., 2014, p. 697). Indeed, as markets become more mature, firms tend to reduce the supply base in order to reduce transaction costs and exploit economies of scales. As a result, the supply market has experienced a consolidation that led to an oligopolistic structure, which other than conferring market power to suppliers is a sub-efficient configuration. In fact, the major effect of an oligopolistic supplier market is the scarcity of suppliers, triggering the buyer's competition to conquer the most capable supplier (Lavie, 2007; Vos et al., 2016, pp. 1207, 4613).

Secondly, the purchasing function has expanded its objectives, shifting from ensuring safe, timely and sufficient supply at appropriate quality with the lowest possible costs to facilitating innovation and establishing the competitive positioning of the firm (Schiele, 2019, p. 48). In particular, from 1990 the locus of innovation has increasingly shifted to the supplier side, since as the technology progresses the need for specialisation becomes crucial (Slowinski et al., 2009, p. 30). Moreover, the impact of purchasing on total revenue has increased dramatically in recent times. This, coupled with the scarcity of suppliers, implies that to outbeat competitors, a strategic interaction with the supplier is essential to acquire the best resources (Kraljic, 1983).

Thirdly, recent shocks such as the pandemic and the Ukrainian conflict have shed light on the importance of having resilient supply networks. Indeed, when the supply chain disruptions occur, being supplied by the best supplier results in having scarce resources that competitors cannot afford. As a result, building a strong relationship with supplier not only generates risk mitigation but creates also a competitive wedge in time of crisis.

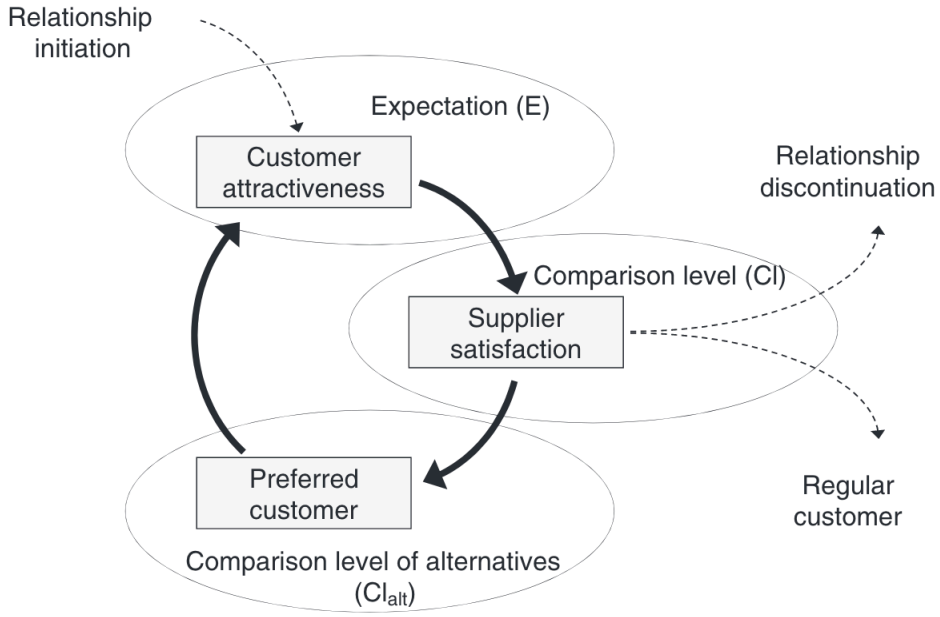
An effective strategy to win competitive supply markets, access innovation, and better respond to shocks is to achieve the preferred customer status (Schiele et al., 2011; Vos et al., 2016, pp. 2, 4613). A preferred customer is, as Steinle and Schiele (2008, p. 4) propose, a customer who receives a preferential allocation of resources from certain suppliers. In particular, suppliers grant the buyer preferential customer status if the customer is considered attractive and if the supplier is currently satisfied with the customer rather than with other customers. As a result of this satisfaction, suppliers react by providing the preferred customer with a privileged allocation of resources (Schiele et al., 2012, p. 1181).

In existing studies, social exchange theory (SET) has been used by numerous researchers to investigate the process of attaining and maintaining PCS. Originally, SET was defined as a theory that describes the formation of relationships between two individuals through a process that creates obligations (Cropanzano & Mitchell, 2005, p. 874). Essentially, this theory evaluates the value of a relationship by considering its benefits and drawbacks. When a relationship is unbalanced, one of the exchange partners may want to abandon the situation, provided that a superior alternative exists. On the other hand, a mutually dependent and high-quality relationship has the capacity to produce exceptional connections, such as the PCS observed in inter-firm relationships (Cropanzano & Mitchell, 2005, p. 874).

Social exchange theory has become increasingly relevant in organisational relationships. Schiele et al. (2012, p. 1179) introduced the circle of PCS, grounded in social exchange theory. The model (Figure 2.1) emphasises customer attractiveness and supplier satisfaction as necessary conditions for achieving PCS. Customer attractiveness helps a buying organisation become vis-

ible to potential suppliers, while supplier satisfaction distinguishes the buyer from alternatives, positively impacting customer attractiveness (Pulles et al., 2016, p. 138). A highly satisfied supplier views the purchasing firm as an attractive partner for future collaboration, making supplier satisfaction a crucial factor in achieving PCS.

Figure 2.1: The cycle of preferred customership.



Source: Schiele, H., Calvi, R., & Gibbert, M. (2012). Customer attractiveness, supplier satisfaction and preferred customer status: Introduction, definitions and an overarching framework. *Industrial Marketing Management*, *41*(8), 1178–1185. https://doi.org/10.1016/j.indmarman.2012.10.002

2.1.2 The main benefits in the presence of supplier satisfaction and preferred customership

Supplier satisfaction is a relational dimension that impacts the quality of the buyer-supplier relationship. Building on the definition of supplier satisfaction, from a SET perspective, allows one to create a profitable exchange of value between the parties involved in the relation, that is, the buyer and suppliers (Benton & Maloni, 2005; Essig & Amann, 2009; Pulles et al., 2016).

In addition, the satisfaction of the suppliers, as suggested by different scholars (Hüttinger et al., 2014; Schiele et al., 2012; Vos, 2017) represents a necessary condition to achieve the preferred customer. Benefits resulting from preferred customership can be grouped into four main groups, pricing behavioural benefits; technology benefits; resources and time benefits; and risk mitiga-

tion benefits (Schiele et al., 2012, p. 18).

In terms of pricing benefits, it can be argued that preferred customers have a more favourable pricing behaviour than their competing buyers. To support this claim, Blenkhorn and Banting (1991, p. 188) found that preferred customers can achieve price savings ranging from 5 to 30%. Besides, Nollet et al. (2012, p. 2012)found that suppliers are more receptive to further price negotiations with their preferred customers and can contribute to the potential for cost savings by implementing inventory management or decreasing manufacturing costs.

In addition to pricing benefits, being a supplier's preferred customer can also result in benefits for the company's products, technology, or innovations. By being the preferred customer of strategic suppliers, the buyer can gain access to the supplier's innovations before competitors or receive dedicated supplier personnel for new product development activities (Schiele, 2006, p. 46). Preferred customers can often have a say in the research direction of suppliers, resulting in a more customised product from that supplier (Schiele, 2012, p. 47). Nollet et al. (2012, p. 2012) also found that preferred customers receive benefits in terms of more consistent quality levels, better support, and increased responsiveness.

In terms of time and resources, a PCS can result in reduced lead times, increased supplier responsiveness, and greater flexibility to eventual short-term demands of the customer (Christiansen & Maltz, 2002, p. 186). Suppliers often take special care of orders, deliver missing components on short notice, keep safety stocks, and even establish warehouses closer to the customer. Additionally, preferred customers may have early access to new material or technology and can receive new material from the supplier for testing and acquisition before competitors, or even before commercial release (Christiansen & Maltz, 2002, p. 181). Some scholars also found a significant relationship of PCS with respect to technology access, since being a preferred customer of a supplier fully moderates the relationship between the buyer's inducement and the supplier's reciprocation in terms of technology access (Ellis et al., 2012, p. 1265).

Finally, preferred customers may gain access to the supplier's resources before competitors in

case of resource bottlenecks which may emerge through natural catastrophes, configuring PCS as a risk mitigation strategy. For example, the COVID-19 pandemic has underscored the vulnerability of critical supply chains, for example, businesses worldwide that rely on China's semiconductors and chips. Furthermore, sanctions against Russia due to the Ukrainian war limit the availability of crucial raw materials and energy for several manufacturing industries in many countries, especially in Europe. Therefore, it is essential for buyers to understand how to gain PCS to increase access to valuable resources (Jääskeläinen et al., 2022, p. 386).

In conclusion, it can be argued that companies that are preferred customers of certain suppliers can benefit from the supply relationship in ways that competitors cannot. These benefits can be categorised as price and pricing behaviour, product, technology, and innovation, and benefits with respect to resources, time, and risk mitigation. Companies must be attractive customers and achieve high levels of supplier satisfaction to reap these benefits. The following section examines the role supplier satisfaction plays in attaining preferred customer status, as well as its antecedents.

2.1.3 The antecedents of the preferred customer status: supplier satisfaction

The PCS has been framed in the context of SET and the path to award such a status has been explained by the preferred customer circle (Schiele et al., 2012, p. 1180) (Figure 2.1). The cycle starts with the act of being attractive towards suppliers in order to initiate the relationship, and therefore having the characteristic to deliver possible value to suppliers. Once the relationship is initiated, the buying firm must satisfy the suppliers and, as noted by Pulles et al. (2016, p. 136) satisfaction is conceptually different from attractiveness. In fact, a customer can be attractive, but this is not a sufficient condition to satisfy the supplier (Huttinger et al., 2012, p. 1198). Therefore, satisfaction is the relevant antecedent of PCS once a relationship is in place.

To clarify what is intended by considering satisfied suppliers, it is necessary to provide a definition of supplier satisfaction. Numerous scholars have endeavoured to delineate the notion of supplier satisfaction. For example, Benton and Maloni (2005, p. 2) characterise it as "a feeling

of equity within the supply chain relationship, irrespective of the power imbalances that may exist between the buyer-seller dyad." In contrast, Essig and Amann (2009, p. 103) define supplier satisfaction as "a supplier's sense of fairness concerning the buyer's incentives and the supplier's contributions within an industrial buyer-seller relationship". Although these definitions diverge in the scenarios they depict, they share a fundamental tenet: suppliers should experience a sense of fulfilment within the relationship. As such, supplier satisfaction can be perceived as a state achieved when the quality of the outcomes derived from a buyer-supplier relationship aligns with or exceeds the supplier's expectations (Pulles et al., 2016; Schiele et al., 2012, pp. 131, 1181).

The supplier satisfaction is pivotal in achieveinvig the PCS. First and foremost, it is imperative to note that being the most prominent client of a supplier does not inherently secure PCS (Bemelmans et al., 2015; Schiele et al., 2012, p. 192). Suppliers evaluate their favoured clientele on different dimensions. Drawing upon SET, the literature reveals that suppliers determine PCS by comparing alternative exchange relationships (Schiele et al., 2012, p. 1180). Specifically, they engage in relationships that force the beneficiary of a particular inducement to reciprocate voluntarily, providing a benefit in return (Ellis et al., 2012; Schiele et al., 2012, p. 1260). Consequently, satisfaction serves as a crucial element of exchange, catalysing the potential to attain the coveted PCS.

Secondly, Schiele et al. (2015, p. 137) elucidate the importance of supplier satisfaction, emphasising that buyers should prioritise it to obtain the best resources. On the contrary, Ellegaard and Ritter (2007, p. 155) contend that a discontented supplier is more likely to channel its resources towards other clients. Both theoretical and empirical foundations support these observations. Social Exchange Theory posits that satisfying suppliers is a prerequisite to achieving PCS and, subsequently, preferential treatment (Schiele et al., 2012, p. 1179). Empirically, the research conducted by Vos et al. (2016) substantiates the notion that supplier satisfaction predominantly accounts for the variance in PCS and preferential treatment. As such, supplier satisfaction emerges as a critical antecedent for preferred customership, which ultimately leads to preferential treatment.

The comprehensive model of Vos et al. (2016, p. 4620) can be considered the state-of-the-art of supplier satisfaction research. In particular, the model building on Hüttinger et al. (2014) found that first-tier antecedents of supplier satisfaction can be divided into relational and economical ones. These antecedents are essential to satisfy the suppliers and they are then relevant either in theory and practise. Therefore, they are presented in the next section.

2.1.4 Critical antecedents of supplier satisfaction: relational behavior, operative excellence, profitability and growth opportunity

Building upon the research conducted by Schiele et al. (2012), Hüttinger et al. (2014) broadened the understanding of the preferred customership cycle by exploring the antecedents of customer attractiveness, supplier satisfaction and PCS. Factors that contribute to supplier satisfaction in this framework include growth opportunity, operational excellence and relational behaviour (see Table 2.1).

Subsequently, Vos et al. (2016) enhanced the research framework by incorporating the profitability factor and differentiating between direct and indirect procurement processes. Furthermore, Vos et al. (2016) applied an updated model based on significance and path coefficients to optimise its explanatory capacity. This led to a more precise delimitation among economic and relational antecedents. In the initial tiers of the refined model, (1) profitability, (2) growth potential, (3) relational behaviour, and (4) operative excellence directly influence supplier satisfaction. Table 2.1 offers a comprehensive overview of the constructs used in this framework, detailing their definitions.

In conclusion, Vos et al. (2016, p. 4620) conducted an investigation that has been widely cited by scholars to advance understanding of supplier satisfaction. However, the landscape of supplier satisfaction and its antecedents is rapidly changing due to the wave of digitalisation. Specifically, operational excellence is one of the primary factors likely to be influenced by digital transformation. Operational excellence refers to the supplier's perception of the buying firm's ability to efficiently manage its operations. As highlighted by various authors (Bienhaus & Haddud, 2018;

Table 2.1: Definitions of critical antecedents of supplier satisfaction.

Construct	Definition	Refrecence
Growth opportunity	Growth opportunity refers to the suppliers' ability to grow together with the buying firm and to generate new potential business opportunities through the relationship	Walter et al., 2001; Walter et al., 2003
Operative excellence	Operative excellence is the supplier's perception that the buying firm's operations are handled in a sorrow and efficient way, which facilitates the way of doing business for the supplier	-
Relational behaviour	Relational behavior refers to the buying firm's behavior towards the supplier with regards to the relational focus of exchange capturing multiple facets of the exchange behavior such as solidarity, mutuality, and flexibility	Palmatier et al., 2007; Griffith et al., 2006
Profitability	"the margins achieved and profitability of the buyer–supplier relationship"	Hald et al. (2009) and Ramsay and Wagner (2009)

Source: Hüttinger, L., Schiele, H., & Schröer, D. (2014). Exploring the antecedents of preferential customer treatment by suppliers: A mixed methods approach [Publisher: Emerald Group Publishing Limited]. *Supply Chain Management: An International Journal*, *19*(5), 697–721. https://doi.org/10.1108/SCM-06-2014-0194

Büyüközkan & Göçer, 2018; Flechsig et al., 2022, pp. 166, 974, 2), the digitisation of procurement processes contributes to gains in productivity and efficiency, thus influencing operational excellence. Additionally, digitalisation is expected to reshape levels of transparency and trust (Scuotto et al., 2017, p. 1382), facilitated by easier information exchange. Consequently, digital procurement practices are believed to have a significant impact on supplier satisfaction. Given its statistical robustness, the model proposed by Vos et al. (2016, p. 4620) serves as the foundational framework for this thesis, representing one of the most significant empirical contributions in supplier satisfaction studies.

2.2 Digital procurement: definitions, theoretical framework, antecedents and consequences

Digital and its related words: a definition for the purchasing and supply chain function

The withdrawal of the analogue in the business world began after the mid-1960s, when the first calculators evolved into a configurable system with an affordable price (Rosen, 1969, p. 10). However, the process has accelerated continuously since then, and the introduction of the internet and its related smart technology has dramatically impacted organisations (Abbate, 2000). Whether in business or academia, the adoption of digital-related tools and practices has become the norm. However, it is seldom the case that a precise definition is used to describe the adop-

tion and related practices of ICT. Indeed, most digital-related terms are interchangeably used, although they have different meanings. The following paragraphs aim to provide different definitions of the digital phenomenon and explain why a specific terminology has been chosen for this thesis.

Digitisation is "the technical process of converting analogue signals into a digital form" (Legner et al., 2017, p. 301). On the contrary, digitalisation depicts a state of being digitalised and the process by which entities are affected by the action of 'going digital' (Gong & Ribiere, 2021, p. 13). Therefore, digitisation is a necessary condition for digitalisation but not sufficient. Additionally, the former pertains to a technical change, whereas the latter entails also the effect that digitisation has on organisation, such as practices, technology adoption, and communication.

On the other hand, digital transformation is "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies" (Vial, 2019, p. 121). It can be argued that this is distinct from digitalisation, in the sense that the DT is the change process, while digitalisation is the state of being digitised. However, adding the suffix '-isation' to a verb (i.e., digitalise) denotes the process described by the original verb and the end state that results from the culmination of such a process (Buller & Gamble, 2002, p. 17). This could lead to a conceptual overlap with DT with respect to the process; yet, as noted by Gong and Ribiere (2021), digitalisation is considered to indicate only the end state. Although it may be counterintuitive, the use of definitions that deviate from the dictionary ones is tolerated in the scientific community in order to favour rigour and exhaustiveness (Hunt, 1991, p. 155).

Digitisation, digitalisation and digital transformation can be framed under the socio-technical perspective (Geels & Schot, 2007, p. 401), since they involve the interrelation between human actors and machines shaping the technical and societal domain (Ropohl, 1999, p. 401). These three concepts, as defined above, are so general that the unit of analysis can range from the micro, meso and macro level (Geels & Schot, 2007, p. 401). For this reason, digitisation, digitalisation, and digital transformation are distinct from the general concept of Industry 4.0. The number

'4.0' refers broadly to the Fourth Industrial Revolution and specifically to enabling technologies such as cloud computing, Internet of Things and cyber-physical systems (Hermann et al., 2016; Kagermann, 2017; Lu, 2017). Therefore, Industry 4.0 in the context of a multiple-level perspective applies only to the macro-sphere, implying that the term "Industry 4.0" may be vague when referring to an organisation.

The unit of analysis of this thesis is the organisation, implying the need for a sharp and appropriate definition of the digital phenomenon. In addition, since the act of 'going digital' has an impact on the organisation and transforms the organisational setting, scholars noted that a change management perspective can be an instructive approach. Borrowing from the change management literature, the digital transformation construct can be framed as a process of planning, implementing, and monitoring changes to an organisation (Kennedy, 2004). Although change is often regarded as an organisation-wide process, it happens at various levels of the organisation, varying in magnitude depending on whether it relates more to strategy or operations (Wilson, 1992). In particular, DT operates at the strategic level, given that its disruptive effect directly impacts the business model (Singh & Hess, 2017, p. 207). However, it can be argued that DT is a highly strategic change phenomenon, but it is not a monolith, which impacts unidirectionally and homogeneously the organisation. Thus, as argued by Gareis (2010, p. 316), while the change is dominant in the medium and long term, the projects and programmes at the functional level are the ones which make up the overall change (Gareis, 2010, p. 316).

The concept of digital transformation can be considered as a composite construct, encompassing multiple digital projects within an organisation. In this context, the primary focus of this thesis lies on examining digital procurement practices, which can be construed as a constituent project or program within the broader digital transformation framework. As Srai and Lorentz (2019, p. 15) define, digital procurement practices involve "the use of advanced 'digital technologies' for procurement purposes". By scrutinising digital practices in the procurement domain, this thesis aims to address a specific and pertinent issue, while also contributing to the literature, which currently exhibits a scarcity of research on digital aspects. For the sake of clarity, Table 2.2 presents the definitions and levels of analysis for digitisation, digitalisation, digital

transformation, Industry 4.0 and digital procurement practices.

Table 2.2: Summary table of digital-related term

Term	**Definition**	**Authors**
Digitisation	*"the technical process of converting analogue signals into a digital form"*	(Legner et al., 2017, p. 301)
Digitalisation	*"a state of being digitalised and the process by which entities are affected by the action of 'going digital'"*	(Gong & Ribiere, 2021, p. 13)
Digital Transformation	*"a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies"*	(Vial, 2019, p. 121)
Industry 4.0	*"The Fourth Industrial Revolution and specifically the enabling technologies such as cloud computing, Internet of Things (IoT) and cyber-physical systems (CPS)"*	(Hermann et al., 2016; Kagermann, 2017; Lu, 2017)
Digital Procurement Practices	***"the use of advanced 'digital technologies' for procurement purposes"***	**(Srai & Lorentz, 2019, p. 15)**

The supply chain practice view as a theoretical basis for digital procurement

Chicksand et al. (2012, p. 14) found that approximately 66% of the academic articles on supply chain management examined in their review of the literature did not rely on any specific "grand theory." The lack of a theoretical base hindered the development of a coherent body of research and, on the other hand, has led to findings with low prediction power for practitioners (Bacharach, 1989, p. 501).

Investigating the challenges of missing an exhaustive theory in SCM literature, Spina et al. (2016) argued that two major approaches have been implemented. First, some scholars have

adapted "grand theories" such as resource-based view (Barney, 1991) or transaction cost economics (Williamson, 2008) to the SCM field in order to rely on consolidated theoretical frameworks and facilitate recognition in other areas of management research. Second, researchers may opt to use mid-range theories that have been developed within the SCM field or in the broader supply chain discipline. The use of mid-range theories could align more effectively with the specific characteristics of SCM-related phenomena, as it takes into account essential constructs associated with managing the supply base, including sourcing decisions, buyer-supplier relationships, the supply chain, and supply networks. C. R. Carter et al. (2017) and Spina et al. (2016) have both highlighted the importance of this approach.

Adopting mid-range theory in digital procurement practices can be extremely insightful, as noted by Kosmol et al. (2019, p. 2). In particular, the author argued that the supply chain practice view (SCPV) is an effective theoretical lens for research digital-related phenomena within the SCM for two main reasons. In the first place, SCPV takes a holistic view that incorporates the antecedents and use of digital technologies in procurement, as well as the performance outcome. In the second place, it considers the interaction between the buyer and the supplier by focusing on the dyad or network level of analysis for each of these elements.

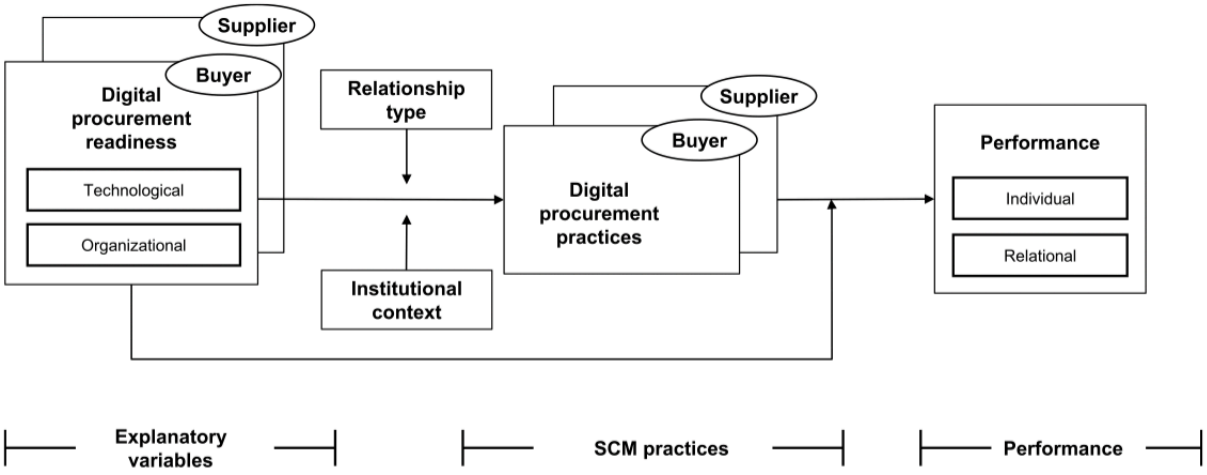
The holistic approach in combination with the focus on the dyadic level of analysis is rooted in the theoretical foundation of the SCPV. The former is grounded in strategic management research, extending it to the inter-organisational level of analysis. Indeed, SCPV is based on practice-based view (Bromiley & Rau, 2014) which, in contrast to the RBV that is centred on the differences in valuable, rare, inimitable and non-replicable resources (Barney, 1991), explains variations among firm performance based on imitable and transferable practices. These practices are "a defined activity or set of activities that a variety of firms might execute" (Bromiley & Rau, 2014, p. 1249). Therefore, the SCPV model seeks to explain why firms adopt SCM practices and how the use of these practices leads to improved relational and economic performance within the supply chain.

The explanation of the reasons why a firm adopts digital procurement practices along with

the consideration of relational performance represents a promising theoretical perspective to investigate digital procurement in this thesis. In particular, SCPV theory allows to study digital procurement practices disentangling the crucial antecedents and the performance outcomes. Additionally, SCPV explicitly considers the interplay between the buyer and the supplier, focussing on the dyadic or network level of analysis, so that it offers an inter-organisational perspective that permits to account for the role of suppliers.

Therefore, since this thesis specifically investigates the dyadic level (i.e., buyer-supplier relationship) in the context of supplier satisfaction and PCS, SCPV allows integration of the impact of digital procurement practices in the satisfaction research model proposed by Vos et al. (2016). A theoretical model for applying SCPV to digital procurement is presented in Figure 2.2, which extends previous studies on the use perspective of digitalisation in SCM and provides a conceptual framework for conducting the research of this thesis.

Figure 2.2: A supply chain practice view on digital procurement.



Source: Kosmol, T., Reimann, F., & Kaufmann, L. (2019). You'll never walk alone: Why we need a supply chain practice view on digital procurement. *Journal of Purchasing and Supply Management*, *25*(4), 100553. https://doi.org/10.1016/j.pursup.2019.100553

The antecedents of digital procurement

The SCPV framework, proposed by Kosmol et al. (2019), aims to study digital procurement practices and includes digital readiness on both sides of the buyer-supplier dyad as an explanatory factor for the adoption of digital technologies, as illustrated in Figure 2.2. Digital procurement readiness is defined as a company's ability to embrace and use new digital technologies in procurement (Parasuraman, 2000, p. 308). To disentangle the elements constituting digital readiness, the TOE framework is considered. Tornatzky and Klein (1982, p. 75) divided the antecedents of technology adoption into technological, organisational, and environmental readiness. Therefore, digital procurement readiness can be assessed using the TOE framework.

Although digital readiness is assessed within an organization, it is necessary to consider both the buyer and supplier simultaneously to account for the consequences on their relationship. Indeed, within the supply chain, each organization is not isolated but rather constantly interacts with other parties, such as through buyer-supplier relationships (C. R. Carter et al., 2017, p. 118). Moreover, the interrelationship between buyers and suppliers plays an even more central role in today's digital landscape. Technology has advanced and become more collaborative (Srai & Lorentz, 2019, p. 78), requiring the alignment of supplier and buyer digital readiness for successful implementation (Kosmol et al., 2019, p. 13). Focussing on the buyer side, (Bruque-Cámara et al., 2016, p. 150) have argued that the effective implementation of digital procurement practices is likely to be influenced not only by a supplier's readiness but may also depend on it. Therefore, studying the digital readiness of both sides of the buyer-supplier relationship is of utmost importance.

Buyer digital readiness

The buyer's digital readiness, as suggested by Kosmol et al. (2019), can be conceptualised using the TOE framework (Tornatzky & Klein, 1982, p. 75), which consists of technological, organisational, and environmental readiness.

First, technological readiness is defined as the "ability to embrace and use new technologi-

cal assets" (Richey et al., 2007, p. 195). As argued by Chen et al. (2015, p. 16), technological readiness can be conceptualised by considering the instrumental benefits of using the technology and the congruence of technology use with the existing practices of potential users. Therefore, technological readiness comprises expected benefits and technological compatibility, defined respectively as "the anticipated benefits, including both the operational and strategic advantages to the organisation, gained from using a new technology" (Venkatesh & Bala, 2012, p. 1117) and "the degree to which the innovation is perceived as consistent with the existing values, past experiences, and needs of the potential adopter" (Rogers, 1983, p. 63).

Second, Iacovou et al. (1995, p. 468) defined organisational readiness as the availability of the necessary organisational resources. In particular, as argued by Chen et al. (2015, p. 18), the critical resources are considered the IT human resource skills and an appropriate level of financial resources.

Third, environmental readiness is deemed to measure the capability of a company to react to environmental factors. Previous research demonstrates that in the SCM setting, the relevant environmental factor is the supply market (Tornatzky & Klein, 1982, p. 75). In the context of digital procurement, the interaction between purchasing firms plays a central role. Therefore, the most prominent environmental factor considered is supplier-side digital readiness (Kosmol et al., 2019, p. 5).

Supplier Digital Readiness

In SCM, the buyer cannot see itself as an independent entity but as a complementary partner of the supplier. Digital procurement practices have a direct impact on suppliers operations and on the relationship, so that the buyer firm is not able to achieve a successful digital implementation if not in tight collaboration with its supply partner (Kosmol et al., 2019, p. 5). Thus, supplier-side digital readiness is a necessary condition to allow for a successful digitalisation of the purchasing organisation.

Supplier-side digital readiness concerns the extent to which the firm is capable of engaging in digital interaction across the firm's boundaries, i.e., with its customers. Similarly to the buyers, the supplier digital readiness encompasses the dimension of the TOE framework, which are organisational, technological, and environmental readiness (Tornatzky & Klein, 1982, p. 75). In addition, the TOE framework can be applied specularly to the supplier, taking into consideration the same dimensions outlined for the buyer side.

However, buyer-supplier relationship is influenced by either poles of the dyad. In the first place, it requires that the supplier displays considerable digitalisation level in order to benefit from digital procurement practices (Tornatzky & Klein, 1982, p. 75). In the second place, as demonstrated by Kosmol et al. (2019), buyers and suppliers need a comparable level of digital readiness to implement successful digital procurement practices. Therefore, the adoption of digital techniques with the SCM must be analysed at the inter-organisational level, given the complementarity of buyers and suppliers.

2.2.1 Digital procurement practices: definition and construct development

Digital procurement practices refer to the use of digital technologies for procurement purposes. Srai and Lorentz (2019, p. 5) have differentiated between basic and advanced technology adoption in digital procurement practices. Basic technology adoption involves using the internet to carry out procurement activities, while advanced technology adoption includes cutting-edge technologies such as cloud computing, IoT, additive manufacturing, and big data analytics.

Although scanning the technological landscape exhaustively is rather complex, the mapping proposed by Srai and Lorentz (2019, p. 5) helps distinguish technologies with respect to their focus; this is the external or internal interface. Digital procurement practices are dyadic in nature, as they impact the supplier directly or indirectly. For instance, Robots Process Automation (RPA) is designed to automate the internal e-procurement process, impacting suppliers indirectly, whereas machine-to-machine communication for forecasting purposes influences the supplier directly. Therefore, this approach helps to focus on the effect of digitalisation on the problem

holder, that is, in the case of this work, the buyer-supplier relationship.

In line with the conceptualisations of Srai and Lorentz (2019, p. 6), it is essential to position the phenomenon of digitalisation within the context of the buyer-supplier relationship. The focus of digital procurement practices primarily lies between the supplier and the buyer. Consequently, this research aims to investigate how digital procurement practices influence the buyer-supplier relationship. These practices occur throughout the purchasing cycle, starting from sourcing and extending to order processing, with knowledge transfer in between, thus influencing the way in which the buyer and supplier interacts.

Charting the technologies embraced and determining the extent of digitalisation present considerable difficulties, making it difficult to create a valid and reliable structure for digital procurement procedures. However, drawing upon the contribution of Srai and Lorentz (2019), Mishra et al. (2023, p. 10) conceptualise and validate this construct in this domain. The author argues that constructing a framework to digitalise the purchasing function is a crucial element in advancing knowledge in procurement and supply chain management.

Furthermore, Mishra et al.'s construct (2023, p. 10) builds on the work of Srai and Lorentz (2023) regarding digital procurement practices in procurement and supply management. Although Mishra et al. (2023, p. 10) employ a different terminology for the construct, the underlying definition aligns with the one used in this research. Hence, the construct proposed by Mishra et al. (2023, p. 10) is adopted in this study.

Digital Procurement and its impact buyer-supplier relations

The evidence that digital transformation has a positive impact on business performance is solid. Indeed, the literature review conducted by Vial (2019) has extensive support for this statement. The authors take operative excellence as a sub-dimension of business performance, which has been found to be enhanced by digital transformation in 36 empirical works. In summary, the main findings report that the adoption of IoT, AI, and big data analytics helps streamline pro-

cesses, optimise resource utilisation, and reduce manual intervention, thereby increasing overall efficiency. Additionally, as underlined by different scholars, digital practices have the power to enhance business relationships because they increase transparency, trust, and collaboration (Bienhaus & Haddud, 2018; Büyüközkan & Göçer, 2018, pp. 167, 947).

Digital procurement practices and its outcome on operative excellence

From a supply management standpoint, operational excellence is delineated as "the supplier's perception of the buying firm's operations being managed in a meticulous and proficient manner, thereby facilitating the process of conducting business for the supplier" (Hüttinger et al., 2014, p. 703). This definition's utility is twofold. On the one hand, operational excellence is examined from the perspective of suppliers, who are paramount stakeholders in the procurement process. Conversely, the definition accentuates the relational aspect of operational excellence, positioning it as a metric associated with the dyadic level of analysis.

In a parallel manner, digital procurement practices exert influence on both the supplier side and the relationship dynamics, and in turn to operative excellence. Numerous scholars have underscored the dramatic efficiency gains digitalisation has introduced within the purchasing function, leading to decreased error rates and expedited processes from sourcing to procurement (Bienhaus & Haddud, 2018; Büyüközkan & Göçer, 2018; Flechsig et al., 2022, pp. 166, 974, 2). A compelling example in this context is offered by the application of Robotic Process Automation (RPA), as documented by Viale and Zouari (2020). The authors discovered that RPA not only helps automate redundant and time-consuming operations, but also enhances reliability and transparency (Viale & Zouari, 2020, p. 190). Consequently, it has been observed that suppliers perceive the buying company as more efficient and find its modus operandi more appealing. Therefore, digital practices, as posited by Flechsig et al. (2022, p. 6), can be identified as crucial antecedents of operational excellence since they enhance the buying firm's operations and the way of doing business.

Supplier satisfaction and the role of digital procurement

Supplier satisfaction refers to the capacity of a buyer to fulfill the expectations of their suppliers, which is significantly influenced by the nature of the buyer-supplier relationship (Forker & Stannack, 2000; Schiele et al., 2012, pp. 1180, 31). Recent developments in digital procurement practices have necessitated a reevaluation of these relationships and expectations, as digitalisation has begun to disrupt traditional supply chain dynamics (Bienhaus & Haddud, 2018; Scuotto et al., 2017, pp. 1382, 978).

One notable aspect of digitalisation in procurement is the emergence of machine-to-machine communication, which allows for a more transparent and real-time exchange of information between buyers and suppliers. This reduction in information asymmetry enhances transparency and fosters an environment conducive to effective collaboration and trust-building (Scuotto et al., 2017, p. 1382). Furthermore, access to richer information sets facilitates more informed decision-making, leading to smoother processes and reduced conflict potential. For example, the use of Robotic Process Automation (RPA) enables the automatic sharing of demand fluctuations for specific product categories, allowing suppliers to optimise inventory management and prevent over- or under-production (Srai & Lorentz, 2019, p. 8).

The integration of digital practices in procurement, resulting in synergistic communication, enhances transparency and trust, ultimately enabling buyers to more consistently meet supplier expectations (Bienhaus & Haddud, 2018, p. 978). Consequently, the impact of digital procurement practices on supplier satisfaction merits examination. Empirically, Ganguly and Roy (2021, p. 258) investigated the influence of digitalisation on supplier satisfaction in procurement, hypothesising a positive and significant relationship. However, their study, conducted in the context of an emerging economy (India), found no empirical support for this hypothesis. The authors posited that the surprising result may be attributable to their chosen sample and suggested that further research in more advanced economies may yield a positive and significant relationship between digitalisation and supplier satisfaction.

In conclusion, the advent of digital procurement practices has the potential to significantly

impact supplier satisfaction by fostering more transparent, efficient, and collaborative buyer-supplier relationships. Further research in advanced economies is necessary to validate the hypothesised positive relationship between digitalisation and supplier satisfaction; thus, this thesis will make a contribution in this direction.

The mediating role of the digital asymmetry: the dark side of digitality

The SCPV model can be expanded by considering mediating and moderating effects (Kosmol et al., 2019, p. 5). Indeed, there might be several factors that exert an effect on the link of digital procurement practices and its influence on performance (i.e., operative excellence). One of the relevant moderating factors is the digital capability asymmetry (DCA), that is the imbalance in adopting and exploiting the benefit of digitalisation (Son et al., 2021, p. 1234).

Anecdotal evidence is provided by General Electric, which failed to transition to e-procurement since the major proportion of its suppliers did not have sufficient capability (Barua et al., 2004, p. 611). As shown by Son et al. (2021, p. 1234), DCA is the "dark side" when it comes to digital transformation phenomena since it may trigger opportunistic behaviour by the digital dominant pole of the dyad. As a result, when opportunistic behaviour is engaged, the relationship deteriorates (Poppo & Zenger, 2002, p. 721), hindering efficiency gains and the improved relational performance driven by digital procurement practices. Therefore, in the context of digital procurement practices, digital asymmetry capability needs to be considered and modelled as a moderating factor.

2.2.2 The role of digital transformation in the preferred customership literature

The perspective of the supplier: a reflexion about the single rater approach

Investigating the buyer-supplier relationship necessitates a decision: to focus research on the relationship itself or to study the relationship from the perspective of one of the two parties involved. As highlighted by Roh et al. (2013), accumulating evidence suggests that the positioning of the research focus is crucial to minimise systematic errors and improve the reliability of measurements. This is primarily due to the risk associated with the exception fallacy, which involves

measuring a construct related to multiple stakeholders from the perspective of only one subsample.

The literature on buyer-supplier relationships provides inconclusive evidence. For instance, some studies, including those by Ellram and Hendrick (1995), have found that buyers and suppliers generally agree on the nature of their partnering relationships. However, other research, such as that conducted by C. Carter (2000) and Whipple et al. (2002), suggests that divergent views on buyer-supplier relationships may exist, particularly regarding alliance satisfaction and unethical behaviour. Roh et al. (2013), attempted to reconcile these contrasting findings by examining the effect of sample data in the context of buyer-supplier relationships. While they did not arrive at a definitive conclusion, their study supports the notion that a multi-stakeholder approach can be beneficial for eliminating potential sources of systematic error. Nevertheless, a single-rater approach may also be valid, provided there is a theoretical and practical basis for postulating agreement between the actors in the buyer-supplier relationship.

In the present study, the research is positioned from the supplier's perspective for two main reasons. First, constructs related to supplier satisfaction and PCS have been already triangulated (Hüttinger et al., 2014) and validated by various empirical studies (Ilkay, 2019; Sende, 2018; Vos et al., 2016; Woolderink, 2021). Second, items related to digital practices are presumed to be perceived similarly by both parties due to the SCPV framework. The adoption of digital procurement practices is inherently a dyadic phenomenon involving both parties in the relationship. Similarly, the antecedents of digital procurement practices are measured from the supplier's perspective, as the perception of relative readiness is deemed more relevant than the absolute level of readiness. Thus, the supplier perspective is adopted given the relevance of the perception and the supposed perceptual agreement on the buyer-relationship in the field of satisfaction and digitalisation.

Integrating preferred customership and supplier satisfaction literature with digital procurement

The influence of digitalisation on relational constructs, such as supplier satisfaction and PCS, warrants further scholarly investigation. Specifically, incorporating the role of digital procurement practices within the context of preferred customer literature serves a dual purpose (Vos, 2017, p. 148).

Firstly, examining the role of digital procurement practices through the lens of SCPV contributes to the ongoing discourse in purchasing and supply chain management research. As noted by Srai and Lorentz (2019, p. 79), there is a dearth of academic literature addressing digitalisation. This research gap can be attributed to an insufficient conceptualisation of digitalisation, which prevent the identification of critical areas of impact. This thesis concentrates on the effects of digital procurement practices concerning buyer-supplier relationships, which are fundamental to both supplier satisfaction and PCS.

Secondly, digitalisation initiatives are primarily aimed at achieving efficiency gains. In the context of supplier satisfaction research, these gains can be observed in the first-tier antecedents of supplier satisfaction, namely operational excellence. Investigating the impact of digitalisation on operational excellence can enhance our understanding of supplier satisfaction. Consequently, this research offers insights for practitioners to capitalise on the benefits of digitalisation, address potential blind spots, and maximise supplier satisfaction in pursuit of preferred customership and preferential treatment.

2.3 Hypothesis and research model: updating the conceptual model of supplier satisfaction, the case of digital procurement practices

As a suggestion for future research, (Vos et al., 2016, p. 4621) have recommended expanding and improving the explanatory and predictive performance of satisfaction measures. Previous studies have shown that supplier satisfaction is a necessary condition for obtaining the PCS (Hüttinger et al., 2014; Vos et al., 2016, pp. 4621, 697). Therefore, it is reasonable to hypothesise that this thesis will yield similar results to those of Vos et al. (2016, p. 4620).

To improve the predictive performance of the satisfaction measures, the antecedents and their relative relationships used in the research model of Vos et al. (2016) will be replicated. This will provide a basis for comparison and further insight into the explanatory weights of each antecedent.

In summary, similar findings are expected to the previously mentioned studies and thus the following hypotheses are proposed.

H1a: Growth opportunity has a positive effect on supplier satisfaction
H1b: Profitability has a positive effect on supplier satisfaction
H1c: Operative excellence has a positive effect on supplier satisfaction
H1d: Relational behaviour has a positive effect on supplier satisfaction
H1e: Supplier satisfaction has a positive effect on the preferred customer status
H1f: Preferred customer status has a positive effect on preferential treatment

The SCPV framework, introduced by Kosmol et al. (2019), serves as a key structure to examine digital procurement practices. This framework incorporates digital readiness from both buyer and supplier within the dyad as a significant explanatory factor for the adoption of digital technologies. Digital procurement readiness is succinctly defined as a firm's capability to adopt and effectively utilize emerging digital technologies within its procurement processes (Parasuraman, 2000, p. 308).

Digital readiness is identified as a crucial antecedent to digital procurement practices. The rationale behind this assertion is that the successful implementation of digital procurement practices necessitates a congruent level of readiness from both parties involved in the transaction. In

this study, particular emphasis is placed on the suppliers' perception of digital readiness, pertaining to both buyers and suppliers. This focus is justified as the phenomenon under investigation is characterized by a perceptual agreement between the two parties.

Furthermore, the suppliers' perspective on digital readiness is deemed critical, as it constitutes a decisive factor influencing the success of digital procurement practices, as outlined in the SCPV framework (Kosmol et al., 2019). In essence, a firm exhibiting higher levels of digital readiness of the buyer and suppliers is inherently more inclined to implement and integrate digital procurement practices successfully. Consequently, the study proposes the following hypotheses:

H2a: Buyer digital readiness has a positive effect on digital procurement practices
H2b: Supplier digital readiness has a positive effect on digital procurement practices

Operational excellence is defined as "the supplier's perception of the buying firm's operations being managed in an assiduous and proficient manner, thereby facilitating the process of conducting business for the supplier" (Hüttinger et al., 2014, p. 703). Concurrently, numerous scholars emphasise the remarkable efficiency gains digitalization has brought to the purchasing function, resulting in diminished error rates and accelerated processes from sourcing to procurement (Bienhaus & Haddud, 2018; Büyüközkan & Göçer, 2018; Flechsig et al., 2022, pp. 166, 974, 2). The research aims to capture the perspective of suppliers regarding digitalization practices. A purchasing organization that is digitalized is posited to be perceived as more proficient by suppliers, thereby impacting the construct of operational excellence. In light of the future research trajectory proposed by Ilkay (2019, p. 49), it is pertinent to examine the extent to which digital procurement practices positevely influence a firm's operative excellence. Consequently, the following hypothesis is formulated:

H3: Digital procurement practices have a positive effect on operative excellence

The satisfaction of suppliers is an important aspect of procurement, as it measures the ability of buyers to meet the expectations of their suppliers, which is greatly influenced by the nature of the buyer-supplier relationship (Forker & Stannack, 2000; Schiele et al., 2012). The advent of

digital procurement practices has led to a re-evaluation of these relationships and expectations, as digitalisation has begun to disrupt traditional supply chain dynamics (Bienhaus & Haddud, 2018; Scuotto et al., 2017, pp. 1382, 978). The integration of digital practices in procurement has resulted in improved communication, transparency, and trust, allowing buyers to consistently meet supplier expectations. Therefore, the perception of digital procurement is a critical factor to meet supplier expectations about the buyer-supplier dyad. In a study conducted by Ganguly and Roy (2021, p. 258), the authors investigated the influence of digitalisation on supplier satisfaction in procurement and hypothesised a positive and significant relationship. However, their study, which was conducted in the context of an emerging economy (India), found no empirical support for this hypothesis. The authors suggested that the surprising result may be due to their chosen sample and recommended further research in more advanced economies to explore the relationship between digitalisation and supplier satisfaction. Given that the present study investigates a company in an advanced economy, it is expected that the finding of Ganguly and Roy (2021, p. 258) will be contradicted, therefore a positive-significant relationship is excpected. Therefore, the following hypothesis is proposed:

H4: Digital procurement practices have a positive effect on supplier satisfaction

As elucidated by Kosmol et al. (2019, p. 13), perceived asymmetry in digital readiness between buyers and suppliers is a pivotal factor that often leads to the unsuccessful implementation of digital practices. This study posits that the successful implementation of digital procurement practices can be assessed only through a dyadic lens. Indeed, this research scrutinises potential discrepancies from the supplier's point of view. The findings suggest that a primary challenge in digitalising the procurement function is the digital heterogeneity within the supply base. This insight underscores the necessity for both buyers and suppliers to possess not only a requisite level of digital capability but also a compatible level of digital competence. In contexts where digital capability asymmetry was observed, digitalisation initiatives were found to be unsuccessful.

In a related study, Son et al. (2021) highlighted that digital capability asymmetry constitutes the "dark side" of digitalisation. The study emphasises that discrepancies in digital capabilities,

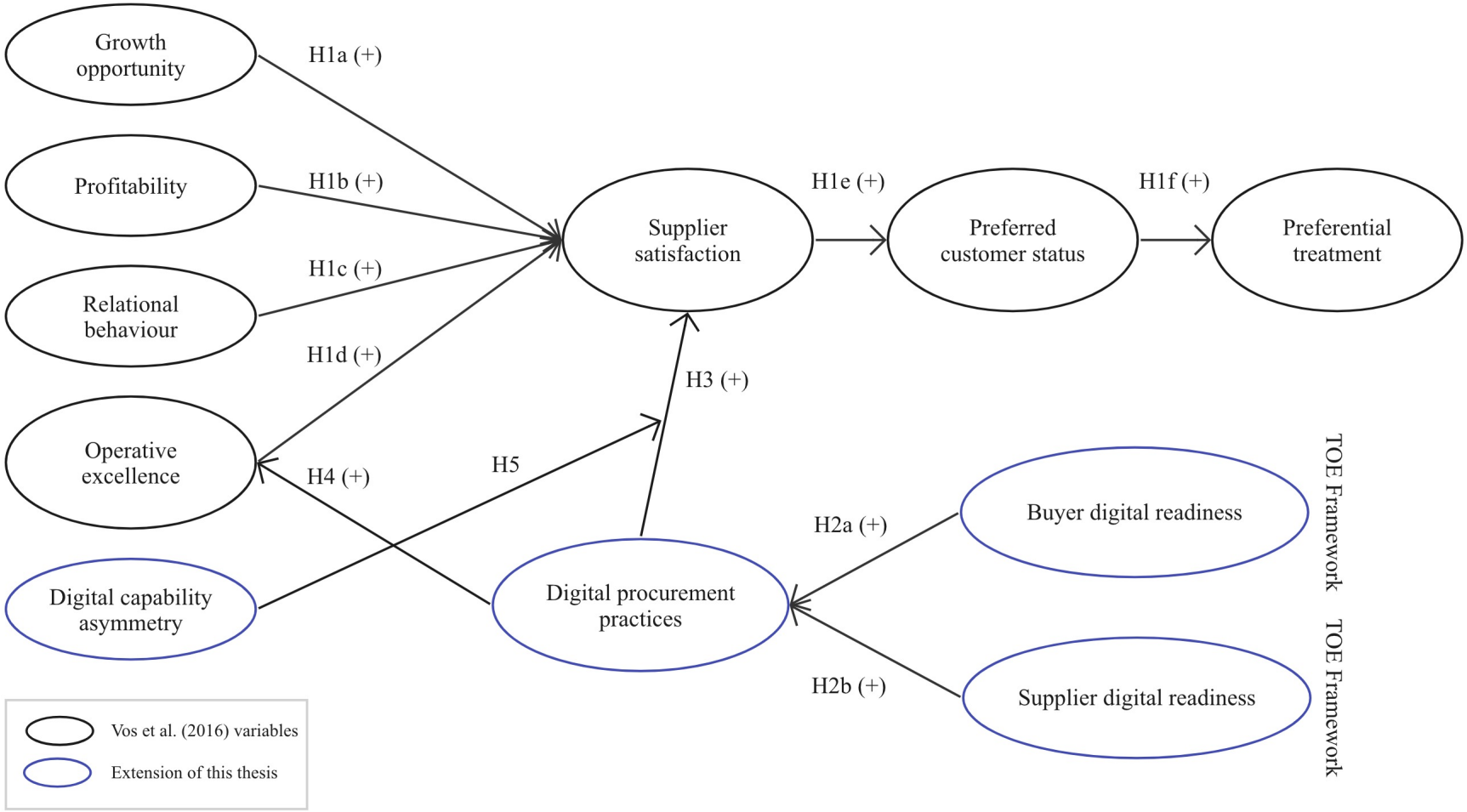
especially when buying firms display superior capabilities, lead to suppliers developing a dependency to access the buyers' capabilities. This dependency, in turn, places buyers in a position of power, potentially leading to opportunistic behaviour by the digitally dominant party within the dyad. Such perceived behaviour, when manifested, deteriorates the relationship (Poppo & Zenger, 2002), hindering the efficiency gains and improved relational performance that digital procurement practices are expected to drive.

In summary, on one hand, digital capability asymmetry influences the positive outcomes of digital procurement practices. On the other hand, it can induce dysfunctional behaviour that could jeopardise the buyer-supplier relationship. Consequently, digital capability is hypothesised to weaken the relation between digital procurement practices and supplier satisfaction:

H5: Digital capability asymmetry has a moderating role between digital procurement practices and supplier satisfaction

A complete overview of the research model is presented in Figure 2.3.

Figure 2.3: Proposed research model



3 Methodology: quantitative hypothesis testing with a questionnaire and structural equation modelling

3.1 Research design: an addition to a state-of-the-art research model

3.1.1 Epistemological position of the research: the survey instrument

One of the prevailing methodologies in business research remains the qualitative approach, predominantly facilitated through the instrument of interviews. As this methodology continues to evolve, it is anchored in the interpretativist epistemological stance, which permits a profound exploration of the intricate theoretical foundations of the constructs under scrutiny. However, such depth often compromises generalisability, a trade-off that scholars must navigate. In juxtaposition, the positivist paradigm contends that reality is an objective entity, able to be elucidated through generally applicable theories (Saunders, 2012).

In the present thesis, a pivot has been made towards a positivistic orientation, underpinned by quantitative methodologies. This decision is informed by two motivations. Initially, the supplier satisfaction survey instrument, which traced its lineage to the pioneering work of Huttinger (2012), has gained significant traction within the domain of supply chain management. Such surveys have the dual advantage of engendering findings with broad applicability, while equipping practitioners with pragmatic insights. Subsequently, the emergent discourse on digital procurement practices has been predominantly characterised by a qualitative approach. This orientation, while rich in depth, has inadvertently circumscribed the universality of its findings, thereby precluding rigorous empirical validation of its foundational theories. As observed by Kosmol (2019), empirical rigour is indispensable, especially within the nascent realm of digitalisation studies. Therefore, the survey instrument is considered the most suitable research method to address the research question.

3.1.2 Questionnaire development: presentation of science-based and validated items

The study employed multi-item scales in the form of a questionnaire to assess both independent and dependent latent variables, to investigate the hypotheses. The questionnaire, which took on average 22 minutes to complete, consists of two parts. The first section examines supplier satisfaction, attractiveness, and preferred customer status, with the questionnaires from Hüttinger

et al. (2014, p. 721) and Vos et al. (2016, p. 4620) serving as the foundation for this replicated portion. This section measures the four main antecedents of the revisited model of Vos et al. (2016, p. 4620), which are growth opportunity, relational behaviour, operative excellence and profitability as well as supplier satisfaction, preferred customer status, and preferential treatment.

The second part of the questionnaire delves into buyer digital readiness, supplier digital readiness, digital procurement practices, and digital capability asymmetry. Digital readiness is assessed from a supplier's perspective for both buyer and supplier using the TOE framework, as operationalized by Chen et al. (2015, p. 20). Digital readiness encompasses the three formative constructs of technological readiness, which consists of expected benefits and technological compatibility, and organisational readiness Chen et al. (2015, p. 20). Digital procurement practices are based on Mishra et al.'s (2023, p. 10), which has been assessed to be a validated and reliable construct. Digital capability asymmetry is gauged using the construct of Son et al. (2021, p. 1244), focussing on potential discrepancies in the digital capabilities of the dyadic poles.

Moreover, all these constructs are measured from the viewpoint of a supplier. While this may seem counterintuitive, as demonstrated by Hüttinger et al. (2014, p. 711), the perspective does not alter the results when there is perceptual agreement on the measured constructs (Roh et al., 2013). Indeed, since this thesis focuses on the perceptions of suppliers regarding relational and digital constructs, the chosen viewpoint does not invalidate the results. Therefore, as argued by Roh et al. (2013), the theoretical motivation for positioning the research excludes the exception fallacy. This approach enables the observation of the relationship with a sizable sample while gathering insights about the buying firm. Additionally, the questionnaire concludes with control questions regarding general information, such as the length of the relationship, annual turnover with the customer, firm type, and the respondent's position.

All the aforementioned dependent and independent variables are measured using a standard 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree'. Multi-item scales are used for all concepts to enhance information reliability and ensure adequate measurement validity (Grapentine, 2001, p. 155)). One might argue that asking suppliers questions about the buying

firm could lead to a social desirability bias. However, given that the questionnaire is managed by an impartial research institution, such bias is considered minimal.

Finally, the final segment of the survey will include the control variables. These variables, namely the duration of the relationship, the magnitude of the company, and the yearly revenue, have been similarly accounted for in the research conducted by Vos et al. (2016, p. 711). The representation of these control variables was through a slider mechanism or an open-ended query format. A comprehensive delineation of the operationalisation of these enquiries, along with their corresponding references, can be found in Appendix A, while in Appendix B a summary of items statistics is presented.

3.2 Data sample description and data collection description

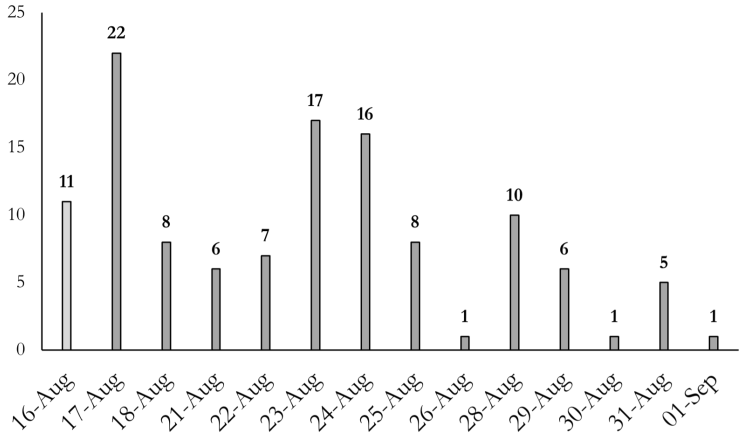
3.2.1 Case company

Confidential

3.2.2 Data collection: adopted procedure based on previous experience

The questionnaire was administered using the Qualtrics® survey tool. Suppliers were approached through a personalised email template. It is essential to note that not all suppliers were deemed suitable for the research. Only those with active purchasing information records in 2022 and transactions exceeding €10,000 were chosen. This criterion ensured that only suppliers with adequate knowledge were contacted to provide reliable information. Consequently, 503 suppliers were contacted: 107 from the United States, 73 from China, 60 from Germany, 47 from India, with the remainder distributed across 48 other countries (see Table 3.1). The diverse international supply base mirrors the global nature of the sourcing strategy. Therefore, the questionnaire was administered in English. Supplier contact details were obtained directly from the ERP system and an anonymous link was generated with the settings to prevent multiple completions of the survey. Of the 504 emails sent, 35 could not be delivered. Regional teams were sought for assistance to resend these emails. The survey was open from August 16th to September 1st, 2023, with a reminder sent on August 23rd, 2023. Figure 3.1 illustrates the daily response rate, highlighting the importance of reminders in improving response rates (Muñoz-Leiva et al., 2010, p. 1049).

Figure 3.1: Bar chart of survey responses per day



Source: own elaboration

Of the total, 119 surveys were fully completed, yielding a response rate of 23,4%. A set of general information questions was included in the survey. One such question, measured on a Likert scale, asked whether respondents felt they had sufficient knowledge to complete the survey. Interestingly, 17 suppliers indicated inadequate knowledge (a score below 3). This left 102 valid responses, translating into a final response rate of 23%. Although specific guidelines on sample saturation are absent — given the varying factors at play from one firm to another due to relational strategy, industry contingencies and communication policies — the response rate is slightly above average compared to similar supplier satisfaction surveys (Vos et al., 2016, p. 4616). The sample consisted solely of direct suppliers for industrial adhesive packaging. On average, the suppliers surveyed have been associated with the company for approximately 16.88 years. 63,9%, are SMEs, classified according to the Eurostat business demographic classification (Eurostat, 2023). An overview of the characteristics of the sample is presented in Table 3.1.

Table 3.1: Sample characteristics
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3.3 Data analysis: Partial least squares modelling

The Partial Least Squares (PLS) method has recently gained traction in empirical purchasing research, as evidenced by Vos et al. (2016, p. 4616), Pulles et al. (2016, p. 136), and Hüttinger et al. (2014, p. 706), who employed PLS in their supplier satisfaction studies (Carrion et al., 2016, p. 4549). PLS is frequently juxtaposed with covariance-based SEM (CB-SEM), another structural equation method utilised for parameter estimation. As Barroso et al. (2010, p. 430) emphasise, PLS's primary objective is to maximise the explained (R^2) of dependent latent variable constructs by applying ordinary least squares to minimise residual variances.

This feature allows PLS to concentrate on prediction and theory development, making it a suitable choice when working with small sample sizes and seeking high statistical power (J. F. Hair et al., 2012, p. 420). Social and behavioural scientists often prefer PLS due to its less stringent requirements compared to CB-SEM (Barroso et al., 2010, p. 431), as well as its tolerance for non-normal data, which is common in empirical business and social research (J. Hair et al., 2014, p. 108).

In light of these considerations, the present study aims to enhance the overall explanatory variance of operational excellence by examining antecedents with a relatively small sample size. Consequently, PLS is employed to test the hypothesis, utilising SmartPLS 4.0 software for the application. Further analyses in SmartPLS 4.0 enable the estimation of hypothesised paths and the identification of a structural model that captures relationships between constructs. To ensure the validity of the results, it is recommended to use 4,999 bootstrap samples, independent of the confidence interval's development (Henseler et al., 2016, p. 11).

3.4 Quality assessment of data

An initial evaluation of the collected data is performed using the principal component analysis in RStudio using the *psych* package. To extract principal components while retaining the unique variance of each measure, it is necessary first to apply the principal component analysis to examine the factor loadings and determine if all indicators refer to a single latent concept (Petter et al., 2007; Trinchera & Russolillo, 2010, pp. 641, 4). Factor analysis suitability is assessed

using the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity. The Kaiser-Meyer-Olkin test yields a value greater than 0,7 (0,86), which is considered acceptable for data adequacy when factor analysis is used. Additionally, the Bartlett's test is significant with a P-value less than 0,001, indicating that the dataset is appropriate for factor analysis (see Appendix C).

Selecting the appropriate number of factors is a pivotal step in theory testing. Despite the significance of this process, a universally accepted method for optimal factor extraction remains elusive, leaving scholars reliant on heuristic guidelines. Historically, the eigenvalue method has been the predominant approach to determining the relevant number of factors. Yet, as highlighted by Cattell (1966), an over-reliance on eigenvalues can inadvertently lead to over-extraction. To address this, the author introduced the "scree plot" methodology. While this method offers a graphically intuitive approach through the application of the elbow-rule, its interpretation can, at times, be ambiguous. As depicted in Figure D.1, the scree plot derived from this study's data does not unambiguously indicate the number of factors to extract (see Appendix D). In light of the extant literature on the subject, a parallel analysis was conducted using the *fa.parallel* function within the *psych* R package (Humphreys & Montanelli Jr., 1975; Revelle, 2023) .
This algorithm suggests an optimal retention of 6 factors (see Appendix D). Intriguingly, this number is considerably lower than the theoretical count of concepts (11) posited by the previously delineated theory. Although extracting a greater number of factors than recommended by the aforementioned methodology does not necessarily improve the explanation of the variance, the author deemed it imperative to extract the eleven proposed factors. This decision was driven by the need to delve deeper into the intricacies and interrelations among the theoretically demarcated and well-defined concepts.

Upon the extraction of the 11 theorised factors, varimax rotations of the principal component analysis were employed as the default procedure. As per the guidelines set forth by (Tabachnick & Fidell, 2012), loadings for each indicator should surpass 0,55 to be deemed as "good loadings", irrespective of the sample size. Subsequent to several iterations of indicator removal, a refined result emerged wherein nearly all indicators exhibited a distinct loading. Following the exclusion

of 11 indicators[1], all remaining indicators, except for two related to relational behaviour, demonstrated a loading of 0,5 or higher (see Appendix E). In Appendix F.1 the bivariate correlation matrix can be found.

Thereafter, the data was subjected to partial least squares structural equation modeling using SmartPLS 4.0, complemented by a 4999-sample bootstrap, to further ascertain its quality, reliability, and validity. Prior to delving into the structural model, it is imperative to validate the measurement model. The reflective measurement model assessment encompasses indicator reliability, construct reliability, convergent validity, and discriminant validity. The internal consistency reliability or construct reliability is gauged through Cronbach's α and composite reliability measures. Given the constraints of Cronbach's alpha, composite reliability emerges as a more apt measure of internal consistency reliability (J. Hair et al., 2022). In advanced research phases, it is recommended that CR exceeds a threshold of 0,6, a criterion met in this research. As delineated in Table 3.2, the constructs scrutinised in this research surpass the aforementioned reliability benchmarks.

[1] S_Growth_20_2, S_Profitability_90_2, S_RelBehavior_80_3, S_RelBehavior_80_4, S_RelBehavior_80_5, S_OperativeExc_40_4, S_OperativeExc_40_5, S_OperativeExc_40_6, PC_PC_110_2, S_RelBehavior_80_2, DPP_1

Table 3.2: Validity and reliability numbers of the measurement model

Construct	Items	Outer loadings	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Growth opportunity	S_Growth_20_1	0,774	0,839	0,856	0,759
	S_Growth_20_3	0,930			
	S_Growth_20_4	0,902			
Profitability	S_Profitability_90_3	0,888	0,919	0,941	0,802
	S_Profitability_90_4	0,851			
	S_Profitability_90_5	0,944			
	S_Profitability_90_6	0,897			
Relational behaviour	S_RelBehavior_80_1	0,782	0,768	0,77	0,684
	S_RelBehavior_80_6	0,853			
	S_CollSpecialist_80_7	0,844			
Operative exellence	S_OperativeExc_40_1	0,889	0,864	0,883	0,718
	S_OperativeExc_40_2	0,882			
	S_OperativeExc_40_3	0,920			
	S_OperativeExc_40_6	0,676			
Supplier satisfaction	S_Satisfaction_100_1	0,827	0,931	0,935	0,83
	S_Satisfaction_100_3	0,964			
	S_Satisfaction_100_4	0,913			
	S_Satisfaction_100_5	0,934			
Preferred customer status	PC_PC_110_1	0,823	0,832	0,841	0,663
	PC_PC_110_3	0,841			
	PC_PC_110_4	0,773			
	PC_PC_110_5	0,818			
Digital procurement practices	DPP_2	0,821	0,851	0,873	0,77
	DPP_3	0,899			
	DPP_4	0,909			
Digital capbility assimetry	DCA_1	0,861	0,92	0,989	0,799
	DCA_2	0,847			
	DCA_3	0,929			
	DCA_4	0,936			

Construct validity is discerned through the assessment of convergent validity, employing the average variance extracted (AVE) measure, and discriminant validity, using the heterotrait-monotrait ratio (HTMT). Convergent validity is established when the AVE exceeds 0,5, signifying unidimensionality (Henseler et al., 2016). This criterion is satisfied in the present study, as evidenced in Table 3.3. For discriminant validity, the HTMT should be considerably below 1 (Henseler et al., 2016). While the precise threshold remains a topic of scholarly debate, Table 3.3 reveals that the Heterotrait-Monotrait ratio is consistently and substantially below 1, thus confirming discriminant validity.

Table 3.3: Heterotrait-monotrait ratio table

Variable	1	2	3	4	5	6	7	8	9	10	11	12
Growth Opportunity												
Profitability	0,624											
Relational behaviour	0,840	0,641										
Operative Exellence	0,595	0,721	0,863									
Supplier satisfaction	0,611	0,431	0,856	0,543								
Preferred customer status	0,671	0,386	0,588	0,446	0,470							
Digital procurement practices	0,636	0,559	0,637	0,652	0,385	0,567						
DCA	0,128	0,590	0,156	0,920	0,760	0,211	0,180					
Small	0,750	0,520	0,750	0,145	0,420	0,610	0,190	0,100				
Medium	0,221	0,137	0,248	0,195	0,480	0,143	0,176	0,800	0,383			
Big	0,217	0,211	0,264	0,380	0,149	0,132	0,267	0,920	0,298	0,614		
DCA x Digital procurement practices	0,110	0,159	0,270	0,121	0,120	0,380	0,213	0,351	0,600	0,480	0,129	

In the final analysis, the model fit assessment is undertaken to determine if the disparity between the estimated and empirical correlation matrices can be solely attributed to sampling error. The standardized root mean square residual (SRMR) serves this purpose. With an SRMR value of 0,074, which is beneath the recommended threshold of 0,08, the model fit is corroborated (Henseler et al., 2016).

To ensure the robustness of the results, the model was subjected to multiple iterations of testing. Specifically, the evaluations were conducted under various conditions: with all control variables, a subset of control variables, without any control variables, incorporating all indicators, including only those indicators derived from the factor analysis, and by examining several potential moderation and quadratic effects. The finalised model, constructed using SmartPLS 4.0, is detailed in Appendix G. Upon examining the diverse control variables incorporated in the questionnaire (see Appendix A), the size of the firm—quantified by the number of employees - became the most pertinent. Notably, data pertaining to turnover and the percentage of turnover exhibited anomalies in the form of outliers, thereby compromising the reliability of these measures. Additionally, control variables related to the duration of relationships with the case company displayed minimal variance (as evidenced by the standard deviations presented in Table 3.4), which diminishes their informational value. Consequently, the firm's size, in terms of its employee count, was adopted in the final model. Given that data collection employed a slider with an upper limit set at 250 employees, three dummy variables were introduced, adhering to the categorisation delin-

eated by the aforementioned Eurostat guidelines.

Table 3.4: Summary statistics of control variables
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In the ensuing section, the structural model will undergo a comprehensive assessment, and the complete 4999-bootstrapped model will be presented, inclusive of pertinent path coefficients and R-squared values.

4 Results: testing the hypothesis using PLS path modelling technique

To empirically validate the hypotheses delineated in preceding chapters (Section 2.3), a PLS path modelling approach is employed, primarily due to its robust predictive power and its not-stringent assumptions (elaborated further in Section 3.3). The model was run using a 5000-sample bootstrap with a significance threshold set at 0,05. Given the directional nature of all hypotheses, positing positive relationships between constructs, a one-tailed test was deemed appropriate.

The reliability of the outer model, as discussed in the antecedent section (Section 3.3), assures that the data are not constrained. The model's goodness of fit is assessed through the R^2, serving as a proxy for its predictive power. Conventionally, the coefficient of determination can be categorised as weak, moderate, or substantial, corresponding to values of 0,25, 0,50, and 0,75, respectively. Nonetheless, within the PLS modelling, the interpretation of the coefficient of determination warrants caution. As articulated by J. F. Hair et al. (2012, p. 428), it should primarily serve an informative role. Given the plethora of predictors for each endogenous variable, the adjusted R^2 emerges as a more refined metric, addressing the potential model over-specification. In essence, adjusted R^2 compensates for the fact that the mere addition of predictors does not invariably improve the fit of the model [1].

As delineated in Table 4.1, both digital procurement practices and operative excellence manifest a weak coefficient of determination. Conversely, supplier satisfaction and preferential treatment demonstrate a more moderate effect. The preferred customer status exhibits a somewhat weak adjusted R^2. When juxtaposed with the model of Vos et al. (2016, p. 428), variances are R^2 -8% are for supplier satisfaction and +2% for preferred customer status, whereas the coefficient for preferential treatment has witnessed an increase of 51%.

The primary objective of the model is to generalise the findings from the sample to the broader population. Consequently, an examination of the path coefficient and the significance level is carried out. The significance level chosen for this study is 5% (one-sided), suggesting that for p-values less than 0,05, the hypotheses will not be rejected. Furthermore, Cohen's effect size,

[1] $R^2_{\text{adjusted}} = 1 - \left(\frac{(1-R^2)(n-1)}{n-k-1}\right)$

Table 4.1: Coefficient of determination

	This thesis		Vos et al. (2016)
Constructs	R^2	R^2 adjusted	R^2
Operative excellence	0,328	0,322	-
Digital procurement practices	0,467	0,433	-
Supplier satisfaction	0,595	0,550	0,300
Preferred customer status	0,183	0,175	0,180
Preferential treatment	0,610	0,606	0,640

represented as f^2, is assessed. This metric quantifies the variance in R^2 resulting from the omission of a particular predictor from the model. A pronounced change in R^2 signifies a notable effect, leading to an increased f^2 value. Conventionally, effect sizes of 0,02, 0,15, and 0,35 are classified as small, medium and large effects, respectively.

The findings of Vos et al. (2016, p. 428) are corroborated to some extent in the replication model. Hypotheses $H1d$, $H1e$, and $H1f$ are statistically significant and, as such, are supported by the model with a level of confidence of 99%. Relational behaviour exerts a substantial influence on supplier satisfaction ($f^2 = 0,497$), Supplier satisfaction impacts preferred customer status ($f^2 = 0,239$), and the latter significantly affects preferential treatment ($f^2 = 1,794$). Growth opportunity, presents a p-value just below that 0,05, with a positive influence on Supplier satisfaction ($\beta = 0,197$ and $f^2 = 0,058$) suggesting that $H1a$ receives support. However, the relationships between profitability and operative excellence with supplier satisfaction are not significant ($p > 0,15$), leading to the rejection of $H1b$ and $H1c$. The directions of the path coefficients align with those identified by Vos et al. (2016, p. 428), with the exception of profitability and operative excellence, which exhibit negative signs. Nevertheless, due to the non-significance of these paths, drawing further conclusions is unwarranted. A comprehensive summary, including the path coefficients ($beta$, p-values, and f^2 values), is presented in Table 4.

Concerning the hypotheses intended to extend the original model, the majority were not supported. Digital procurement practises do not exert a significant influence on supplier satisfaction, evidenced by a near-zero β and a p-value greater than 0,15 (see Table 4). Consequently, $H4$ is rejected. However, consistent with the proposed hypothesis, digital procurement practices signif-

icantly influence operative excellence. The path coefficient is 0,573 with a p-value approaching zero. Notably, the f^2 value is 0,523, indicating a considerable effect on operative excellence. Therefore, $H3$ is supported.

With respect to the antecedents of digital procurement practises, only a few manifested an impact. These antecedents were conceptualised as the digital readiness perceived by the suppliers themselves and the purchasing firm under scrutiny. To operationalise digital readiness for both entities, the TOE framework was used, as recommended by Chen et al. (2015, p. 428). Adhering to his methodological approach, Digital Readiness was operationalised by measuring the three underlying formative constructs of the TOE framework: expected benefit, organisational readiness, and technological compatibility. Specifically, the suppliers filled the TOE framework for themselves and then for the Company. Among the constructs related to supplier digital readiness, none of them appears to be influential, therefore $H2b$ is rejected. In addition, even the signs of the path coefficients are not coherent with the system of hypothesis; (S) technological compatibility exerts a negative influence on DPP. Buyer's digital readiness does not seem to significantly influence digital procurement practises. Among all the constructs of buyer digital readiness, only (B) organisational readiness appears to have an influence, evidenced by a p-value less than 0.05 and a β coefficient of 0.112, so that $H2a$ is also rejected.

Digital capability asymmetry (DCA) was hypothesised to mediate the relationship between DPP and supplier satisfaction. However, the mediating effect was found to be statistically not significant (p-value > 0.05), and DCA lacks a direct influence on supplier satisfaction. As a result, $H5$ is not supported.

Lastly, control variables play a pivotal role in the model. The three dummy variables created encapsulate the classifications of "Small", "Medium", and "Big", with "Micro" serving as the reference category, i.e., when all dummies in the model are zero. These categories are assigned based on the Eurostat classification criteria (Eurostat, 2023). All three control variables exhibit a p-value less than 0.05 and have negative coefficients. Specifically, their coefficients are as follows: "Small" $\beta = -0,702$ and $f^2 = 0,068$, "Medium" $\beta = -0,828$ and $f^2 = 0,111$, and

"Big" $\beta = -0,657$ and $f^2 = 0,070$.

Figure 4.1 reports a model plot with key statistical measures, while Table 4 concisely shows all the results described above.

Figure 4.1: Complete model using structural equation modelling (N=102)

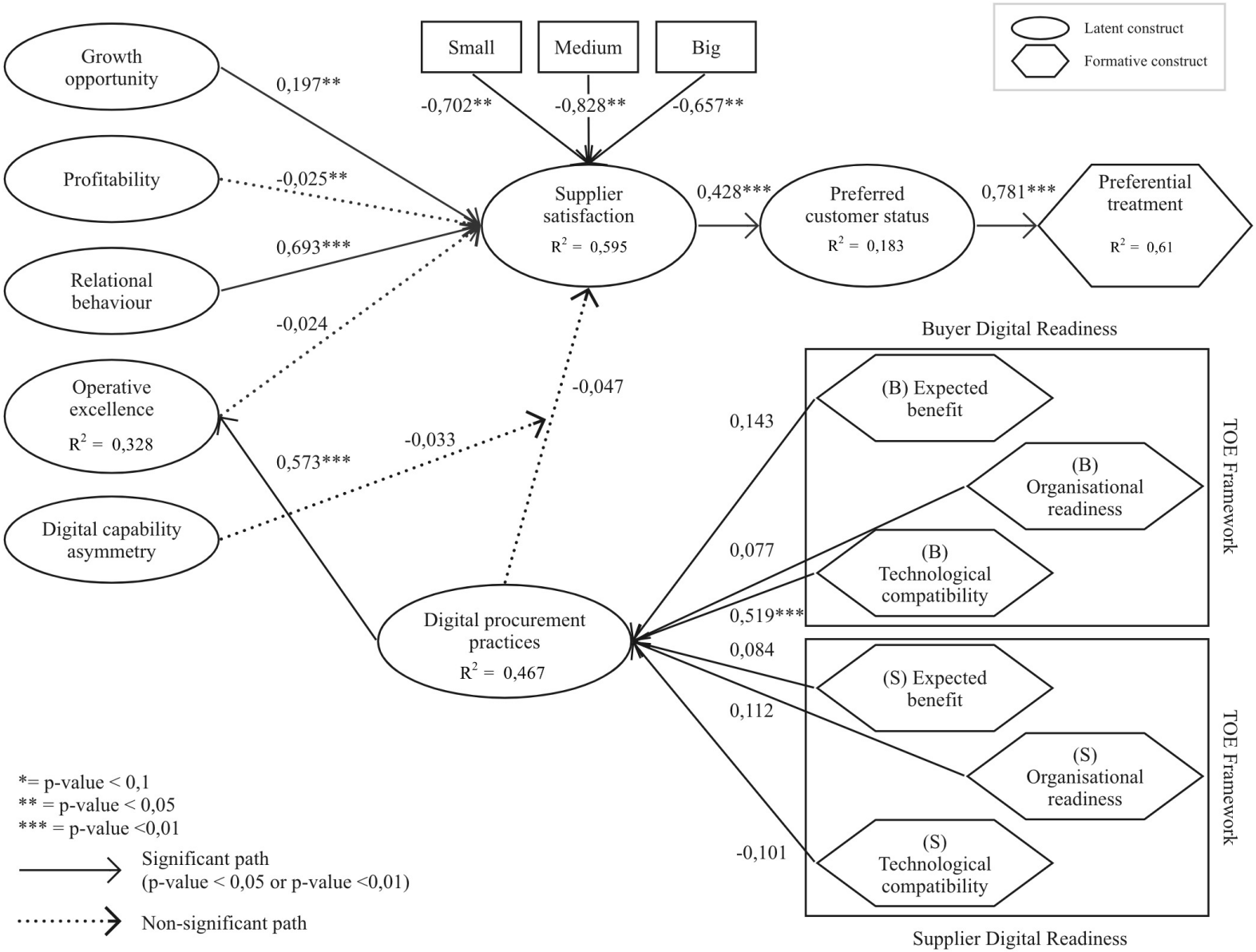


Table 4.2: Structural model p-values, standardised path coefficients, and effect size

	Path	P values	β	f^2	
H1a	Growth opportunity → Supplier satisfaction **	0,034	0,197	0,058	**Supported**
H1b	Profitability → Supplier satisfaction	0,392	-0,025	0,011	Not Supported
H1c	Operative excellence → Supplier satisfaction	0,821	-0,024	0,011	Not Supported
H1d	Relational behaviour → Supplier satisfaction ***	0,000	0,693	0,497	**Supported**
H1e	Supplier satisfaction → Preferred customer status***	0,000	0,428	0,239	**Supported**
H1f	Preferred customer status → Preferential treatment***	0,000	0,781	1,794	**Supported**
H2a	(B) Expected benefit → Digital procurement practices	0,199	0,143	0,036	Not Supported
	(B) Organisational readiness → Digital procurement practices	0,207	0,077	0,036	Not Supported
	(B) Technological compatibility → Digital procurement practices**	0,000	0,519	0,129	**Supported**
H2b	(S) Expected benefit → Digital procurement practices	0,272	0,084	0,026	Not Supported
	(S) Organisational readiness → Digital procurement practices	0,123	0,112	0,038	Not Supported
	(S) Technological compatibility → Digital procurement practices	0,266	-0,101	0,024	Not Supported
H3	Digital procurement practices → Operative excellence***	0,000	0,573	0,523	**Supported**
H4	Digital procurement practices → Supplier satisfaction	0,309	-0,047	0,016	Not Supported
H5	DCA x Digital procurement practices → Supplier satisfaction	0,356	-0,033	0,024	Not Supported
	DCA → Supplier satisfaction	0,416	0,023	0,028	Not Supported
Control variables	Small → Supplier satisfaction **	0,014	-0,702	0,068	**Supported**
	Medium → Supplier satisfaction **	0,001	-0,828	0,111	**Supported**
	Big → Supplier satisfaction **	0,011	-0,657	0,070	**Supported**

Note: p = p-value; β = standardised coefficient beta; f^2 = effect size of variance explained by predictor; *=p <0,1 (one-sided); **= p <0,05 (one-sided); ***= p <0,01 (one-sided).

4.1 Reduced model: a focus on the model extension

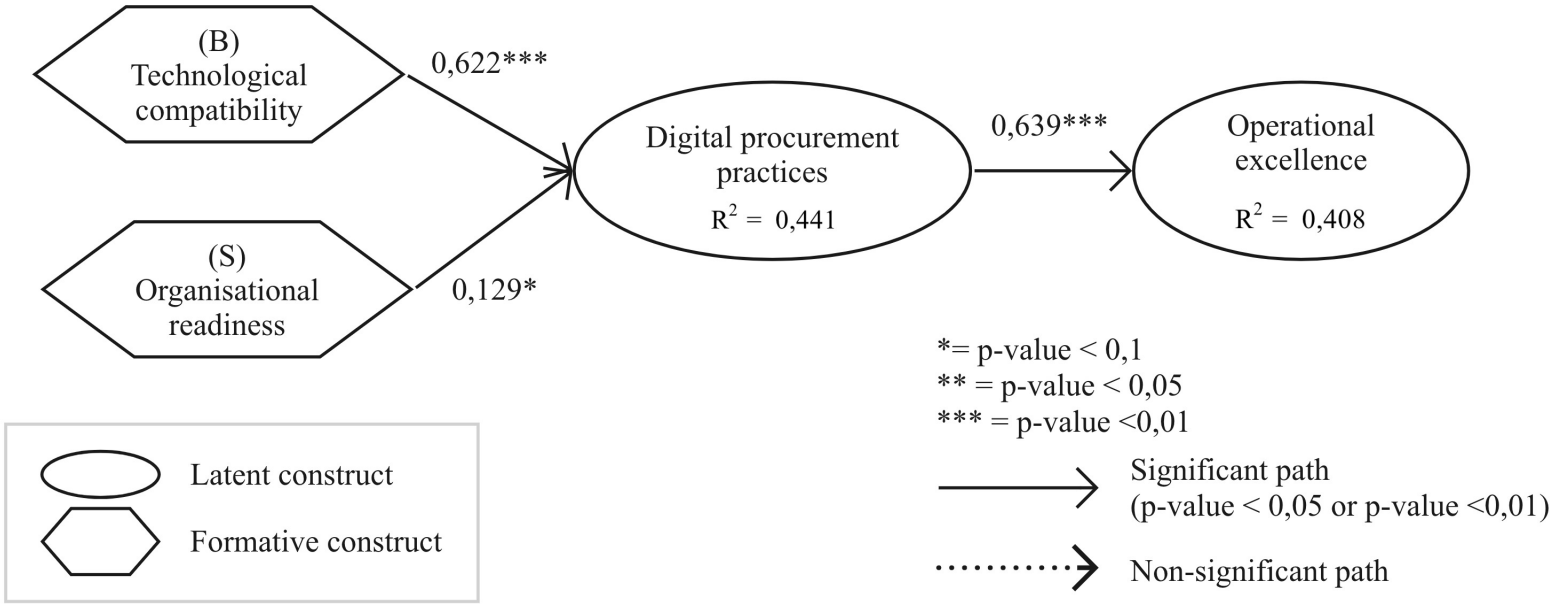
To further substantiate the previous findings and elucidate the original contributions of this thesis, a streamlined version of the model is introduced. The methodology employed for this reduced model mirrors that of the comprehensive one. This model seeks to examine the supply chain perspective on digital procurement, specifically assessing the influence of digital procurement practises and their antecedents on operational excellence. Given that the construct of digital readiness was deemed insignificant in prior analyses, the reduced model incorporates only the most influential dimensions of digital readiness, as derived from the TOE framework. Notably, the pivotal antecedents of digital procurement practises chosen are: (B) technological compatibility and (S) organisational readiness. Figure 4.2 visually represents this model, showcasing the associated path coefficients, p-values, f-squared values, and the coefficient of determination for the dependent variable.

It is evident that (B) Technological compatibility exerts a significant positive influence on digital procurement practices ($\beta = 0,622$, p-value < 0,01, $f^2 = 0{,}656$). Additionally, (S) organisational readiness, albeit with a diminished impact, still plays a role, registering a β of 0,129 and f^2 of 0,028. However, its p-value, while less than 0,1, exceeds the 0,05 threshold. Collectively, the coefficient of determination for DPP, based solely on these two antecedents, stands at 0,441, a mere 0,026 lower than the original. Although these findings do not offer conclusive evidence to reject H2a and H2b, they do underscore that DPP is influenced by pivotal antecedents related to readiness.

Furthermore, the model probes the association between DPP and operational excellence. This relationship is both positive and substantial ($\beta = 0,689$, p-value < 0,01, $f^2 = 0{,}656$), aligning with the outcomes of the comprehensive model. In particular, the value of R^2 exceeds that of the complete model by 0,08, possibly due to the exclusion of variables that could have diluted the direct effect.

Figure 4.2 shows graphical representation summarising the findings described above. The output of SmartPLS 4.0 is provided in Appendix H.

Figure 4.2: Calculated reduced model using structural equation modelling (N=102)



5 Discussion: partial confirmation of previous preferred customership studies and strong influence of digital procurement practices on operative excellence but no impact on satisfaction

The main objective of this thesis is to address the following research question: "How do digital procurement practices impact supplier satisfaction and operative excellence in the buyer-supplier relationship?"

The theoretical and empirical foundation of this thesis is anchored in the model developed by Vos et al. (2016). This model is integrated with the literature addressing digital transformation in purchasing and supply chain management. The findings of this thesis reveal that growth opportunity and relationship behaviour serve as pertinent antecedents to supplier satisfaction. Among these, relationship behaviour exerts the most profound impact. This is consistent with the conclusions drawn by Vos et al. (2016), emphasising the relative dominance of social antecedents over economic ones.

In fact, profitability was not a significant factor in this investigation, challenging earlier findings where this construct was considered relevant (Vos et al., 2016). Piechota et al. (2021) noted that, while relational aspects are crucial for determining absolute levels of supplier satisfaction, economic aspects take precedence in relative satisfaction. Thus, when suppliers need to prioritise customer treatment, the economic value of the relationship emerges as the primary driver. However, it can be argued that the industrial dynamics and contextual factors that affect the suppliers surveyed may have played a significant role in removing this variable. Turbulent market conditions, characterised by supply shocks (e.g., COVID-19, Ukraine War) and inflationary pressures, have likely impacted profitability (Bäck et al., 2023). Therefore, it is possible that the respondents gave a lower profitability assessment than they would have under normal circumstances, since external elements could influence their opinion (Tourangeau et al., 2000, p. 211), particularly availability bias is believed to be a factor (Tversky & Kahneman, 1973). Table B shows that profitability-related items have a noticeably lower sample mean compared to supplier satisfaction and other relational items, lending credence to this explanation.

Operational excellence was also found to be not significant, diverging from the original findings of Vos et al. (2016). This observation is consistent with previous studies (Hüttinger et al., 2014;

Lasschuijt, 2021; Sende, 2018; Woolderink, 2021). The extant literature has yet to provide a clear resolution to these contradictory results, thereby necessitating further enquiry. Two potential interpretations could guide future research. Firstly, as suggested by Sende (2018), the construct of operational excellence includes general processes and forecasts. Consequently, a supplier may be satisfied with the process, but still receive inaccurate forecasts. However, multiple models and various combinations of associated items have been tested, and the non-significance of operational excellence has remained consistent. This suggests that such an explanation requires further validation. Secondly, based on qualitative research of Staughton and Johnston (2005), operational excellence appears to lose its impact on relational performance metrics, such as supplier satisfaction, once a certain threshold is reached. Although this explanation seems plausible, a statistical saturation analysis using cross-sectional data is recommended for more definitive insights to eventually amend the satisfaction framework of Vos et al. (2016).

Notwithstanding, supplier satisfaction remains a pivotal determinant in attaining the status of a preferred customer. Intriguingly, the preferred customer status accounted for 50% more variance in preferential treatment compared to the findings of Vos et al. (2016). A plausible elucidation for this discrepancy can be derived from the social exchange theory (Cropanzano & Mitchell, 2005). In the realm of buyer-supplier interactions, supplier satisfaction often reciprocates, prompting suppliers to recognize satisfying buyers as preferred customers (Huttinger et al., 2012). However, it is essential to note that PCS inherently signifies a supplier's intention, and as Sheeran (2002) posits, intentions do not necessarily translate into behaviour. Under the lens of SET, it is reasonable to assume that positive relational exchanges are likely to convert these intentions into manifest actions (Steinle & Schiele, 2008). This mechanism seems to account for the elevated levels of satisfaction observed in this study, which, in turn, contributes to a higher coefficient of determination for preferential treatment.

To integrate the influence of digital procurement practices (DPP) into supplier satisfaction research, the theoretical framework of Kosmol et al. (2019) was used to guide the system hypothesis. Kosmol et al. (2019) utilised the supply chain practice view to elucidate the role of digital procurement practises in supply chain management. Specifically, DPP were anticipated to be

influenced by two primary antecedents: buyer digital readiness and supplier digital readiness. Drawing from the literature, this study operationalised these variables using the TOE framework as widely used instrument to measure technological adoption (Tornatzky & Klein, 1982). TOE framework comprises three main underlying formative constructs: expected benefit, technological compatibility, and organisational readiness. Both buyer digital readiness and supplier digital readiness were assessed from the supplier's perspective, since it has been assumed perceptual agreement among buyer and suppliers relative to digital readiness (Roh et al., 2013). However, none of the constructs emerged as significant, which appears to contradict the qualitative findings of Kosmol et al. (2019). Two primary reasons can be posited to explain these discrepancies. Firstly, while the qualitative results of Kosmol et al. (2019) establish the relevance of digital readiness for both buyers and suppliers, he also indicates that establishing a causal relationship is more challenging. The author emphasises that the absolute levels of digital readiness are not determinants in themselves; rather, it is the convergence of buyer and supplier readiness to adopt technology that leads to the so-called "corridor of coevolution" (Kaufmann et al., 2016). Therefore, the results of this thesis suggest investigating digital readiness through a differential construct, rather than measuring them separately.

Secondly, the constructs may have been subject to measurement errors. Specifically, suppliers may not have been adequately informed, although the sample was controlled for knowledgeable responses. Alternatively, following the psychological interpretation of Tourangeau et al. (2000), respondents could have been influenced by a contextual assimilation effect. Given that the questions about the digital readiness of the buyers preceded those about the suppliers, the judgments of the respondents may have been influenced by their previous responses, nullifying the variation (see Table B). To unravel this phenomenon, future research should consider reversing the order of the questions to measure potential context effects (Tourangeau et al., 2000, p. 212).

Nevertheless, in the comprehensive model, (B) technological compatibility was found to exert a significant and positive influence on DPP. Concurrently, in the same model, (S) organisational readiness, although not statistically significant, exhibited a moderate effect size. Indeed, in the streamlined model, both (B) technological compatibility and (S) organisational readiness were identified as having a positive and significant impact on DPP (see Figure 4.2). This exploratory

analysis underscores the need for further research into the operationalisation of digital readiness within the realm of supply chain management.

DPP have been identified to exert a positive and robust influence on operational excellence, reinforcing previous evidence on the improved role of digitalisation in supply chain management (Flechsig et al., 2022; Viale & Zouari, 2020). In particular, the case company distinguishes itself from competitors through its significant reliance on digitalisation processes, with the aim of cultivating a more efficient and resilient supply chain. Digital standards are expected to play an even more crucial role in purchasing and supply chain management, serving as a crucial determinant for being perceived as operationally excellent (Flechsig et al., 2022). Consequently, the findings of this study could serve as a basis for incorporating DPP as an additional antecedent of operational excellence in satisfaction studies, updating the one of Vos et al. (2016). However, DPP was not found to significantly influence satisfaction. This observation aligns with the research of Ganguly and Roy (2021, p. 258), which also reported an insignificant impact of digitalisation on satisfaction. The authors postulated that this outcome could be attributed to their sample that predominantly comprises firms from developing countries, and they anticipated more pronounced results in advanced economies. Contrary to this expectation, the present study corroborates that such assumptions may not necessarily hold. A potential explanation for this could mirror the rationale provided for operational excellence. Specifically, once a certain threshold of digitalisation is achieved, its incremental contribution to satisfaction becomes negligible. In such a scenario, other factors, such as relational behaviour, may assume greater significance.

Digital capability asymmetry (DCA) was initially hypothesised to moderate the relationship between DPP and supplier satisfaction. Contrary to expectations, the results revealed that DCA neither significantly moderated this relationship nor had a direct effect on supplier satisfaction. Son et al. (2021, p. 258) posit that DCA manifests itself in buyer-supplier relationships when the buyer holds a dominant position over its supply base. The authors further elucidate that DCA is notably prevalent when large firms engage with a supply base dominated by Small and Medium-sized Enterprises (SMEs). Although a high level of satisfaction can be achieved even in the presence of an asymmetric relationship (Caniëls et al., 2018), DCA typically arises from the

opportunistic behaviour of the buying firm. In the current study, more than half of the suppliers were SMEs. However, even when controlling for size, the moderating effect remained insignificant. Given the high levels of supplier satisfaction reported and in light of social exchange theory, it can be argued that the investigated buyer-supplier relationship is mutually beneficial. Consequently, opportunistic behaviour on the part of the buying firm appears to be absent in this specific context. Intriguingly, the SMEs reported higher levels of satisfaction compared to the larger firms in this study. The lack of significance for the moderating effect can be attributed to the unique characteristics of the surveyed supply base. Nonetheless, the role of DCA remains an important avenue for exploration in different settings.

5.1 Theoretical implications

This thesis advances the theoretical understanding of purchasing and supply chain management by offering a new level of analysis of digital procurement practices, updating supplier satisfaction studies, and by narrowing the boundaries of digital transformation within the purchasing function.

First, this thesis serves as a seminal contribution to the quantitative exploration of digitalization in purchasing literature. Drawing from the comprehensive framework posited by Kosmol et al. (2019), this work underscores the importance of digital procurement practices. Specifically, the original value of this work lies in the integration of the social exchange theory with the supply chain perspective view. The former serves as the ”grand theory” explaining the relational interactions between firms, while the latter provides a basis for exploring digital adoption and its impact on relational and operative performance. The digital phenomenon is particularly salient given the rapid and continual evolution of digital technologies, which exert a multifaceted impact on the process of technological adoption. These technologies not only transform at an unprecedented speed but also influence the adoption mechanisms in diverse and complex ways, thereby necessitating a nuanced understanding and strategic approach to their integration and utilisation in various domains.Thus, in light of the theoretical lenses expounded in this thesis, further research should test the validity of these theories and perform a systematic empirical testing. However, the antecedents of DPP, specifically buyer and supplier digital readiness, were found to be non-significant, even when operationalised using the TOE framework as recommended by Kosmol et al. (2019). Notably, the underlying construct of buyer technological compatibility

was identified as significant and influential in both the reduced and complete models. Such findings quantitatively affirm that ”comparable/aligned levels of digital readiness can facilitate the adoption of digital technologies over time” (Kosmol et al., 2019, p. 14). These insights partially validate the applicability of the SCPV theory for digital procurement practices. The peculiarity of the results sheds light on the need for testing different outer models and statistical techniques to further support the validity of SCPV theory for DPP.

Second, this research corroborates most of the results of the model proposed by Vos et al. (2016). Nonetheless, the observed diminished significance of profitability—potentially attributable to turbulent market conditions—accentuates the imperative to incorporate contextual factors into consideration. Such factors are notably pivotal in settings characterized by high interrelations. In a parallel vein, the study concurs with antecedent findings, casting doubt on the pre-eminence of operational excellence as a key antecedent of supplier satisfaction, particularly in engagements with purchasing organizations that are mature. As previously contended, these insights lay a foundational basis for revising satisfaction studies, with the objective of assessing the salience of variables hitherto considered. The studies at hand suggest that the relevance of DPP and the rise of digitalisation are poised to steer the trajectory of forthcoming research.

Lastly, this research contributes to the broader discourse on digital transformation. Theoretically, it offers a comprehensive review of literature surrounding various concepts related to digital transformation. As such, this thesis aims to present a consolidated overview of key definitions associated with digital phenomena in business studies. Specifically, the research emphasises the critical importance of precise definitions when investigating digital phenomena, ensuring a focused and valid operationalisation of the variables in purchasing and supply management studies.

5.2 Managerial implications

The research was conducted within the purchasing organisation of a leading chemical company. The results of this thesis were openly discussed with management, and the practical implications were derived from multiple deep-dive sessions. Therefore, the following practical implications have been drawn.

Firstly, the study reaffirms the pivotal role of relational behaviour in influencing supplier-

supplier satisfaction. Given that supplier satisfaction is instrumental in achieving preferred customer status and preferred treatment, which subsequently fosters long-term competitive advantage, this research underscores the need to improve supplier relationship management within the strategic purchasing agenda. Relational behaviour can not only offset potential deficiencies in economic value within the relationship, but can also serve as a genuine source of competitive advantage, especially in competitive and turbulent markets. Consequently, organisations are advised to devise comprehensive supplier relationship programmes, positioning suppliers as strategic partners to facilitate value creation. For instance, one beneficial practice is to actively and systematically involve suppliers to promote strategic alignment. To achieve this, consider implementing a supplier council. This council would engage strategic suppliers in coordination and co-creation activities, aiming to generate value and secure long-term competitive advantages. Engaging with suppliers in this manner not only aligns strategies but also fosters a collaborative environment where both parties work towards mutual benefits and shared success, as outlined by Gutierrez et al. (2020).

Secondly, this research introduces a visualisation tool designed to optimise digital procurement adoption, drawing from the findings discussed earlier. This tool, depicted as a 2x2 matrix in Figure 5.1, illustrates how digital procurement practices correlate with technological compatibility [1].

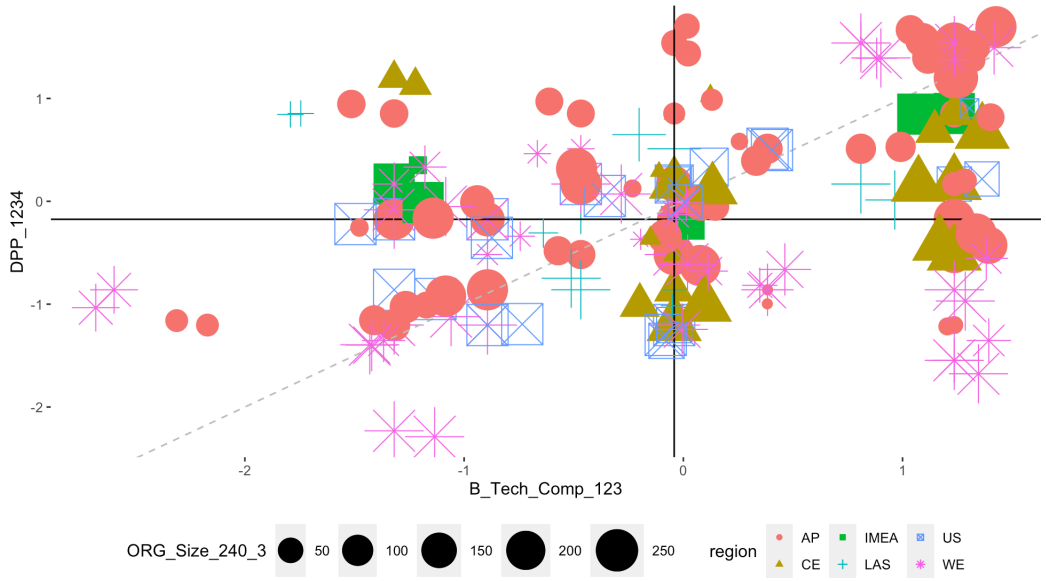
This matrix provides decision makers with a visual aid, highlighting areas of improvement and best practices in digitalisation. It is intended to improve decision-making processes and catalyse positive organisational change.

Lastly, the research underscores the undeniable significance of digital transformation, bolstering the argument for continued investment in emerging technologies and their adoption pro-

[1]Calculation method:

1. Standardise *DPP* and *Tech_Comp*.
2. Calculate the mean for the group of components associated with the two constructs.
3. Plot the results.

Figure 5.1: Digital procurement adoption matrix case company



Note: Own elaboration

grammes. However, these findings also serve as a cautionary note for practitioners, emphasising that digital transformation is not merely about technology adoption but requires a change management approach. As suggested by experts in the field, it is crucial to develop an organization-wide digital mindset. This mindset comprises a set of attitudes and behaviors that enable individuals and organizations to understand how data, algorithms, and AI open up new possibilities. This understanding, in turn, leads to a reframing of the change phenomenon, shifting the perspective from viewing change as a step-by-step process to embracing it as a continuous habit (Nadkarni & Prügl, 2021).

6 Limitations and future research

This thesis is not without its limitations.

Firstly, the generalisability of the findings may be limited due to the focus on suppliers from a specific sector. This limitation suggests that when using the matrix proposed by Kraljic in 1983 as a reference, the results may vary when concentrating on different quadrants or categories within the matrix. While the sample is geographically diverse and varies in size, the industry-specific focus could make the findings more niche. Future research building on this thesis should consider a cross-industry and cross-category approach. Additionally, a longitudinal study would be valuable to assess the stability of the constructs over time and to refine the model accordingly.

Secondly, certain items were found to be nonsignificant, potentially due to measurement errors. This poses a threat to the study's validity, and if confirmed, could challenge the credibility of some findings. Although all constructs were conceptualised and operationalised using the latest literature, the risk of measurement errors, especially in emerging fields like digitalisation, cannot be dismissed. Moreover, the data was exclusively sourced from the suppliers' perspective. This approach was justified on the grounds that both supplier satisfaction and digital procurement practices are primarily relevant from the supplier's perception. However, there is a possibility that suppliers, lacking comprehensive information, might have responded based on assumptions, which could question the accuracy of the results. Future research should aim to solidify the theoretical foundation within supply chain management and, through construct validity studies, refine the operationalisation of variables to further advance research in this domain.

Lastly, external contingencies beyond the buyer-supplier relationship were not considered. Factors such as market structure, organisational inter-dependencies, and technological uncertainties warrant inclusion in subsequent research. Given the increasing interconnectedness of global supply chains, the significance of contextual factors is expected to rise. To validate the resilience of this and related studies, the incorporation of these contextual elements would be instrumental for both academic research and practical applications.

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Appendices

A Variable codebook

Growth opportunity		
The relationship with Company XYZ ...		
(Vos et al., 2016)	S_Growth_20_1	... provides us with a dominant market position in our sales area.
	S_Growth_20_2	... is very important for us with respect to growth rates.
	S_Growth_20_3	... enables us to attract other customers.
	S_Growth_20_4	... enables us to exploit new market opportunities.
Profitability		
The relationship with Company XYZ ...		
(Vos et al., 2016)	S_Profitability_90_2	... provides us with large sales volumes.
	S_Profitability_90_3	... helps us to achieve good profits.
	S_Profitability_90_4	... allows us to gain high margins.
	S_Profitability_90_5	... has a positive influence on the profitability of our firm.
	S_Profitability_90_6	... enables us to raise our profitability together.
Relational behavior		
(Vos et al., 2016)	S_RelBehavior_80_1	Problems that arise in the course of the relationship are treated by Company XYZ as joint rather than individual responsibilities.
	S_RelBehavior_80_2	Company XYZ is committed to improvements that may benefit our relationship as a whole and not only themselves.
	S_RelBehavior_80_3	We each benefit and earn in proportion to the efforts we put in.
	S_RelBehavior_80_4	Our firm usually gets at least a fair share of the rewards and cost savings from our relationship with Company XYZ.
	S_RelBehavior_80_5	Company XYZ would willingly make adjustments to help us out if special problems/needs arise.
	S_RelBehavior_80_6	Company XYZ is flexible when dealing with our firm.
	S_CollSpecialist_80_7	The collaboration with this supplier's operational/specialist department is very good.
Operative excellence		
Company XYZ...		
(Vos et al., 2016)	S_OperativeExc_40_1	... has always exact and in-time forecasts about future demand.
	S_OperativeExc_40_2	... provides us with forecasts our firm can rely and plan on.
	S_OperativeExc_40_3	... has for our firm simple and transparent internal processes.

	S_OperativeExc_40_4	... supports short decision-making processes.
	S_OperativeExc_40_5	... stands open for process optimizations.
	S_OperativeExc_40_6	... has an optimal payment habit.
Supplier satisfaction		
(Vos et al., 2016)	S_Satisfaction_100_1	Our firm is very satisfied with the overall relationship to Company XYZ.
	S_Satisfaction_100_3	Generally, our firm is very pleased to have Company XYZ as our business partner.
	S_Satisfaction_100_4	If we had to do it all over again, we would still choose to use Company XYZ.
	S_Satisfaction_100_5	Our firm does not regret the decision to do business with Company XYZ.
Preferred customer status		
Compared to other customers in our firm's customer base...		
(Vos et al., 2016)	PC_PC_110_1	... Company XYZ is our preferred customer.
	PC_PC_110_2	... we care more for Company XYZ.
	PC_PC_110_3	... Company XYZ receives preferential treatment.
	PC_PC_110_4	... we go out on a limb for Company XYZ.
	PC_PC_110_5	... our firm's employees prefer collaborating with Company XYZ to collaborating with other customers.
Preferential treatment		
Our firm...		
(Vos et al., 2016)	PC_PrefTreat_120_1	... allocates our best employees (e.g., most experienced, trained, intelligent) to the relationship with Company XYZ.
	PC_PrefTreat_120_3	... allocates more financial resources (e.g., capital, cash) to the relationship with Company XYZ.
	PC_PrefTreat_120_4	... grants Company XYZ the best utilization of our physical resources (e.g., equipment capacity, scarce materials).
	PC_PrefTreat_120_5	... shares more of our capabilities (e.g., skills, know-how, expertise) with Company XYZ.
Expected Benefit (Buyer-side)		
Digital procurement enables Company XYZ to…		
(Chwelos et al., 2001; Cooper & Zmud, 1990; Thong, 1999; Tornatzky & Klein, 1982)	B_Expected_Ben_1	Improve the quality of work.
	B_Expected_Ben_2	Make work more efficient.
	B_Expected_Ben_3	Lower costs.

Technology Compatibility (Buyer-side)		
Please indicate your level of agreement with the following statements:		
(Chwelos et al., 2001; Cooper & Zmud, 1990; Thong, 1999; Tornatzky & Klein, 1982)	B_Tech_Comp_1	The use of digital procurement practices of Company XYZ is consistent with their business practices
	B_Tech_Comp_2	The use of digital procurement practices of Company XYZ fits their organizational culture
	B_Tech_Comp_3	Overall, it is easy for Company XYZ to incorporate digital procurement practices into their purchasing function
Organizational Readiness (Buyer-side)		
To what extent are the following factors preventing Company XYZ from fully exploiting digital procurement practices?		
(Chwelos et al., 2001; Zhu et al., 2004)	B_Org_Read_1	Lacking capital/financial resources.
	B_Org_Read_2	Lacking needed IT infrastructure.
	B_Org_Read_3	Lacking analytics capability.
	B_Org_Read_4	Lacking skilled resources.
Expected Benefit (Supplier-side)		
Using digital technologies when interacting with Company XYZ improves ...		
(Chwelos et al., 2001; Cooper & Zmud, 1990; Thong, 1999; Tornatzky & Klein, 1982)	S_Expected_Ben_1	Improve the quality of work.
	S_Expected_Ben_2	Make work more efficient.
	S_Expected_Ben_3	Lower costs.
Technology Compatibility (Supplier-side)		
Please indicate your level of agreement with the following statements:		
(Chwelos et al., 2001; Cooper & Zmud, 1990; Thong, 1999; Tornatzky & Klein, 1982)	S_Tech_Comp_1	The use of digital technologies used with Company XYZ is consistent with our business practices
	S_Tech_Comp_2	The use of digital technologies used with Company XYZ fits our organizational culture
	S_Tech_Comp_3	Overall, it is easy to incorporate digital procurement practices of Company XYZ into our sales practices
Organizational Readiness (Supplier-side)		
To what extent are the following factors preventing your company from fully exploiting digitalization?		
(Chwelos et al., 2001; Zhu et al., 2004)	S_Org_Read_1	Lacking capital/financial resources.
	S_Org_Read_2	Lacking needed IT infrastructure.
	S_Org_Read_3	Lacking analytics capability.
	S_Org_Read_4	Lacking skilled resources.

Digital Capability Asymmetry		
Relative to Company XYZ, please indicate your company's capability in acquiring and utilizing digital technologies:		
(Son et al., 2021)	DCA_1	We have the capability to monitor business operations and resources in real-time.
	DCA_2	We have the capability to analyze big data with AI for process improvement and new business generation (e.g., intelligent defect detection, preventive machine maintenance, machine failure prevention).
	DCA_3	We have the capability to exchange digitalized data with supply chain partners in real-time for effective sales and operations, inventory planning.
	DCA_4	We constantly keep current with new digitalization technologies and innovative use cases.
	DCA_5	We have a climate that is supportive of trying out new ways of using digitalization technologies.
Digital Procurement Practices		
At Company XYZ...		
(Mishra et al., 2023)	DPP_1	...procurement decisions are based on system data analysis
	DPP_2	...the purchase orders are placed directly through ERP systems based on the requirement.
	DPP_3	… cross-functional teams are formed to integrate various digital solutions in procurement practices
	DPP_4	We … centrally controlled systems facilitate the production stores to keep a check on inventory as per production planning
General Information		
At Company XYZ...		
(Vos et al., 2016)	ORG_REV_240_1	Annual Turnover (in €). (When you belong to a firm-group, please provide the details of your firm branch!)
	ORG_REV_240_2	Please indicate the annual turnover with Company XYZ as % of your total annual turnover (in %, 0=lowest, 100=highest, e.g. if your Company is having half of its turnover at Company XYZ , fill-in ”50”)***
	ORG_Size_240_3	Number of employees
	ORG_COUNTRY	Where is your company located
	ORG_KNOW_256_1	I know Company XYZ good enough to answer all the questions in this questionnaire
	ORG_COM_280	Do you have any additional comments or remarks? Please leave them here

	NEW_CONTROL	Our company adopts digital technologies and dispose of IT infrastructure (e.g. internet, laptops, server etc.)
	POS_SUP_EMPLOYEE	What is your position in the company?

B Items descriptive statistics

Table B.1: Items descriptive statistics

Name	Missings	Mean	Media	St. devi	Min	Max
S_Growth_20_1	0	4.118	4.000	0,993	1.000	5.000
S_Growth_20_2	0	4.314	4.000	0,852	1.000	5.000
S_Growth_20_3	0	3.961	4.000	1.047	1.000	5.000
S_Growth_20_4	0	4.127	4.000	0,967	1.000	5.000
S_Profitability_90_2	0	4.029	4.000	1.014	1.000	5.000
S_Profitability_90_3	0	3.627	4.000	1.066	1.000	5.000
S_Profitability_90_4	0	3.157	3.000	1.153	1.000	5.000
S_Profitability_90_5	0	3.627	4.000	1.084	1.000	5.000
S_Profitability_90_6	0	3.765	4.000	1.068	1.000	5.000
S_RelBehavior_80_1	0	4.216	4.000	0,893	1.000	5.000
S_RelBehavior_80_2	0	4.157	4.000	0,988	1.000	5.000
S_RelBehavior_80_3	0	4.147	4.000	0,868	1.000	5.000
S_RelBehavior_80_4	0	3.804	4.000	0,96	1.000	5.000
S_RelBehavior_80_5	0	3.951	4.000	0,994	1.000	5.000
S_RelBehavior_80_6	0	4.029	4.000	1.004	1.000	5.000
S_CollSpecialist_80_7	0	4.490	5.000	0,71	2.000	5.000
S_OperativeExc_40_1	0	3.912	4.000	1.112	1.000	5.000
S_OperativeExc_40_2	0	3.843	4.000	1.055	1.000	5.000
S_OperativeExc_40_3	0	3.961	4.000	1.056	1.000	5.000
S_OperativeExc_40_4	0	3.941	4.000	1.101	1.000	5.000
S_OperativeExc_40_5	0	4.176	4.000	0,856	2.000	5.000
S_OperativeExc_40_6	0	4.069	5.000	1.215	1.000	5.000
S_Satisfaction_100_1	0	4.529	5.000	0,724	2.000	5.000
S_Satisfaction_100_3	0	4.765	5.000	0,58	2.000	5.000
S_Satisfaction_100_4	0	4.765	5.000	0,563	2.000	5.000
S_Satisfaction_100_5	0	4.775	5.000	0,503	3.000	5.000
PC_PC_110_1	0	4.284	4.000	0,809	2.000	5.000
PC_PC_110_2	0	4.235	4.000	0,854	2.000	5.000
PC_PC_110_3	0	4.176	4.000	0,901	1.000	5.000
PC_PC_110_4	0	4.039	4.000	0,979	1.000	5.000
PC_PC_110_5	0	3.765	4.000	0,972	1.000	5.000
PC_PrefTreat_120_1	0	4.441	5.000	0,799	1.000	5.000
PC_PrefTreat_120_3	0	3.951	4.000	1.023	1.000	5.000
PC_PrefTreat_120_4	0	4.353	5.000	0,824	2.000	5.000
PC_PrefTreat_120_5	0	4.265	5.000	0,896	1.000	5.000
B_Expected_Ben_1	0	3.971	4.000	0,891	2.000	5.000
B_Expected_Ben_2	0	3.971	4.000	0,934	2.000	5.000
B_Expected_Ben_3	0	3.814	4.000	0,937	1.000	5.000
B_Tech_Comp_1	0	4.039	4.000	0,827	2.000	5.000
B_Tech_Comp_2	0	4.069	4.000	0,795	2.000	5.000
B_Tech_Comp_3	0	3.990	4.000	0,869	2.000	5.000
B_Org_Read_1	0	2.814	3.000	1.152	1.000	5.000
B_Org_Read_2	0	2.892	3.000	1.128	1.000	5.000
B_Org_Read_3	0	2.941	3.000	1.037	1.000	5.000
B_Org_Read_4	0	2.902	3.000	1.098	1.000	5.000

DPP_1	0	3.902	4.000	0,869	1.000	5.000
DPP_2	0	4.000	4.000	0,907	1.000	5.000
DPP_3	0	3.755	4.000	0,822	1.000	5.000
DPP_4	0	3.853	4.000	0,912	1.000	5.000
DCA_1	0	3.000	3.000	1.000	1.000	5.000
DCA_2	0	2.510	2.000	1.135	1.000	5.000
DCA_3	0	2.735	3.000	1.075	1.000	5.000
DCA_4	0	2.804	3.000	1.039	1.000	5.000
DCA_5	0	2.853	3.000	1.061	1.000	5.000
S_Expected_Ben_1	0	4.069	4.000	0,831	2.000	5.000
S_Expected_Ben_2	0	4.137	4.000	0,864	2.000	5.000
S_Expected_Ben_3	0	3.853	4.000	0,912	2.000	5.000
S_Tech_Comp_1	0	4.000	4.000	0,816	2.000	5.000
S_Tech_Comp_2	0	3.922	4.000	0,871	1.000	5.000
S_Tech_Comp_3	0	3.775	4.000	0,906	2.000	5.000
S_Org_Read_1	0	2.971	3.000	1.107	1.000	5.000
S_Org_Read_2	0	3.186	3.000	1.073	1.000	5.000
S_Org_Read_3	0	3.029	3.000	1.052	1.000	5.000

C Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity

Figure C.1: Kaiser-Meyer-Olkin measure of sampling adequacy

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Kaiser-Meyer-Olkin factor adequacy
Call: KMO(r = my_data_quant)
Overall MSA =  0.86
MSA for each item =
       S_Growth_20_1        S_Growth_20_2        S_Growth_20_3        S_Growth_20_4 S_Profitability_90_2 S_Profitability_90_3
                0.92                 0.90                 0.92                 0.93                 0.83                 0.86
S_Profitability_90_4 S_Profitability_90_5 S_Profitability_90_6    S_RelBehavior_80_1   S_RelBehavior_80_2   S_RelBehavior_80_3
                0.83                 0.90                 0.91                 0.82                 0.92                 0.94
  S_RelBehavior_80_4   S_RelBehavior_80_5   S_RelBehavior_80_6 S_CollSpecialist_80_7  S_OperativeExc_40_1  S_OperativeExc_40_2
                0.96                 0.90                 0.91                 0.94                 0.88                 0.90
 S_OperativeExc_40_3  S_OperativeExc_40_4  S_OperativeExc_40_5  S_OperativeExc_40_6 S_Satisfaction_100_1 S_Satisfaction_100_3
                0.91                 0.91                 0.94                 0.85                 0.90                 0.82
S_Satisfaction_100_4 S_Satisfaction_100_5          PC_PC_110_1          PC_PC_110_2          PC_PC_110_3          PC_PC_110_4
                0.80                 0.84                 0.86                 0.85                 0.87                 0.83
         PC_PC_110_5   PC_PrefTreat_120_1   PC_PrefTreat_120_3   PC_PrefTreat_120_4   PC_PrefTreat_120_5      B_Expected_Ben_1
                0.85                 0.86                 0.78                 0.88                 0.91                 0.85
    B_Expected_Ben_2     B_Expected_Ben_3        B_Tech_Comp_1        B_Tech_Comp_2        B_Tech_Comp_3         B_Org_Read_1
                0.86                 0.86                 0.89                 0.85                 0.90                 0.69
        B_Org_Read_2         B_Org_Read_3         B_Org_Read_4               DPP_1                DPP_2                DPP_3
                0.69                 0.62                 0.58                 0.88                 0.84                 0.89
               DPP_4                DCA_1                DCA_2                DCA_3                DCA_4                DCA_5
                0.88                 0.61                 0.73                 0.78                 0.73                 0.71
    S_Expected_Ben_1     S_Expected_Ben_2     S_Expected_Ben_3        S_Tech_Comp_1        S_Tech_Comp_2        S_Tech_Comp_3
                0.86                 0.90                 0.80                 0.91                 0.83                 0.85
        S_Org_Read_1         S_Org_Read_2         S_Org_Read_3         S_Org_Read_4
                0.72                 0.72                 0.70                 0.70
```

Source: own elaboration. Revelle, W. (2023, June 21). *Psych: Procedures for psychological, psychometric, and personality research* (Version 2.3.6). Retrieved September 15, 2023, from https://cran.r-project.org/web/packages/psych/index.html

Figure C.2: Bartlett's test of sphericity

```
> cortest.bartlett(my_data_quant) #we reject the null HP as the p-value is extremely small
R was not square, finding R from data
$chisq
[1] 7873.514

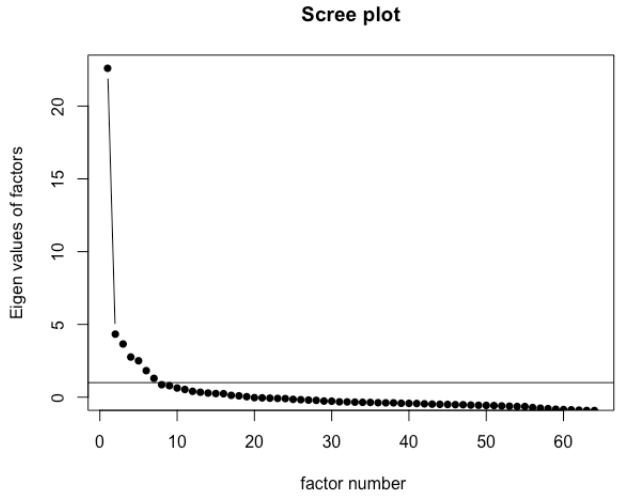
$p.value
[1] 0

$df
[1] 2016
```

Source: own elaboration. Revelle, W. (2023, June 21). *Psych: Procedures for psychological, psychometric, and personality research* (Version 2.3.6). Retrieved September 15, 2023, from https://cran.r-project.org/web/packages/psych/index.html

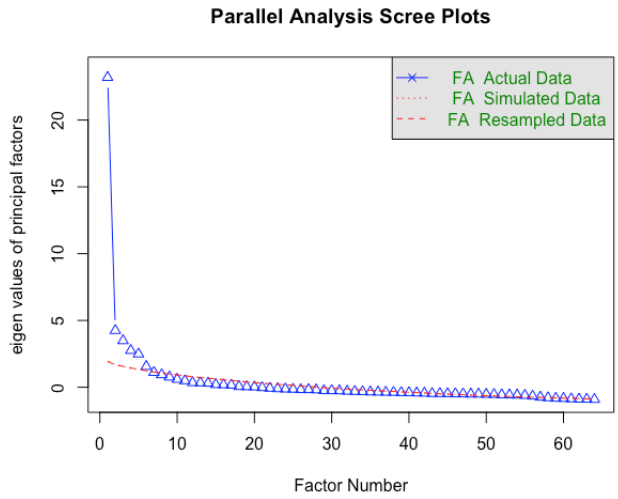
D Scree plot and parallel analysis

Figure D.1: Scree plot



Source: Revelle, W. (2023, June 21). *Psych: Procedures for psychological, psychometric, and personality research* (Version 2.3.6). Retrieved September 15, 2023, from https://cran.r-project.org/web/packages/psych/index.html

Figure D.2: Parallel analysis



Source: Revelle, W. (2023, June 21). *Psych: Procedures for psychological, psychometric, and personality research* (Version 2.3.6). Retrieved September 15, 2023, from https://cran.r-project.org/web/packages/psych/index.html

E Rotated Matrix

Figure E.1: Rotated matrix - *varimax*

	1	2	3	4	5	6	7	8	9	10	11
S_Growth_20_1	0,224	0,382	0,201	0,026	0,147	0,152	0,126	0,018	**0,534**	0,067	0,132
S_Growth_20_3	0,216	0,259	0,297	0,054	0,288	0,065	0,095	0,106	**0,660**	0,122	-0,077
S_Growth_20_4	0,184	0,146	0,324	-0,007	0,278	0,064	0,042	0,081	**0,691**	0,251	-0,037
S_Profitability_90_3	0,191	0,150	0,126	-0,018	**0,842**	0,034	-0,003	0,119	0,087	0,142	0,111
S_Profitability_90_4	0,178	0,044	0,081	-0,018	**0,786**	0,198	0,152	0,266	0,075	0,060	-0,043
S_Profitability_90_5	0,295	0,067	0,157	-0,027	**0,786**	0,110	0,050	0,252	0,247	0,036	-0,087
S_Profitability_90_6	0,358	0,207	0,180	-0,017	**0,664**	0,030	0,024	0,240	0,217	0,123	0,014
S_RelBehavior_80_1	0,226	0,135	**0,507**	0,088	0,083	-0,054	-0,039	0,375	0,313	-0,028	0,114
S_RelBehavior_80_6	0,182	0,177	**0,474**	0,046	0,355	-0,047	0,207	0,331	0,294	0,204	0,042
S_CollSpecialist_80_7	0,166	0,099	**0,574**	0,045	0,134	-0,093	-0,028	0,224	0,197	0,401	-0,088
S_OperativeExc_40_1	0,215	0,101	0,186	-0,029	0,313	0,026	0,095	**0,817**	0,042	0,120	-0,022
S_OperativeExc_40_2	0,159	0,116	0,166	-0,008	0,285	0,050	0,085	**0,832**	0,051	0,143	-0,020
S_OperativeExc_40_3	0,388	0,108	0,284	-0,005	0,325	0,081	0,087	**0,603**	0,215	0,184	0,006
S_Satisfaction_100_1	0,144	0,185	**0,653**	0,006	0,235	0,025	0,075	0,144	0,370	0,224	-0,139
S_Satisfaction_100_3	0,193	0,178	**0,887**	0,035	0,096	-0,017	0,009	0,101	0,147	0,027	-0,043
S_Satisfaction_100_4	0,229	0,237	**0,875**	0,012	0,062	0,069	-0,064	0,049	-0,035	-0,029	0,067
S_Satisfaction_100_5	0,218	0,174	**0,898**	-0,003	0,056	0,015	-0,081	0,048	0,043	-0,011	0,012
PC_PC_110_1	0,085	**0,630**	0,196	0,061	0,088	0,005	0,023	0,315	0,382	0,083	-0,212
PC_PC_110_3	0,206	**0,747**	0,085	-0,001	-0,027	0,050	-0,065	0,084	0,206	0,047	-0,105
PC_PC_110_4	0,185	**0,625**	0,067	0,191	-0,126	0,127	-0,088	0,052	0,134	0,124	0,132
PC_PC_110_5	0,177	**0,666**	0,050	0,072	0,169	-0,064	0,012	0,074	0,262	0,231	0,197
PC_PrefTreat_120_1	0,213	**0,816**	0,153	0,042	0,062	0,071	0,032	0,014	-0,176	0,010	-0,154
PC_PrefTreat_120_3	0,299	**0,747**	0,105	0,016	0,185	0,109	0,031	0,059	-0,029	-0,044	0,157
PC_PrefTreat_120_4	0,189	**0,800**	0,216	0,000	0,125	0,033	-0,025	-0,021	0,036	0,061	-0,041
PC_PrefTreat_120_5	0,100	**0,677**	0,306	0,113	0,182	-0,045	0,048	0,127	0,273	0,237	0,007
B_Expected_Ben_1	**0,619**	0,248	0,013	0,042	0,068	0,055	0,095	0,214	0,456	-0,022	0,108
B_Expected_Ben_2	**0,701**	0,248	0,108	0,066	0,108	-0,009	0,080	0,264	0,345	0,062	0,000
B_Expected_Ben_3	**0,666**	0,149	0,088	0,113	0,234	0,083	0,126	0,266	0,277	0,155	0,101
B_Tech_Comp_1	**0,717**	0,261	0,092	0,038	0,132	-0,043	0,087	0,345	0,077	0,226	0,130
B_Tech_Comp_2	**0,667**	0,294	0,135	0,047	0,205	-0,071	0,060	0,236	0,135	0,169	0,321
B_Tech_Comp_3	**0,646**	0,276	0,133	0,014	0,156	0,003	0,054	0,353	0,311	0,217	0,150
B_Org_Read_1	0,027	-0,007	0,075	0,109	0,055	**0,866**	0,279	0,140	0,104	0,012	-0,084
B_Org_Read_2	0,033	0,066	-0,040	0,050	0,105	**0,908**	0,222	0,041	0,026	0,041	-0,079
B_Org_Read_3	0,008	0,093	0,027	0,036	0,096	**0,901**	0,240	-0,034	-0,025	0,099	0,000
B_Org_Read_4	0,030	0,091	-0,046	0,019	0,030	**0,868**	0,183	-0,044	0,048	-0,001	0,133
DPP_2	0,296	0,150	0,109	-0,097	0,102	0,121	0,024	0,053	0,026	**0,813**	-0,183
DPP_3	0,280	0,243	0,077	0,072	0,199	0,055	0,089	0,284	0,186	**0,644**	0,270
DPP_4	0,325	0,244	0,064	0,010	0,168	0,075	0,090	0,257	0,299	**0,609**	0,097
DCA_1	0,049	0,081	0,051	**0,827**	-0,023	0,011	0,059	-0,057	-0,076	0,035	-0,172
DCA_2	0,030	0,025	-0,017	**0,872**	0,039	0,081	-0,051	0,052	0,085	-0,062	0,111
DCA_3	0,115	0,072	-0,028	**0,915**	0,033	-0,064	0,030	0,112	0,082	0,108	0,012
DCA_4	0,128	0,060	0,046	**0,921**	-0,027	0,100	-0,075	-0,045	0,017	0,004	-0,030
DCA_5	0,132	0,043	0,050	**0,879**	-0,056	0,057	-0,070	-0,049	-0,023	-0,095	0,068
S_Expected_Ben_1	**0,785**	0,125	0,131	0,076	0,037	0,042	0,102	0,117	0,088	0,081	-0,392
S_Expected_Ben_2	**0,757**	0,099	0,258	0,074	0,117	0,097	0,071	0,109	0,097	0,143	-0,357
S_Expected_Ben_3	**0,686**	0,118	0,113	0,106	0,342	0,064	0,150	-0,055	0,032	0,222	-0,240
S_Tech_Comp_1	**0,811**	0,113	0,207	0,060	0,150	0,096	-0,016	0,028	-0,080	0,060	0,013
S_Tech_Comp_2	**0,800**	0,175	0,216	0,111	0,103	0,017	-0,084	-0,101	-0,078	0,007	0,036
S_Tech_Comp_3	**0,740**	0,260	0,166	0,166	0,074	-0,117	-0,025	-0,022	0,101	0,093	0,176
S_Org_Read_1	0,246	-0,039	-0,023	-0,057	0,064	0,227	**0,735**	-0,012	0,091	0,054	0,250
S_Org_Read_2	0,091	0,009	-0,020	-0,076	0,009	0,245	**0,904**	-0,011	-0,044	0,031	-0,033
S_Org_Read_3	0,040	-0,021	-0,039	-0,016	0,031	0,252	**0,896**	0,122	0,031	-0,051	-0,055
S_Org_Read_4	-0,082	-0,013	0,002	0,018	0,120	0,258	**0,849**	0,124	0,134	0,102	-0,116

Source: own elaboration. Revelle, W. (2023, June 21). *Psych: Procedures for psychological, psychometric, and personality research* (Version 2.3.6). Retrieved September 15, 2023, from https://cran.r-project.org/web/packages/psych/index.html

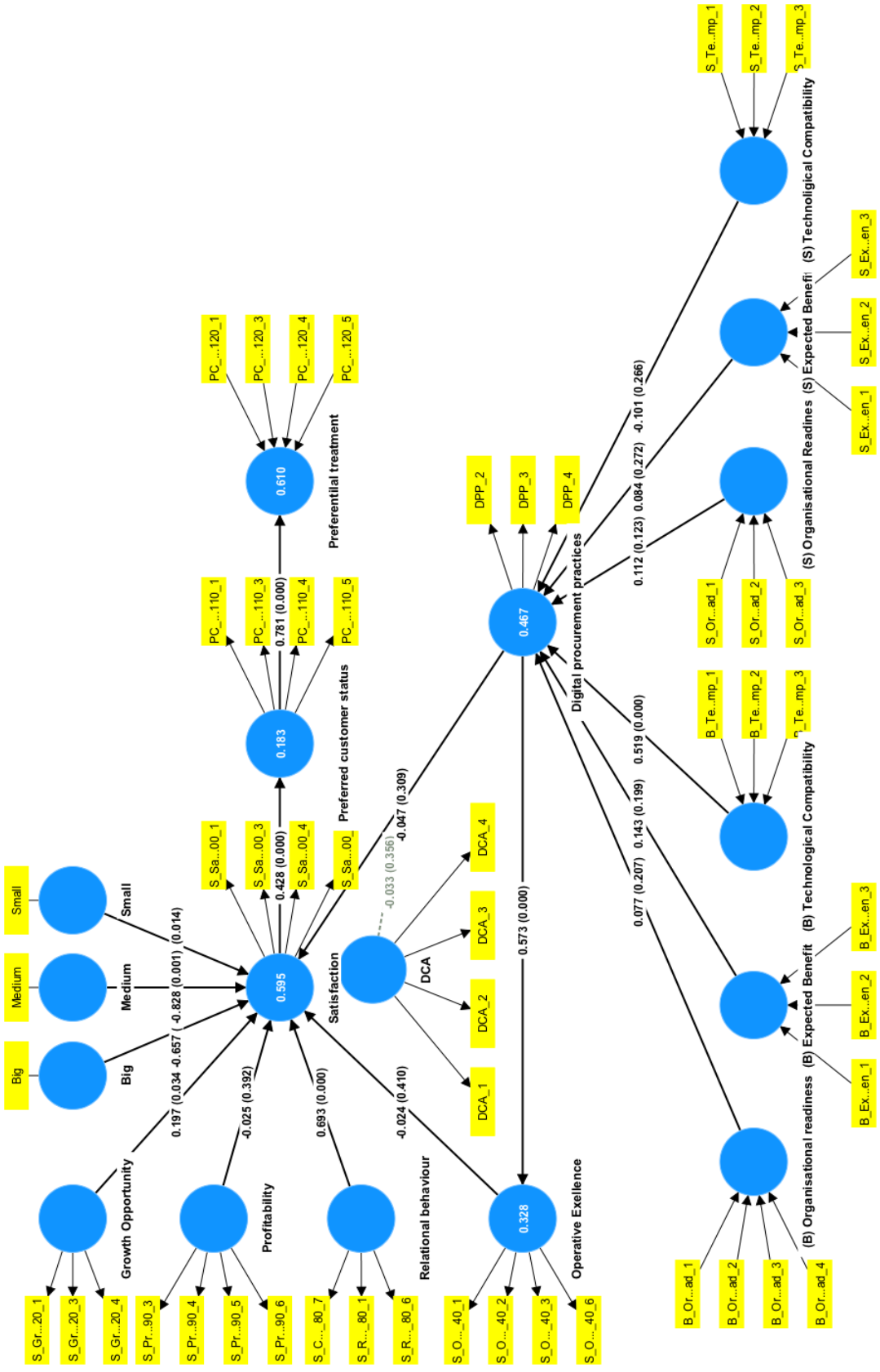
F Bivariate correlation table

Table F.1: Bivariate correlation table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Growth Opportunity	1																		
Profitability	0.16	1																	
Relational behaviour	0.82***	0.11	1																
Operative Exellence	0.69***	0.19	0.66***	1															
Supplier satisfaction	0.26**	0.19	0.23*	0.23*	1														
Preferred customer status	0.63***	-0.01	0.72***	0.64***	0.29**	1													
Preferentilal treatment	-0.19	-0.09	-0.20*	-0.19	-0.07	-0.12	1												
(B) Expected Benefit	0.19	0.11	0.13	0.21*	-0.02	0.23*	0.07	1											
(B) Organisational readiness	0.60***	0.20*	0.65***	0.50***	0.27**	0.45***	-0.25*	0.09	1										
(B) Technological Compatibility	0.58***	0.20*	0.59***	0.45***	0.23*	0.40***	-0.20*	0.11	0.55***	1									
(S) Expected Benefit	0.18	0.05	0.12	0.08	-0.16	0.02	-0.61***	0.09	0.18	0.20*	1								
(S) Organisational Readiness	0.63***	0.19	0.69***	0.49***	0.20*	0.43***	-0.29**	0.06	0.57***	0.52***	0.18	1							
(S) Technoligical Compatibility	0.48***	0.14	0.57***	0.39***	0.08	0.46***	-0.15	0.17	0.49***	0.57***	0.12	0.41***	1						
Digital procurement practices	0.48***	0.09	0.55***	0.37***	0.06	0.43***	-0.12	0.18	0.49***	0.57***	0.13	0.40***	0.78***	1					
DCA	0.57***	0.23*	0.57***	0.51***	0.20*	0.40***	-0.21*	0.03	0.51***	0.56***	0.13	0.65***	0.42***	0.36***	1				
Small	0.56***	0.05	0.60***	0.46***	0.12	0.43***	-0.23*	0.13	0.52***	0.65***	0.21*	0.71***	0.50***	0.48***	0.55***	1			
Medium	0.39***	0.08	0.43***	0.44***	0.04	0.39***	-0.15	0.08	0.35***	0.55***	0.05	0.50***	0.50***	0.43***	0.42***	0.73***	1		
Big	0.03	-0.00	0.10	0.05	0.21*	0.05	-0.30**	-0.08	0.17	0.07	-0.38***	0.14	0.08	0.04	0.05	0.06	0,03	1	
DCA x Digital procurement practices	0.05	0.12	0.13	0.19	0.16	0.16	-0.13	0.33***	0.19	0.10	0.05	0.12	0.05	0.02	0.15	0.11	0,07	0,01	1

* Correlation is significant at the 0.1 level (2-tailed). ** Correlation is significant at the 0.05 level (2-tailed). *** Correlation is significant at the 0.01 level (2-tailed). N = 102 (0 missing)

G SmartPLS graphical final model



H SmartPLS graphical reduced model