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To cite this article: Buddhi Pathak, Mona Ashok & Yin Leng Tan (2022) Value co-creation in the B2B context: a conceptual framework and its implications, The Service Industries Journal, 42:3-4, 178-205, DOI: [10.1080/02642069.2021.1989414](https://doi.org/10.1080/02642069.2021.1989414)

To link to this article: <https://doi.org/10.1080/02642069.2021.1989414>



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Published online: 17 Oct 2021.



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Value co-creation in the B2B context: a conceptual framework and its implications

電子企業環境之價值共創之研究:理論框架與實務意涵

Buddhi Pathak ^a, Mona Ashok ^b and Yin Leng Tan^c

^aStrategic Management at Bristol Business School, the University of the West of England, Bristol, UK;

^bOperations Management at Henley Business School, the University of Reading, Reading, UK; ^cBusiness Informatics at Henley Business School, the University of Reading, Reading, UK

ABSTRACT

This study aims to bring a renewed focus on Value Co-Creation (VCC) between an organisation (service provider) and its customers in the business-to-business (B2B) context. From the literature review, a conceptual framework of factors affecting VCC was developed by adding Customer to the Technology-Organisation-Environment framework (T-O-E). The enhanced Customer-Organisation-Technology-Environment (C-O-T-E) framework was empirically investigated from the focal firms' perspectives using semi-structured interviews with seventeen executives from knowledge-intensive service organisations. The research captured a total of sixteen factors affecting VCC and highlighted co-conception for competition as a new form of co-creation, where the customer-service provider's long-term relationship positively enables a competitive strategy. These findings have significant implications for how service providers achieve competitive advantage in a challenging B2B marketplace.

摘要

本研究以嶄新的角度重新檢視在企業對企業(Business-to-Business, B2B)的電子商業環境下,企業組織與其客戶間的價值共創(Value co-creation, VCC)相關議題。從既有文獻探討,藉由將客戶融入於技術、組織、環境(Technology-Organisation-Environment, T-O-E)理論框架中,建立了影响VCC因素的客戶-組織-技術-環境(Customer-Organisation-Technology-Environment, C-O-T-E)理論框架。本研究為強化該項理論框架,運用半開放式的定性方法訪談17名在知識密集型組織服務的高階主管,以公司經營者的經驗觀點聚焦探討C-O-T-E理論框架。研究結果歸納出16個影响VCC的關鍵因素和提供一個創新的共同競爭構想價值共創理論,強調企業組織與其客戶間(customer-service Provider's)的長期關係能促成正面有效的競爭策略。本項研究的結果對於協助企業在B2B商業環境中取得競爭優勢具有相當指標性意義。

ARTICLE HISTORY

Received 17 January 2021
Accepted 29 September 2021

KEYWORDS

Value co-creation; B2B; Customer-Organisation-Technology-Environment (C-O-T-E) framework; Co-conception for competition; Competitive advantage

關鍵詞

價值共創、企業對企業(B2B)、客戶-組織-技術-環境(C-O-T-E)理論框架、共同競爭構想

CONTACT Buddhi Pathak  buddhi.pathak@uwe.ac.uk

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Introduction

Co-creation is defined as, ‘the practice of developing systems, products, or services through collaboration with customers, managers, employees, and other company stakeholders’ (Ramaswamy & Gouillart, 2010, p. 2). To make co-creation successful, it is necessary to understand what motivates organisations and their partners involved in the co-creation process (Frow et al., 2015; Fuller, 2010). The benefits of customer co-creation are well reported (Ind et al., 2013; Moreira et al., 2020; Ramaswamy & Ozcan, 2018). Purchase and Volery’s (2020) systematic review of 289 papers highlights the growing focus on the role of external actors, in specific sectors, in enabling marketing innovation through co-creation and enhancing organisational performance.

Nonetheless, this process can be challenging. McKinsey’s 2014 study of 300 companies found that 90 per cent of executives were eager to integrate customers’ opinions and resources into their core processes, although only 12% actually did this (Bughin, 2014). From the customer perspective, Bughin’s (2014) study revealed that only a quarter of customers were aware of the co-creation concept; a further 5% knew about co-creation but not how it worked. Recent scholarly work has called for an extension of the boundary of co-creation research to include customers’ and organisations’ networks (Brodie et al., 2019; Vargo & Lusch, 2016), and for the study of factors that are essential for co-creation in the business-to-business (B2B) context (Ostrom et al., 2015; Ranta et al., 2020). In response to these gaps, this study explores the relationships between B2B vendors (service providers) and their customers (service buyers).

Ostrom et al. (2015) stress the importance of researchers understanding the value co-creation concept as an evolving and crucial body of knowledge and a rich research avenue. This topic is also identified as one of the top research priorities in service research (Leclercq et al., 2016; Ramaswamy & Ozcan, 2018; Vargo & Lusch, 2017). This study, thus, sets out to identify factors affecting the practice of value co-creation with the focus on the knowledge-intensive business service (KIBS) industry in the context of a B2B relationship. KIBS organisations are known for their human resources capabilities which they use to solve customer problems (Hidalgo & Herrera, 2020). In doing so, these organisations have greater roles and responsibilities for creating and enriching co-creation experiences and incentives for their customers (Füller et al., 2011); hence, they perceive value differently from how the customers do. Two research questions are proposed that will be investigated using a focal firm’s perspective to achieve the aim of the research:

RQ1: What are the factors affecting a customer firm’s participation in value co-creation?

RQ2: What are the factors affecting organisational participation in the value co-creation?

To study value co-creation between customers (i.e. customer firms in the B2B context) and organisations from focal firms’ perspective, we adapt the technology-organisation-environment (TOE) framework designed by Tornatzky et al. (1990). The TOE framework explains how a firm’s context (technological, organisational and environmental) influences its adoption and implementation decisions. However, in value co-creation, the customer becomes more than just an environmental factor (Maglio & Spohrer, 2008; Heinonen & Strandvik, 2015). We propose to extend the framework to include the customer (C) as co-creators of value (Vargo & Lusch, 2008). The extended customer-

organisation-technology-environment (C-O-T-E) framework provides a theoretical basis for studying both constraints and opportunities for customer and organisational value co-creation. This also enables organisations to better manage factors affecting value co-creation. We adopt an exploratory and qualitative research approach (Neghina et al., 2015) and draw on findings from focal organisations (service providers) that are involved in value co-creation practices with their customer firms in KIBS B2B settings.

This study presents a list of factors that are significant to value co-creation captured in the C-O-T-E framework. It extends the previous divided and siloed works of Payne et al. (2008), Zwass (2010) and Frow et al. (2015) by incorporating new notations in VCC and providing conceptual clarity on the forms of co-creation and how it can be used in organisations.

Following this introduction, the second section discusses the theoretical underpinnings, followed by a section covering the extended conceptual C-O-T-E framework. The fourth section presents the research methodology, the fifth summarises the findings and the sixth discusses the results and implications. The final section highlights the conclusion, research contributions, limitations and future research opportunities.

Theoretical background

Value co-creation in the B2B context

Value in the B2B context is defined as an actor's subjective experience as an outcome of a co-creation process in which value propositions (a product, service or solution) act as conveyors of potential value in the exchange processes between the organisation and the customer firms (Kohtamäki & Rajala, 2016). Gandhi et al. (2019) state that customer expectations and experience matter, but this logic is often neglected when it comes to B2B. For example, IBM's Institute for Business Value 2019 reported that B2B companies lag behind their business-to-customer (B2C) counterparts in customer engagement (Bracke et al., 2019). B2B and B2C differences have been noted in the literature concerning buying behaviour, the buying process, buying decision making and the level of complexity involved. Most importantly, B2B buying is typically seen as a collaboration between suppliers and buyers (Hakansson & Snehota, 1995) demanding co-creation to realise a win-win outcome from the relationship. Prior research on value co-creation has focused on the business-to-consumer context (Ashok et al., 2014); thus, VCC in the business customer context has had received relatively little attention (Lilien, 2016; Mustak et al., 2013) until recently (Purchase & Volery, 2020).

The importance of VCC in the B2B context has been magnified in the global, digitally connected, service-oriented, and innovative economy (Pathak et al., 2020). Sheth (2020) argues that the co-creation of value is more prevalent in all B2B markets and almost universally inherent in B2B services. This VCC practice could take several forms, e.g. co-design, co-conception of ideas and co-marketing (Frow et al., 2015). However, research also shows there is a risk of partners' opportunistic behaviours that could lead to value destruction in the B2B context (Ashok et al., 2018; Pathak et al., 2020). This paper explores the customer motivations to participate in value co-creation and organisational efforts to facilitate such participation (Aarikka-Stenroos & Jaakkola, 2012; Kohtamäki & Rajala, 2016; Mustak et al., 2013). This study adds to the work of Hakanen and Jaakkola (2012) not only

by extending the factors influencing co-creation efforts but also in the wider context of co-creation. Further, our study investigates how an organisation and its customer's willingness and skills affect the co-creation process, as described by Grönroos (2012), and the types of value that are generated as a result of the co-creation process (Leclercq et al., 2016). We adopt and extend the Technology-Organisation-Environment (TOE) framework to study factors affecting co-creation. The next section describes the TOE framework.

Conceptual framework

Technology-Organisation-Environment (TOE) framework

The researchers examined the information systems and service literature, including the Technology-Organisation-Environment (TOE), the Technology Acceptance Model (TAM), and Work Systems Theory (WST), to find relevant theory and frameworks. The TOE framework was chosen for its wide coverage in the literature and its adaptability in a new context (AlHinai, 2020; Awa & Ojiabo, 2016; Oliveira et al., 2019). Designed by Tornatzky et al. (1990), TOE focuses on three elements of the firm:

- *Technological context*: includes all the technologies that are relevant to the firm including those in use at the firm level and those available in the market but not in use in the firm.
- *Organisational context*: includes the resources available to the firm and the characteristics of the firm.
- *Environmental context*: includes the external business environment in which the firm operates, facing competition and dealing with the market regulators and structural change.

Since its inception, the TOE framework has been used to study B2B e-commerce (e.g. Teo et al., 2006), e-business diffusion (e.g. Lin & Lin, 2008) and digital transformation (AlHinai, 2020). The freedom to vary the factors or measures for each new research context makes it highly adaptable (Baker, 2012). However, Baker (2012) argues that '[it] remains to be seen how the [TOE] framework will evolve and change in response to the new domain' (n. p.). As value is always determined by the beneficiaries (e.g. business customers in B2B), customer contribution in the co-creation process is warranted (Vargo et al., 2010). In response, this study extends the TOE framework to include customer (C) as the fourth element, as suggested by Vargo et al. (2010) and Grönroos and Voima (2013), and the extended framework is called the *Customer-Organisation-Technology-Environment (C-O-T-E) framework*. The next section presents the rationale for the C-O-T-E framework.

Customer-Organisation-Technology-Environment (C-O-T-E) framework

Service theories such as service-dominant logic and service science emphasise that the customer is an important actor in the value co-creation process (Maglio & Spohrer, 2008). In a more recent development of service theory, *customer-dominant logic* (Anker et al., 2015; Heinonen et al., 2010; Heinonen & Strandvik, 2015) emphasises the need for a *more holistic understanding of the customer's life, activities, practices, experiences, and context*, in which service is logically and unavoidably rooted. Thus, understanding

in-depth the customer's perception would allow for a sustainable business. To understand this perspective, this study adapts and extends the TOE framework by adding the new dimension of 'customer'.

Similar to the customer contribution to value co-creation, the organisation uses its resources and capabilities to co-create value with the customer. Technology plays a key role, as discussed by Payne et al. (2008) in their process-based framework of value co-creation. External factors, such as changes in industry logic, customer preferences and lifestyles, provide opportunities for value co-creation (Payne et al., 2008). The environmental context beyond the firm's boundaries is also referred to as the *extended service climate (ESC)* in the value co-creation literature (Jaakkola et al., 2015). ESC is discussed within the social forces influencing value co-creation and referred to as value-in-social-context (Edvardsson et al., 2011). Hence, the combination of customer, organisation, technology and environment constructs become better able to explain VCC in B2B settings than TAM or WST constructs. The next section presents C-O-T-E in detail starting with the customer context of co-creation.

The customer context in the C-O-T-E framework

Building on the work of Payne et al. (2008), Zwass (2010) and Hoyer et al. (2010), this study has identified five customer-related factors (presented in Table 1), are chosen for their relevance and frequent citation in the VCC literature (e.g. Leclercq et al., 2016; Vargo & Lusch, 2016): *customer motivation, needs and desires* (Neghina et al., 2015); *perceived value* by the customer (Grönroos & Voima, 2013); *customers' knowledge, expertise and creativity* known as *competence* (Vargo & Lusch, 2008, 2016); *customers' trust and relationship with the organisation* (Ballantyne & Varey, 2006; Ind et al., 2013); and *customers' peer influence* through word of mouth, recommendations and other channels (Nambisan & Nambisan, 2008; Zwass, 2010).

Table 1. (a-priori) Customer context of value co-creation.

(a-priori) Factors	Consideration	Supporting literature
<i>Customer motivation, needs and desires</i>	Why does the customer want to be involved in VCC: their personal needs and desires can vary greatly and will influence their willingness to engage in VCC	Edvardsson et al., 2005; Fuller, 2010; Stucky et al., 2011; Chen et al., 2012; Jaakkola & Alexander, 2014; Neghina et al., 2015; Heidenreich et al., 2015; Friend et al., 2020
<i>Perceived value</i>	Some customers perceive value based on their <i>assessment of benefits and sacrifice</i> ; others look for <i>attributes of the product</i> ; while the rest enjoy the <i>ultimate experience of activities that generate value for them</i>	Prahalad & Ramaswamy, 2004; Etgar, 2008; Fuller, 2010; Campbell et al., 2011; Saarijärvi et al., 2013; Grönroos & Voima, 2013; Bharti et al., 2014; Guo et al., 2016
<i>Customer competence</i>	To achieve the strategic benefit, a firm needs to utilise as much information, knowledge, skills and other operant resources from their customers as they can access and use	Maglio & Spohrer, 2008; Nambisan & Nambisan, 2008; Desai, 2010; Vargo & Lusch, 2008, 2016; Skälén et al., 2015
<i>Trust and relationships</i>	Relationship building requires both commitment and trust between firm and customers that matter in VCC	Morgan & Hunt, 1994; Ballantyne & Varey, 2006; Westergren, 2011; Ind et al., 2013; Choi & Burnes, 2013; Scherer et al., 2015; Kosiba et al., 2020
<i>Peer influence</i>	Peer influence spreads in many forms, e.g. electronically or by word of mouth; a customer's behaviour can influence and help other customers to choose the best possible service.	Rowley et al., 2007; Nambisan & Nambisan, 2008; Zwass, 2010; Goh et al., 2013; Jaakkola & Alexander, 2014; Dowell et al., 2019

The organisational context in the C-O-T-E framework

The organisational context involves the characteristics and resources/capabilities of the organisation in the value co-creation process with the customer. It outlines organisation-related factors that enable or inhibit VCC. Table 2 presents the organisational factors affecting VCC. Building on work by Payne et al. (2008), Zwass (2010), Hoyer et al. (2010) and Frow et al. (2015), this study identifies five organisation-related factors: *organisational motivation to VCC* (Frow et al., 2015); *perceived value by way of revenues, profits, referrals or innovation* (Payne et al., 2008; Prahalad & Ramaswamy, 2004); *organisation's competence*, both operant and operand resources required for VCC (Vargo & Lusch, 2016); *organisational policy and governance mechanisms to guide VCC process* (Grover & Kohli, 2012; Guo et al., 2016); and the *organisational culture* that supports VCC (Ind et al., 2013; Paasi et al., 2014).

The technological context in the C-O-T-E framework

The *technological context* refers to the internal and external technologies or technology-related factors that are relevant/available to the organisation to facilitate value co-creation. Technology is defined as the application of a scientific principle to solve human problems or satisfy human needs (Arthur, 2010). The dual role of technology as operand and operant has made a wide range of interactions and interaction tools available (Akaka & Vargo, 2014; Madhavaram & Hunt, 2008). Building on the work of Payne et al. (2008), Zwass (2010) and Frow et al. (2015), this study has identified three technology-related factors (Table 3): *firm's digital infrastructure and support systems that enable VCC*

Table 2. (a-priori) Organisational context of value co-creation.

(a-priori) Factors	Definition	Supporting literature
<i>Organisational Motivation</i>	Similar to the customer motivation discussed earlier, this factor refers to why an organisation wants to embark on VCC. Organisations are motivated by their needs and desires, which trigger value co-creation.	Möller et al., 2008; Chen et al., 2012; Russo-Spena & Mele, 2012; Hakanen & Jaakkola, 2012; Chen et al., 2012; Ranjan & Read, 2016; Cova et al., 2015; Frow et al., 2015
<i>Perceived value</i>	Organisations achieve competitive advantage through the benefits (or value) by way of <i>revenues, profits, referrals</i> (Payne et al., 2008), <i>innovation, customer relationship management capabilities</i> (Nambisan & Nambisan, 2008), <i>decrease in high product failure rates</i> (Fuller, 2010), and <i>enhancement of a product value and innovativeness</i> (Hoyer et al., 2010; Campbell et al., 2011).	Edvardsson et al., 2005; Ballantyne & Varey, 2006; Rowley et al., 2007; Payne et al., 2008; Zwass, 2010; Fuller, 2010; Hoyer et al., 2010; Guo et al., 2016
<i>Competence</i>	Competencies are significant to the organisation because, without them or willingness to develop those needed to meet the client's service requests, the client may seek new partners (Möller et al., 2008)	Ballantyne & Varey, 2006; Vargo & Lusch, 2008; Möller et al., 2008; Campbell et al., 2011; Stucky et al., 2011; Neghina et al., 2015; Vargo & Lusch, 2016
<i>Policy and governance</i>	Policy and governance guide the VCC process through <i>defining mechanism, control, responsibilities, resources sharing, intellectual property (IP), reward and feedback systems</i> , i.e. defining the rules of engagement	Desai, 2010; Hoyer et al., 2010; Fournier & Avery, 2011; Grover & Kohli, 2012; Lusch & Nambisan, 2015
<i>Organisational culture</i>	It consists of <i>leadership, approach to innovativeness; open vs closed, risk-taking and learning behaviours</i> .	Prahalad & Ramaswamy, 2004; Desai, 2010; Ind et al., 2013; Watkins, 2013; Grönroos & Voima, 2013; Paasi et al., 2014; Ordenes et al., 2014

(Henfridsson & Bygstad, 2013; Westergren, 2011); *new technology development that supports customer interaction* (Castillo et al., 2020; Goh et al., 2013; Rishika et al., 2013); and *information security and privacy* (Lusch & Nambisan, 2015).

The environmental context in the C-O-T-E framework

The *environmental context* or *business environment* refers to the industry's characteristics, market structure and competitors that can affect the value co-creation process. External factors, such as changes in industry logic, and in customer preferences and lifestyles, provide opportunities for value co-creation (Payne et al., 2008). The environmental context goes beyond the firm's boundaries and is often referred to as the *extended service climate* in the value co-creation literature (Jaakkola et al., 2015).

According to Edvardsson et al. (2011), value is co-created with customers and assessed based on value-in-context. Such context is shaped by social forces and social structures; thus, the value should be understood as value-in-social-context and as a social construction (p. 327).

Building on Payne et al.'s (2008) *changes in industry logics, customer preferences*, and Edvardsson et al.'s (2011) *value-in-social-context* conceptualisations, this study identifies the two environment-related factors (Table 4): *government policies* regulating market interactions (Laamanen & Skålén, 2015; Lemey & Poels, 2011); and *changing market structure, market trends and competition* (Edvardsson et al., 2011; Payne et al., 2008).

Methodology and research context

This exploratory study investigates the factors affecting value co-creation between customers and organisations using the conceptual C-O-T-E framework. Given that the concept of value co-creation is still evolving (Neghina et al., 2015; Ostrom et al., 2015), this study uses a qualitative approach. In-depth interviews allow the researchers to delve deeper into the organisational perspective of VCC and recognise insightful opinions, inferences and explanations (Järvi et al., 2018; Yin, 2014). The organisation's perception of value

Table 3. (a-priori) Technological context of value co-creation.

(a-priori) Factors	Definition	Supporting literature
<i>Digital infrastructure</i>	It refers to a collection of information technologies and systems that jointly produce a desired outcome (Henfridsson & Bygstad, 2013).	Prahalad & Ramaswamy, 2004; Nambisan & Baron, 2009; Fuller, 2010; Kohler et al., 2011; Westergren, 2011; Grover & Kohli, 2012; Akaka & Vargo, 2014
<i>New technology</i>	Dialogue (Prahalad & Ramaswamy, 2004) or interaction (Grönroos & Voima, 2013) as the foundation of VCC are enabled by the use of technology. The latest technological advances allow for real-time, and highly personalised interactions and social collaboration between customers and the focal organisation.	Payne et al., 2008; Rishika et al., 2013; Goh et al., 2013; Ostrom et al., 2015; Castillo et al., 2020
<i>Security and privacy</i>	Perceived security reflects the extent to which an organisation's digital infrastructure can protect the integrity of resources from attacks/intrusion (Shin, 2009). The organisation must be able to fend off attacks/intrusion as this plays a key role in the value co-creation process.	Shin, 2009; Grover & Kohli, 2012; Morosan, 2018; Lusch & Nambisan, 2015

Table 4. (a-priori) Environmental context of value co-creation.

(a-priori) Factors	Definition	Supporting literature
<i>Government policies</i>	Policy refers to a plan or course of action on how a government controls various market-related practices between organisation and customer which may include but is not limited to regulations on customer rights, sustainability, health and safety, taxes and investment and intellectual property.	Zwass, 2010; Lemeij & Poels, 2011; Grover & Kohli, 2012; Yngfalk, 2013; Paasi et al., 2014; Laamanen & Skälén, 2015
<i>Market structure, trends and competition</i>	As value co-creation practices are influenced by various social contexts, the context of the business (e.g. industry structure), social forces (e.g. customer lifestyle and culture), and competition can affect the organisation's co-creation efforts (Edvardsson et al., 2011; Hakanen & Jaakkola, 2012).	Prahalad & Ramaswamy, 2004; Payne et al., 2008; Hoyer et al., 2010; Hakanen & Jaakkola, 2012; Rayna & Striukova, 2015; Paasi et al., 2014

co-creation will be different from the customers' because organisations are responsible for creating and enriching co-creation experiences and incentives for the customer (Füller et al., 2011; Rayna & Striukova, 2015). Therefore, this study only looks at exploring focal organisational perspectives on their value co-creation practices.

The criterion for selecting an interviewee was that the organisation they represented incorporates co-creation with customers in their business model. A purposeful sampling (Patton, 2000) approach was adopted to recruit respondents with relevant experience through personal networks. A similar sampling approach has been advocated by Lehrer et al. (2012), Greer (2015) and Petri and Jacob (2016). The study used semi-structured, in-depth interviews with executives from seventeen organisations to explore VCC practices and to use the C-O-T-E framework as a theoretical foundation to guide the investigation of factors affecting VCC in the B2B context. Interview guidelines were based on the following six topics:

- (1) Introduction (role, experience with co-creation task, its types, the reasons and motivation for co-creation)
- (2) Customer context (motivation, value expectation, significance of customer resources, the importance of trust, and their influencing behaviour)
- (3) Organisation-related factors (motivation, resources required, value sought, policy and governance, organisational culture)
- (4) Technology context (firm's digital infrastructure, new technology, privacy and security)
- (5) Environment context (government policy and regulation, market structure, trends and competition)
- (6) Challenges associated with VCC.

Seventeen interviews were conducted in England between September 2016 and September 2018, fourteen face-to-face and three via Skype, lasting between 45 and 115 min. The researchers gathered information into participants' organisational co-creation initiatives with business customers from their company website, case studies, news articles and company policies. Thematic analysis of these documents helped in exploring the organisations' co-creation practices, their vision to include customers in service development or

innovation processes and to identify their past co-creation activities. The chosen interviewees were senior or executive staff who had worked with business customers in product/service development in the B2B market. Further, we validated that the participants' organisations had experience in co-creating products/services/solutions with customer firms.

Each interview was recorded (with consent) and subsequently transcribed. The study relied on the complementary roles of interviewees from various organisations to increase *data triangulation and validity* (Hahn et al., 2018). Table 5 presents the details of each interviewee: seventeen organisations (coded as O_1 – O_17), representing various small-medium enterprises (SMEs) and multinational corporations (MNCs) operating in the UK market.

The study applied predetermined (a priori) and emerging codes (Ashok et al., 2021; Braun & Clarke, 2006; King & Brooks, 2018) to analyse the interview data with NVivo software. Following the guidelines developed by Jackson and Bazeley (2019), the researchers designed an NVivo database of the interview scripts. Structured nodes and coding systems were developed and case types, classifications and comparisons of codes were performed. This approach is similar to that used by Greer (2015), who applied NVivo

Table 5. Profiles of interviewees.

Organisation (coded)	Brief description and interviewee profile
O_1	Head of Engineering of a software and solutions provider in big data at a medium-sized enterprise in the UK, with over 10 years of experience.
O_2	Systems Architecture specialist in a multinational consulting and solutions provider, with over 30 years of experience in the technology space.
O_3	Associate Director and Head of Business at a software and solutions provider in a medium-sized enterprise in the UK, with over 18 years of experience.
O_4	Founder and CEO of a UK-based software and solutions provider in the Healthcare sector, with over 29 years of experience.
O_5	Senior Portfolio Accounts Manager for a multinational consulting and service provider, with 22 years of experience in the UK B2B market.
O_6	Head of Enterprise Architecture at a multinational delivery and shipping company in the UK, with 18 years of experience.
O_7	Group IP Acceleration Programme Director at multinational IT services and consulting firm, with 26 years of experience.
O_8	Operation Director at a service firm specialising in software as a service in HR and recruitment; a medium-sized company in the UK, with over 23 years of experience.
O_9	Sales Account Manager in a multinational product and solution provider in the ICT area, with over ten years of experience.
O_10	Principal Service Management Consultant at a multinational ICT service provider, with 18 years of experience in co-creation practices with business customers and partners in IT project management, IT security management, and management consulting.
O_11	Operations and Programme Director of a global cloud service provider. More than 17 years of experience in IT and management consultancy, client and cloud architecture and project management.
O_12	Business Analytics Consultant in one of the fast-growing big-data solutions providers in the UK. More than 16 years of experience in IT and management consulting. Worked in MNCs, SMEs and the UK higher education sector at managerial and lecturer levels.
O_13	Senior Cyber Security Consultant in a large consulting firm in the UK. Over 18 years of experience in IT, business, and cybersecurity practices.
O_14	Customer Experience and Service Improvement Expert. Service recovery, creativity in service, service innovation researcher for more than 18 years.
O_15	Co-founder of a software development company in the cybersecurity space. A small UK company dealing with business customers across the world. More than 30 years of experience in the B2B market.
O_16	Co-founder of a UK small-sized solution provider for the cable television and network industry, with over 25 years of experience dealing with business customers.
O_17	Founder and CEO of a UK small-sized data analytics and solution provider in device detection services, with 19 years of experience in the B2B context.

software to analyse the qualitative data to report defective co-creation practices in the professional services context. The approach supports the continuous comparative process of data triangulation, i.e. on every occasion possible the study compared interviewees' responses (Patton, 2000). This approach meant that the overall response from the research participants resulted not only in answering the research questions but also in providing another facet of co-creation in practice, as presented in Table 6.

Findings

The interview findings are presented under the six sections noted in the Research Methodology: introduction, customer-context, organisation-context, technology-context, environmental-context and challenges associated with VCC in the B2B context.

Introduction to forms of co-creation in practice

Through the interviews, this study explored the types or forms of co-creation and identified various VCC practices through which co-creation might occur. These practices are developed based on Grönroos's (2012) customer feedback and Frow et al.'s (2011, 2015) theory on co-conception of ideas, co-design, co-research, and co-marketing. This paper identifies a new form of co-creation, co-conception for competition. Table 6 summarises the forms of co-creation and the associated coding used to classify the interview findings. The results also show organisations involved in more than one form of co-creation. For example, O_2 was found to be practising *co-conception of ideas, co-design, co-research, and co-marketing*. The other form found to be dominant amongst all companies is the *feedback loop*. This is used for various purposes: by O_3 to improve their prototype; O_4 for problem identification; and O_5 for introducing new features and product innovation. O_3, O_8, O_10 and O_12 practise *co-conception for competition*, which is defined as *customers helping an organisation to beat their competitors*.

Interviewees O_3 and O_8 suggested two ways in which customers help their organisation to beat the competition:

- (1) Pursuing/forcing the organisation to add new features, functionality, or services to their products, which match or outperform the competition, and
- (2) Helping the organisation understand how the competitors' product/systems work, and consequently suggesting the next step.

For example, O_3's Associate Director explained the process of co-conception for competition as:

Sometimes it is far greater than that (i.e. suggesting new features). Sometimes it is, I hate supplier X. It might be the outgoing supplier that we are taking over from, Oh I hate them and then they give us [a] log in to their systems so that you can have a look at what we are up against! ... and you go, oh I never thought I would have had that! That's a good idea.

In the case of O_8, customers helped their organisation by *suggesting new features* that they had seen elsewhere or desired to have themselves; the Operations Director explained:

Table 6. Co-creation forms coding and themes.

Level 1 code	Source	Example of Level 2 code	Themes example	Associated organisation
Co-conception of ideas	Frow et al. (2011; 2015)	New ideas/features	'Do we see an opportunity to test new ideas or concepts with that customer loyalty? Yes, massively.' (O_4)	O_2, O_4, O_6, O_8, O_9, O_10, O_11, O_12 O_15 O_16
Co-design	Frow et al. (2011; 2015)	Formulating solution together	'And then working with them, providing them with sort of snippets of capability they could then feedback on and help ensure sort of solution they get ... in the shape of [a] working prototype.' (O_1)	O_1, O_2, O_5, O_6, O_13 O_15 O_16
Co-research	Frow et al. (2011; 2015)	Research engagement	'One of the areas is research where there are [a] lot of really about doing things, our research department, So now with the research, we have a whole way engaging with our clients. So I think first of its kind of client projects. We work with a client or couple of clients, to really to co-develop, their problems, our technology ... one very specific example of where we do it is our research team.' (O_2)	O_2, O_14
Co-marketing	Frow et al. (2011; 2015)	Client demonstration	'So we gave them some clients to talk to and they have arranged with the client. They're actually going to go in [the] office and sit with them so they can actually see the system working.' (O_8)	O_2, O_8 O_15
Feedback loop	Grönroos (2012)	Problem identification	'And then we began to close partnerships in agile terms when we develop a solution, getting feedback and adjusting it we went the way. So that type of opportunity to get close to the customer and innovate alongside each other we do, but it is within the product.' (O_4)	All of them; O_1-O_17
Co-conception for competition	Emergent	New features/ beating competition	'... (customers) tend to network a lot whether it be at conferences or forums and they will talk about new things that they have seen or heard from new suppliers. Therefore, we need to be aware that they can gain knowledge of other systems. We mustn't be complacent. We must continue to engage.' (O_8)	O_3, O_8, O_10, O_12

I think it might influence their (customer) desire for our product to have what our competitors have. We may be able to justify why we haven't got that functionality and offer an alternative functionality to meet that need or we might think, well if they're looking at an alternative supplier and are really interested maybe we do need to do some work on this.

O_10 elaborated their practice:

It is possible to use the customer network to gain an insight into the competitor's capabilities, because, that [is] what it is all about. Gaining an insight [in]to the competition, the capabilities shows [the] organisation's weaknesses and strengths. Now you have an extra set of insights from customers, who are feeding back to you information about where you stand in the

market. Then, obviously, you prioritise what are your next steps in the product or service development pipeline.

Customer-context of co-creation

The customer context refers to the characteristics and resources/capabilities identified as *customer motivation, perceived value, their competence, trust and relationship and peer influence* that have positive or negative effects on VCC; these were all found to be related and are presented in [Table 7](#). One factor found to be significant for co-creating value was the *culture of the customer firm*. This makes six customer-related factors to be considered in the value co-creation process. The culture of the customer firm, *which was not included in the conceptual framework*, emerged from the findings as one of the significant factors affecting co-creation. Interviewees O_3, O_4, O_5, O_6, O_7, O_11 and O_13 explained that the business customer's way of thinking, their mindset on opening up their organisation, their approach to innovation and interaction with the organisation were found to affect the overall business relationship; according to the Head of Enterprise Architecture, O_6:

It is always painful, it is always stressful and it is all about how well the two cultures work together to solve the problems.

The Senior Cyber Security Consultant O_13 confirmed that:

Culture is a big factor; we have perceived understanding of the culture. Even the contractual agreement does not codify culture. If we miss the cultural bit (of [the] customer), we will end up, even our strategy will not make sense, because we miss [the] culture. Culture is the fluid, is the oil that drives strategy.

Organisation-context of co-creation

The organisational context refers to characteristics and resources/capabilities, which are identified as *organisational motivation, perceived value, competence, policy and governance mechanism, and organisational culture*, each having a positive or negative effect on VCC as confirmed by participants. The main motivation behind the organisational approach to co-creation was found to be *creating more competitive offerings and reducing the product failure rate*, views confirmed by interviewees from O_1, O_2, O_3, O_4, O_5, O_6 and O_8. According to O_2:

Closed-door research ... and that wasn't working very well. So now with the research, we have a whole way [of] engaging with our clients. So we are more likely to work with clients who help us develop that and obviously then we work out how we will take that to market. So, if you get up, you are more specific then there's more opportunity for co-creation at that business level.

The indicative quotes and codes used to generate the findings are presented in [Table 8](#).

Technology-context of co-creation

The importance of technology was emphasised by the interviewees as significant enablers for engaging and maintaining strong links with customers. The interview findings suggest

Table 7. Updated customer-context factors (based on co-creation forms).

Level 1 Code	Level 2 code	Indicative quotes
1.1 Motivation	Needs	'... very first part is for customers to recognise and to admit that they have a problem ... You know that might sound obvious because why would someone bring you in if you don't have [a] problem.' (O_1)
	Desires	'Some people are more like they want to do for greater good ... '(O_3)
1.2 Perceived Value	Benefits-sacrifice	'One is the risk, you know our customers are willing, depends on the opportunity on what we are doing but at times our clients are willing to risk more if there is more gain. So there is certainly the risk tolerance, especially if they are looking at first to market or driving something quickly.' (O_7)
	Means-end (e.g. product attributes)	'... so that they get better candidate engagement and they can recruit more effectively and more quickly and perhaps than their competitors so that it could actually be to two different ideas here that one for them to be more efficient and effective and save money for their organisation.' (O_8)
	Experiential approach	'Cost is only the factor to the certain point. So it is more about the student experience. It is going to affect the student experience in the long-term and they won't do it.'(O_9)
1.3 Competence	Operant resources (e.g. presence of/ lack of skills and knowledge)	'... they definitely have "know"- high technical, they have a vast amount of resources; they have cloud, they have all sort of fantastic things we know we don't have access to.' (O_6) 'The great example where using their skills as oncologists and our skills as technologists and coming together to create this pretty much game-changing solutions and then co-marketing it.' [i.e. presence of operant resource] (O_2) '... We were sort of talking about flying drones and you know ... Airships with internet capabilities ... they are so far out of their comfort zone. Because that's why I live to deliver service to my customers today and my customers don't necessarily understand all these [i.e. lack of operant resource].'(O_5)
1.4 Trust & Relationship	Trust	'... Because they know we see their clients across their sectors and able to obviously not breach clients confidentiality.' (O_7)
	Relationship	'... I mean it is of mutual relationships. They need our assistance and we need their assistance. We need their help in order to help them.' (O_1)
1.5 Peer Influence	Recommendations	'... We will be recommended to other organisations by current users because they think we're good. They think our software is good and they think our service and support is good. So they will influence perhaps a peer in another organisation.'(O_8)
1.6 Culture	Openness / Blame	'... much more open to co-create and look to us almost to curate that.'(O_7)
		'... are sometimes keen to point finger on us saying "oh you have not done this on time!" They don't mind the fact that they have not done XYZ! That's very much a cultural thing.'(O_3)

that technology, especially ICT, enables co-creation by supporting interaction between the organisation and its customers and enabling new business models. For example, the *firm's digital infrastructure, new technology and provision for security and privacy* were found to play a significant role in enabling co-creation between the organisation

Table 8. Updated organisational-context factors (based on co-creation forms).

Level 1 code	Level 2 code	Indicative quotes
2.1 Motivation	Access to resources	'Customer knows their problems, they have skills to know [the] problem so access to that skills knowledge.' (O_2)
	Create competitive offering	'So when we follow the experimental scientific path of doing experiments on a very small scale, learning from them and refining our directions that tends to work very well in terms of building things on what people do want and what people don't pay money for.'(O_1)
2.2 Perceived Value	Monetary	'It's all about money and building right things ... building the things that market wants.'(O_2)
2.3 Competence	Knowledge and skills	'Critical to that is our employees, our teams, their skills and their attitudes ... it is not necessarily a domain where many people have direct experience in. And that's what I think definitely is allowing us to go and deliver the value we are to our clients.' (O_1)
2.4 Policy and Governance	Non-Disclosure Agreements (NDA)	'And obviously, there is a thing like NDAs and other things that get signed along the way to ensure compliance on our side.' (O_1)
	Intellectual property rights (IPR)	'We have specific stuff around IPRs; what it means, who can use it, terms of use, whether there's any monetary to and from, etc. For example, we have some products we sell, if we have co-created them with the customer, every time we sell it they will get kind of like royalty.' (O_2)
2.5 Organisational culture	Risk-taking	'I see as when I look at the customer as I am the one that takes risks and investments so that my customers doesn't have to.' (O_4)

and its business customers. The importance of the digital infrastructure in their business is confirmed by O_6:

APIs allow customers to tell us more about them. They will be able to interact with us ... we are trying to make [a] lot of products more flexible and ease of business with us. That is the directive on the digital space and obviously, in our digital space we are trying to do with apps and mash-ups ... and in that space, the technology at the back end is all the central function.

Table 9 presents the results of the analysis.

Environment-context of co-creation

The study findings suggest that business environment-related factors such as *government policies and regulations, and competition and market trends*, are important factors in co-creating value with business customers. Highlighting the significance of government rules and regulation, O_3 noted: the government will come out with some new rules. Usually with a surprise and usually with a deadline ... we need to make sure that we

Table 9. Updated technology-context factors (based on co-creation forms).

Level 1 code	Level 2 code	Indicative quotes
3.1 Digital infrastructure	Interaction	'... with our ongoing communications, whether we are doing management of a server or otherwise sort of having technical tools at your fingertips for communicating with your clients whether it is instant messaging or emails or whatever shortens the gap between you and your clients.' (O_1)
3.2 New technology/ innovation	Human creativity	'Things will never going to happen via telephone, is it? ... and in Asia, there is [a] different dynamic and there is also different things across the world and even within Europe, there are sort of different things happening.' (O_5)
3.3 Security and privacy	Data access	'With the cloud products, all of our UK customers want the data to be kept in the UK, so we have to open the UK data centre for that bit. The most sensitive for ... type of customers want only the UK people to access the data in the UK. So that's the sort of an additional layer of the.'(O_5)

need to keep that in the road map and make sure they are built-in. Table 10 presents examples of coding for the environmental context of value co-creation.

Challenges to value co-creation

Analysis of the interviews with the managers and executives from the 17 organisations suggests four particular challenges related to value co-creation:

(1) Identifying the right balance of customer input

The interviews revealed several challenges associated with co-creation with customers. Several respondents, including O_1, experienced challenges in meeting customer needs with little input on co-creation. And not enough customers knew about or understood the problem, so there was no co-creation of value. As O_1 noted:

... because it was a bet on customer or some customers wanting something and before confirming ... Ah ... something was built and delivered and it did not really meet their needs. So I guess, put it like this ... there was no co-creation of the value and it was just a creation from our part.

The challenge of finding the balance between customer needs and wants was confirmed by O_2:

One of the areas where there is definitely a problem is how do you work with the client to make sure what they need not necessarily what they want.

(2) Managing resource limitations

Global and digital marketplaces are pushing organisations towards shorter product-service-solution life cycles. Thus, organisations that focused on incremental products ensuring maximum value with limited time to develop products found co-creating value with customers challenging. O_2 and O_8 highlighted the lack of sufficient time for the co-creation process itself; as O_8 noted:

Yes, it can be frustrating if we don't have enough time or there are contingencies on time. Time is probably always the biggest thing ... there are frustrations sometimes because there wasn't enough time to do this or that happened.

Table 10. Updated environment-context factors (based on co-creation forms).

Level 1 code	Level 2 code	Indicative Quotes
4.1 Policy and regulations	Compliance	'They (compliance) play [a] big role especially with ... (Industry). So the government will come out with some new rules. Usually with a surprise and usually with a deadline. And then from the customer perspective, they turn around and say how you going to help us achieve this!' (O_3)
4.2 Market structure, trends and competition	Competition	'... but at APIs I mean again APIs are [a] big thing all if you can look over competitors like X (competitor) they have already got APIs.'(O_6)
	Trends	'in ... (industry) as it stands at the moment, if you jump back to maybe 5 or 10 years ago it was the X (customer) choosing the ... and now it is the ... choosing X because they are paying ... This is the problem we have to deal.' (O_9)

The challenge to manage limited resources can also constrain the commercialisation aspect of co-creation.

(3) Overcoming commercialisation of co-created products and managing complexity

How quickly they make money from their collaborative projects was found to be a key challenge to several companies. For instance, O_6 explained why commercialisation was important for co-creation with customers:

Obviously, the business runs in money, so if we embark on what can take years then we probably wouldn't do that ... as soon as the company is investing the risk money they want [a] return on the risk money ... in short, we need to get the value out on both sides.

In addition, O_3, O_6, O_15 and O_16 explained that the challenge is to secure the investment and get people on board for collaborative projects.

The other challenge related to commercialisation, a more direct financial one, is around customers wanting more features or system upgrades without payment. This would not bring about a viable co-creation relationship, according to O_6:

X (Customer) just said to me, 'we will be really interested in ... (features) and if it doesn't cost anything ... Well, it is ok, yeah ... So, they are interested but there is not a lot of money to be put into that. They say, yeah I want this but when we say 'ok, do you want to pay?' they say 'No!' ... So we have to fund it, repair for it and do it but ...

As these participants suggested, how they turn their labour into profit remains a key challenge.

(4) Co-ordination throughout the co-creation process

Co-creation may involve many stakeholders and a large number of customers and communities, which makes it difficult to manage; thus, co-ordination between various stakeholders was found to be challenging for companies, including O_6:

Although we have got one thing sitting here, 150 interfaces are coming in so you have to coordinate across that whole community to migrate and move everybody so it becomes very complex and I think you get to the point where there are lots of laggards from our customer side of things.

Co-creation requires a change in people's perceptions and organisational processes. Thus, it is complex, requiring reengineering of internal processes and encountering resistance from risk aversion, as confirmed by O_7:

People are not ... you know the people are typically risk-averse and people make of corporations, so you don't have a lot of organisation running towards change. You typically have organisation running away from change.

The next section discusses the findings and their implications and outlines the study's contribution to the body of knowledge.

Discussion and implications of findings

This section discusses the findings and implications of the study, in the context of organisation and customer value co-creation practices. Figure 1 summarises the factors affecting value co-creation in a B2B context and captures various forms of co-creation. Discussion and implications of the findings are presented under several headings: Co-conception for competition (a new form of co-creation) which emerged from the interviews, and the Customer-Organisation-Technology-Environment related factors and challenges faced in value co-creation.

A new form of co-creation: co-conception for competition

The findings show that most of the organisations participated in *feedback loops*, empirically confirming the conceptualisation of Grönroos (2012). The results also confirm the existence of various forms of co-creation in practice (Frow et al., 2015). They further reveal a new form of co-creation: *co-conception for competition* (as predicted by Frow et al., 2011, 2015). *Co-conception for the competition* is defined as ‘two or more actors, e.g. organisation and customer, collaborating to innovate products, services or solutions to win existing rivalry in the market; where the customer positively influences the organisation to add new features, functionality or service to their existing products.’

The participants stressed that customers help their service provider to understand their competitors’ product/service offerings, and to enable the service provider to match or outperform the competition. This study also extends the findings of Liu et al. (2020) that new forms of co-creation and strategy can enhance new service development.

Customer-context (C)	Organisational-context (O)
<ul style="list-style-type: none"> - Culture of customer firm - Motivation - Perceived value - Competence - Trust and relationship - Peer Influence 	<ul style="list-style-type: none"> - Motivation - Perceived value - Competence - Policy and governance - Organisational culture
Technological-context (T)	Environmental-context (E)
<ul style="list-style-type: none"> - Firm’s digital infrastructure - New technology - Security & privacy 	<ul style="list-style-type: none"> - Government policy and regulations - Market structure, trends and competition

Co-creation Forms

- Co-conception of ideas
- Co-design
- Co-research
- Co-marketing
- Feedback loop
- Co-conception for competition

Figure 1. C-O-T-E: Framework of factors affecting value co-creation.

Customer context of co-creation

The results reveal the customer firm's culture as one of six customer-related factors affecting value co-creation, a factor rarely discussed in VCC research (Yi & Gong, 2013). Further, the quality of collaboration between two parties is important (Oesterle et al., 2016). The culture of the customer's firm is all about *how they do things, how they seek and share information, provide feedback and interact with service providers*. This established culture of the customer's firm could impede or enable value co-creation with their service provider (Oesterle et al., 2016; Yi & Gong, 2013). This research argues that matching customers and organisations based on cultural value orientations would facilitate the creation of value (Chan et al., 2010).

Regarding customer motivation for co-creation, the current study confirms the findings of Roberts et al. (2014, p. 165) that 'co-creating value with organisations was found to be driven by opportunity or goal-related motives of customers'. Although customers' altruism has been widely studied in the context of value co-creation in the B2C and open source software context (e.g. Zwass, 2010), this study concludes that it is very rare in the B2B context. From the focus firms' perspectives, customers' perceptions of value from co-created products and services are mainly driven by the *benefits* they will receive. This indicates that customers in the B2B domain are motivated by the *benefit-sacrifice approach* (e.g. Klanac, 2013; Zeithaml, 1988). Further, customers' competencies are valued when co-creating from scratch (Desai, 2010).

Finally, this study extends and brings together the reasons and conditions for customers showing peer-influencing behaviours. The wider an organisation's customer base, and the more interactions between them, the stronger are the product ecosystems. This indicates customer *goal-oriented motivation*: customers want to recommend products as the ecosystem becomes stronger. This study also extends understanding of peer-influencing behaviour affecting co-creation when employees move to another organisation.

Organisation context of co-creation

The results reveal five organisation-related factors affecting value co-creation, of which motivation of the organisation to co-create value with customers was highlighted. The motivations included: to create competitive products, to reduce product failure, to access customer resources, to create customer commitment, to enhance customer experience, to enhance strategic capabilities, and to reduce innovation costs. However, the lack of such motivation and commitment to co-creation projects can lead to the risk of losing co-creators. The findings reported *monetary benefits* as the primary expectation of value co-creation, and this position is consistent with the insights of Prahalad and Ramaswamy (2004, p. 11): 'companies and customers are competitors for the extraction of economic value' in co-creation.

The key organisational contextual factors identified in this study are organisational skills, and domain-specific knowledge and experience (as reported by Skålén et al., 2015; Smaliukiene et al., 2014). The findings show that the service provider's existence depends on the advantage of their competence over customers, and this position is consistent with the insights of Möller et al. (2008, p. 37): '[I]f the provider lacks the

competences or willingness to develop the competencies needed to meet the client's service requests, the client may seek new partners'.

Regarding organisational policy, the results revealed that confidentiality and privacy between organisations and customers are paramount in VCC, and developing control mechanisms and new policies for protecting such provisions are key (Yngfalk, 2013). Thus, methodologies like agile and design thinking are consistent with the theory of value co-creation (Vargo & Lusch, 2008, 2016), allowing organisations to demystify the process and make it more tangible. However, it was also found that too many methodologies and processes are bad for co-creation and innovation. This is because imposing administrative control on the co-creation process affects customers' freedom and autonomy, which in turn fails to foster co-creation (Desai, 2010).

The findings provide new insights by exploring organisations' approaches to becoming a *co-creation cultural fabric*. Factors such as *extensive customer support built over time, learning from customers, internal organisational provision to facilitate knowledge sharing, and the risk-taking propensity of innovation*, support value co-creation. This result confirms that leaders and managers need to see themselves as part of the *cultural fabric*: there to contribute, create, support, and learn (Ind et al., 2013). However, too much dependence on customers negatively impacts the long-term survival of the service provider.

Technology context of co-creation

The technology context of co-creation, such as the *firm's digital infrastructure, new technology available in the market and provision for security and privacy* were found to play a significant role in enabling value co-creation (Frow et al., 2015; Westergren, 2011). A firm's digital infrastructure supports frequent interaction with customers, product prototyping, back-office operations, and business model innovation. This enables organisations to involve their customers in different forms of co-creation, e.g. product planning, development, and marketing activities (Rishika et al., 2013).

New technology or technological advances, e.g. big data analytics, were found to be advantageous for organisations as they help shape customers' expectations and allow for new business models (Breibach & Maglio, 2016; Dzandu & Pathak, 2021; Ostrom et al., 2015; Payne et al., 2008; Tuan, 2021). The results also revealed two particular challenges with regards to the use of digital infrastructure and the adoption of new technology: the non-substitutable nature of the *human touch* and the *issue of privacy and security*.

Human creativity and the personal touch in supporting customers can never be replaced by new technology (O_5). This view empirically supports the argument of Ostrom et al. (2015), who noted that technology cannot be a substitute for human creativity as the source of new ideas for services and their delivery; the non-substitutable personal touch avoids the commoditisation of services. This further explains that the lack of such organisational creativity and human touch with the introduction of technology can lead to co-creation failure (as in O_6).

The findings from the technology context of co-creation offer some new insights into current practices: a firm's digital infrastructure and new technology encourage innovative business models and create new opportunities, as well as challenges to co-creating value with customers.

Environment context of co-creation

The results show business environment-related factors, *government policies, regulations, competition and market trends*, as affecting value co-creation. Government policy and regulations were found to intervene in or encourage interaction between organisations and their customers (cf. Lemey & Poels, 2011; Laamanen & Skälén, 2015; Yngfalk, 2013).

Digital technology adoption, like the use of Artificial Intelligence, has led to a monumental speed in organisational transformation. However, the regulators (government agencies) do not support this pace of change. Further, the regulator's mindset and practices are, historically, associated with the manufacturing sector, and thus not fully aligned with the service economy (Vargo & Lusch, 2008, 2016; Vargo et al., 2010). Thus, regulators have been slow to develop rules of engagement for new knowledge-intensive industries, for use of big data, patents and new processes. This study offers new insights into [the] current practice of how regulation affects the overall business operations, thereby impacting co-creation with customers.

The results also show that competition pushes organisations to learn more and to develop additional product and service features that may be similar to those of their competitors. While these findings seem to be obvious in the co-creation literature (e.g. Edvardsson et al., 2011; Grover & Kohli, 2012; Hakanen & Jaakkola, 2012; Hoyer et al., 2010; Paasi et al., 2014), the results further confirmed that business customers help organisations to build such features. This extends the understanding that new market trends and new technical capability open up new avenues for organisations and customers to develop a new form of co-creation called *co-conception for competition*.

Conclusions, limitations and future research

The study's findings highlight various forms of co-creation in practice and C-O-T-E framework-related factors (Figure 1), empirically identifying challenges to VCC in the B2B context. In response to RQ1, this research identifies several factors affecting customer participation in VCC: *culture of customer firm, motivation, perceived value, competence, trust and relationship*, and *peer influence*. This is one of the few studies to highlight the importance of the customer firm's culture in VCC; similarly, this paper has emphasised that customers can influence their peers. In response to RQ2, this study finds that the organisational factors that affect participation in VCC are *motivation, perceived value, competence, policy and governance*, and *organisational culture*. Several technological and environmental factors and forms of co-creation in the B2B context are identified. A key contribution of this paper is the identification of a new form of co-creation: *co-creation for competition*. The empirical findings also confirmed the customer (C) context of co-creation, which extends the work of Tornatzky et al.'s (1990) TOE framework by applying it in the new context of value co-creation.

Theoretical contributions

Studying VCC from the focal firms' perspective, this research makes several contributions to knowledge. First, the definition of value co-creation adopted in this paper focuses on the customer and organisational factors that enable or inhibit VCC in the B2B context.

Similarly, the efforts of customers and organisations to integrate their resources to support various VCC activities such as product development are affected by technological (T) and environmental (E) contexts.

Secondly, in response to research gaps highlighted by Baker (2012), Oliveira et al. (2019) and AlHinai (2020), this paper extends the TOE framework to include customers (C), thus creating a new framework C-O-T-E. This enhanced framework explored how the culture of customer firms affects co-creation. It also identifies ecological constructs, such as business environment and technological innovation, that are core elements in service science and service-dominant theories.

While exploring various factors of co-creation, this paper identifies a new form of co-creation as *co-conception for competition*. Thus, future researchers can explore emerging practices and extend the literature on VCC (e.g. Frow et al., 2015; Russo-Spena & Mele, 2012). The paper incorporates new notations in VCC, by building on the work of Payne et al. (2008), Zwass (2010), Frow et al. (2015) and others (presented in Tables 1–4), which had been fragmented across bodies of knowledge.

Overall, the study shows that the building blocks of VCC, such as dialogue, information, access and transparency (Prahalad & Ramaswamy, 2004), motivation, process and forms of co-creation (Frow et al., 2015; Zwass, 2010) are not the only elements that need to be considered when engaging in VCC.

Practical contributions

This study interviewed 17 co-creation practising organisations within the KIBS industry and explored several forms of co-creation in practice. The results provide managers with conceptual clarity on how value is co-created in the B2B context. Several factors in VCC warrant consideration: motivation of the actors involved, process governance, competence requirements, and the perception of benefits from the co-creation process. These factors are encapsulated within the C-O-T-E framework, which will be a valuable reference tool for practitioners to identify and assess their impact on VCC; previous research failed to include all these factors in their frameworks.

Nevertheless, the factors within the C-O-T-E framework are not intended to be comprehensive or final. As the co-creation process varies from organisation to organisation and form to form (e.g. co-design vs co-marketing), the components within C-O-T-E could serve as a foundation that co-creation practitioners may adapt and extend.

Limitations and future research direction

This exploratory research focused on value co-creation and the factors affecting it at organisation-customer levels. Inevitably, there are limitations to this project in terms of conceptualisation, data sources, empirical setting and methodology employed. For example, given the limited access to customer firms' data, the study concentrated on the service organisations' view of their value co-creation practices. As more and more business customers are co-creating value with their service providers, the inclusion of customer firms' views in future studies will enhance academic and practitioner understanding of VCC practices. The C-O-T-E framework may also benefit from being tested using a quantitative approach or action research in different service domains. This study was

focused on practitioners from the knowledge-intensive service sector. The C-O-T-E framework could be applied to non-service contexts to assess the factors supporting and hindering value co-creation.

Empirical validation of the framework will enable the generalisability of the research findings. Several future research opportunities exist: for example, as value is increasingly co-created in the ecosystem context, a B2B triadic or network context (Sales-Vivó et al., 2020) would provide a further basis to test the framework. The C-O-T-E framework has identified several factors; further research could explore and enhance these factors, and study the inter-relationship between them. Further exploration of several constructs introduced in this research is needed, for example, the new form of co-creation: *co-conception for competition*. This could focus on the process and consequences of the emergence of this form. Further research could also explore the C-O-T-E framework in B2C contexts, using a large-scale survey.

Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

Buddhi Pathak  <http://orcid.org/0000-0001-9801-642X>

Mona Ashok  <http://orcid.org/0000-0002-9827-9104>

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