DOCTORAL THESIS

Joint Recovery Management in Business-to-Business Markets: Antecedents, Process and Relational Outcome

Naghmeh Nik Bakhsh

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Declaration:
Hereby I declare that this doctoral thesis, my original investigation and achievement, submitted for the doctoral degree at Tallinn University of Technology, has not been submitted for doctoral or equivalent academic degree.

Naghmeh Nik Bakhsh

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NAGHMEH NIK BAKHSH

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IV Nik Bakhsh, N. (2019). Co-creation of Service Recovery and Post-Recovery Responses: The Impact of Cultural Values Orientations and Outcome Favorability. Journal of Service Science Research, 11 (2), 133−155. DOI: 10.1007/s12927-019-0007-4.

Author's contribution to the publications

Contribution to the papers in this thesis is:

I The author of the thesis is the main author of Article I. The author developed an interview guide in collaboration with the co-author, collected the data, analyzed the results, and wrote the article in collaboration with Iivi Riivits-Arkonsuo, the co-author. The paper was revised based on reviewers' comments in collaboration with Iivi Riivits-Arkonsuo.

II The author of the thesis is the main author of Article II. The author developed an interview guide in collaboration with the co-author, collected the data, analyzed the results, and wrote the article in collaboration with Iivi Riivits-Arkonsuo, the co-author. The paper was revised based on reviewers' comments in collaboration with Iivi Riivits-Arkonsuo.

III The author of the thesis is the first author of the article. The author was responsible for developing the conceptual framework through discussions with the co-author, for data collection, analysis of data, and the presentation of results. The methods of data analysis and main findings and contributions of the study were discussed and refined further in cooperation with the co-author. The paper was revised based on reviewers' comments in collaboration with the co-author Iivi Riivits-Arkonsuo.

IV The author of the thesis is the only author of the article. The author was responsible for developing the theoretical framework of the study, preparing the data collection instrument (questionnaire), collecting and analyzing the data, presenting the results, presenting the conclusions and contributions, and revising the paper based on reviewers' comments.

Introduction

In service recovery theory and practice, value co-creation through joint recovery has emerged as an important approach to facilitate achieving positive customer experience and continuing relationships during and after the failed service encounter (Park & Ha, 2016; Cheung & To, 2016; Skourtis et al., 2019). Joint recovery activities, rooted in service-dominant logic (S-D logic) (Vargo & Lusch, 2008), focus on the customer's extra effort in interacting and integrating their resources (tools, skills, knowl edge, etc.) with the service provider's resources to become a part of decision making (Chan et al., 2010), create and maximize value (Vargo & Lusch, 2004), and boost the positive outcome of the recovery effort (Zhao et al., 2014; Chathoth et al., 2016; Bagherzadeh et al., 2020). The importance of *joint* recovery management is further amplified in the service recovery context (Heidenreich et al., 2015), as it helps service providers understand the customers' needs and expectations, and it benefits the customers by granting them more control over the failure resolution and providing informed choices, which they naturally desire after a service failure (e.g., Park & Ha, 2016; Skourtis et al., 2019; Friend et al., 2020).

Within business-to-business (B2B) markets[1], service providers[2] across industries have recognized the importance of engaging customers in recovery activities to gain a better understanding of their needs and expectations (Brey, 2019; Baliga et al., 2021). Recovery management in B2B markets[3] has been defined as "a systematic approach for the development, implementation and controlling of activities by the seller firm to handle product or service failures to regain customer satisfaction and attain customer retention in the context of business-to-business markets" (Döscher, 2013, p.18). Recovery management, as extended services offerings (Vargo & Lusch, 2008), is one of the most important components of the value generation process in B2B markets, helping service providers mitigate the negative consequences of failures that are often very dynamic, complex, and snowballed through the business network (Zhu & Zolkiewski, 2015; Vidal et al., 2016; Shin et al., 2017; Hübner et al., 2018; Baliga et al., 2021).

To achieve successful failure recovery, service providers need to collaborate internally (i.e., intrafirm activities) and externally (i.e., with customers) to transmit information across organizational silos and then react to their customers' changing needs and expectations (Vargo & Lusch, 2004; Skourtis et al., 2019; Friend et al., 2020). These numerous intrafirm and interfirm interactions provide opportunities for service providers and customers to collaboratively undertake the recovery management activities through which greater value is co-created in B2B markets (Brey, 2019; Baliga et al., 2021). However, the scientific evidence indicates that joint recovery management[4] within B2B markets is not an easy task, as it requires combining and aligning interactions

[1] In this thesis, the term "business-to-business markets" is used interchangeably with "business-to-business context," "industrial environment," and "business environment."
[2] The term "service provider" is used interchangeably with "the supplier."
[3] This refers to "Firms, institutions, or governments that acquire goods and services either for their use, to incorporate into the products or services that they produce, or for resale along with other products and services to other firms, institutions or governments" (Anderson et al., 2009, p. 4).
[4] The term "joint recovery management" is used interchangeably with "co-creation of recovery" and "co-production of recovery."

between multiple internal and external stakeholders (e.g., customer) at different functional levels (e.g., quality, sales, supply). As such, previous studies (e.g., Baliga et al., 2021) show that service providers often seek to understand the roles of parties, the antecedents of customer participation in recovery management and key activities that lead to successful joint recovery, and the relational outcome of joint recovery activities in B2B markets (Ostrom et al., 2015; Marcos-Cuevas et al., 2016).

The research problem originates, on the one hand, from the lack of well-stablished conceptualizations on the key aspects of joint recovery management (i.e. the antedecents and relational outcome); and on the other hand, from the lack of knowledge and understanding of practices of resource integration [5](RI) and the role of customers in recovering from the failure in the B2B markets (Döscher, 2013; Baliga et al., 2021).

In genreral, joint recovery management remains a rather abstract concept without much empirical and practical development in B2B markets (Marcos-Cuevas et al., 2016; Van Vaerenbergh et al., 2018; Gandhi et al., 2019; Baliga et al., 2021). Based on the literature review, most studies in the field of joint recovery have only focused on the consumer market (B2C)[6] and show the positive impact of joint recovery on customer satisfaction and repurchase intention (e.g., Hazée et al., 2017). These findings are restricted to B2C markets, which differ significantly from B2B markets in terms of customer types, product, market, demand, domino effect of failures that cascade the service provider's downstream and affect service customers, the number of decision makers, and complexity (Hutt et al., 2014; Zhu & Zolkiewski, 2015).

More specifically, in terms of product and service characteristics, the services and their transactions in B2B markets are more complex, which raises the chance of critical failures (Backhaus & Bauer, 2001). In additon, the customers in B2C markets typically base their purchases on personal taste, while customers in B2B markets tend to make decisions mostly on the functionality of the services (Anderson et al., 2009). In terms of customer characteristics, customers in B2B markets are represented by organizations and firms with a high level of professionalism, while customers in B2C markets are often rather inexperienced individual consumers (Brennan et al., 2007). In B2B markets, multiple individuals need to be considered in different layers of the organization, where organizational buying is based rather on rationality and cost efficiency; meanwhile, in B2C markets, an individual's purchase decision is based on consciousness (Döscher, 2013). In terms of business relationship, there is higher interdependence and a more important, intensive, and continuing relationship between the service provider and the customer in B2B markets compared to B2C markets (Hutt & Speh, 2004). Demand and transactions are also much larger in value in B2B markets (Narayandas, 2005).

Despite having small similarities in some aspects, such as planning and resource contribution, previous research has shown that B2B and B2C markets reflect significantly different recovery management requirements (Hutt & Speh, 2004; Döscher, 2013). The failures in B2B often have a domino impact on customers and significantly impact the transactions; therefore, more effort is needed to effectively recover from these failure situations. In addition, B2B practices are more relational; thus, maintaining business relations after failure is especially crucial, and recovery management can be fundamental in determining whether a business relationship will terminate or not.

[5] Resource integration is "the process of effectively identifying, acquiring, and allocating external resources" (Ma et al., 2019, p. 4).

[6] In B2C markets, the customers are represented as individuals rather than as organizational entities.

For these reasons and given the contextual differences between B2B and B2C, transferring the structure and guideline (framework) of joint recovery across contexts might not be feasible.

In B2C markets, joint recovery has been well-researched in recent years. However, given the differences between B2B and B2C markets, the recovery management developed for B2C markets is likely to fail under B2B market conditions. So far, joint recovery management in B2B markets has been scarcely examined. This indicates a need to develop joint recovery management specific to the B2B market context in order to prevent misleading findings.

Furthermore, the limited studies in the field of B2B recovery management have addressed the handling of failure situations from the service provider perspective (e.g., Shin et al., 2017; Hübner et al., 2018) rather than the interactive joint recovery process from the dyadic perspective of the service provider and the customer (Zhu & Zolkiewski, 2015; Vidal et al., 2016).

The **research gap** in the topic presented in this thesis implies a lack of a joint recovery framework specific to B2B markets. More specifically, a research-based, detailed understanding of the antecedents, processes, and relational outcomes of joint recovery management in B2B markets is needed. Given that the value of co-creation has well-recognized benefits through joint recovery activities and that recovery management is vital to secure post-failure relationship quality, this lack of research on joint recovery management represents a gap in the B2B literature. Thus, it is essential to provide a framework of joint recovery management in B2B markets so that value co-creation through joint recovery activities can be facilitated.

To this end, by focusing on B2B service markets (also the service focus of manufacturing companies), **the aim of this thesis** is to develop a framework for joint recovery management that encompasses the antecedents, underlying processes, and relational outcomes in B2B markets. I formulate the following research questions:

RQ1: What are the activities and processes employed by the service provider and the customer to co-create recovery management?

RQ2: What are the different roles that the customer and the service providers play in the joint recovery process?

RQ3: What are the antecedents and relational outcomes of customer involvement in joint recovery activities?

My thesis consists of **three** main articles and one validating article. Article I provides the means for answering RQ1, and Article II contributes to answering RQ1 and RQ2. The findings of Article III help answer RQ3. Article IV contains the validating study, which shows the relational outcome of joint recovery management in B2C markets. The results can be compared to the relational outcome of joint recovery management in B2B markets (see Conclusion).

Since the design of the current study is exploratory and attempts to provide an understanding of joint recovery management in B2B markets, an exploratory sequential mixed method design was adopted. This thesis looks at recovery management from the perspective of value co-creation; S-D logic (Vargo & Lusch, 2004, 2008) and service logic (Grönroos, 2008, 2011) are used to analyze mutual value creation through joint recovery management in B2B markets. It also draws on the recovery management literature to bring insights to value co-creation and co-production in B2B markets, and it employs

social exchange theory (Blau, 1968) to analyze the relational outcome of joint recovery management in B2B markets.

I chose the philosophical research paradigm of pragmatism to study this complicated phenomenon and developed the methodology accordingly. In the validating article, I used samples from two countries, Iran and Denmark. This choice was particularly useful for studying the role of cultural differences in B2C joint recovery management. However, my study on B2B recovery management followed the dyadic perspective of the service provider and customer firm in different industries based in Iran. In the first phase of the research, I used qualitative research design and grounded theory strategy to explore the underlying process of joint recovery, the role performed by business parties, the practice of resource integration, and the level of joint recovery management. Based on the findings of the first phase, and using quantitative experimental design, my focus was on the antecedents and relational outcomes of joint recovery management in B2B markets.

My doctoral research is based on Iran's B2B markets because Iran is a developing country where service delivery is often negatively affected by a fragile economy and plagued with uncertainties, such as a lack of raw material or machinery (Roland Berger GMBH, 2015). Previous research has shown that the Iranian market is faced with many challenges, and industry forces such as high market uncertainty and competitive intensity have a significant effect on service providers' performance in Iran (Iranmanesh et al., 2021). The uncertain nature of the economy, market uncertainty and competitiveness, and other challenges have become key factors in service provider managers' decisions on strategies to strengthen the business relationship with customers and increase market share (Sharfaei et al., 2022). Specifically, long-lasting business relationships with customers are hard to maintain because of high competitiveness and uncertainty in B2B markets and the economic and political situation (Hosseini, 2019). Previous research has established that high uncertainty in the market exacerbates the challenges for producers to predict customer behavior and expectations (Blind et al., 2016). In the competitive market, customers have more options to choose from, which makes it harder for service providers to develop a strong relationship with customers (Sharfaei et al., 2022). At the same time, performance in a competitive environment with high uncertainty encourages service providers to increase customer engagement in different organizational activities to gain a better understanding of their customers' needs and preferences (Oklevik et al., 2020). In the recovery management context, value co-creation through joint activities has been shown to have a significant impact on the market penetration and market share of the service provider when the market reflects a high level of competition (Ndidi, 2020). However, no studies have addressed joint recovery management in a developing country, particularly in the highly dynamic, intense, and uncertain markets of Iran. Thus, my thesis research was conducted in the context of the Iranian market from the dyadic perspective of the service provider and customer firm in different industries. The problems in Iran's B2B markets are similar to those of countries where service providers in B2B markets suffer from supply challenges and economic and political barriers. Thus, one can generalize the findings beyond the case of Iran.

The data for these studies were collected from September 2016 to February 2021. Figure 1 illustrates the connection between the aim of this thesis, the research questions, and the published articles. Each article focuses on one specific part of the research that allowed me to meet the aim of the doctoral thesis: the result of Article I shows the level

of customer collaboration in the recovery activities, the result of Article II sheds light on the roles played by the service provider's process and activities during joint recovery management, Article III presents the antecedents and relational outcomes of joint recovery management in B2B markets, and Article IV provides a validation of the research conducted on joint recovery in B2C markets for comparison with B2B markets.

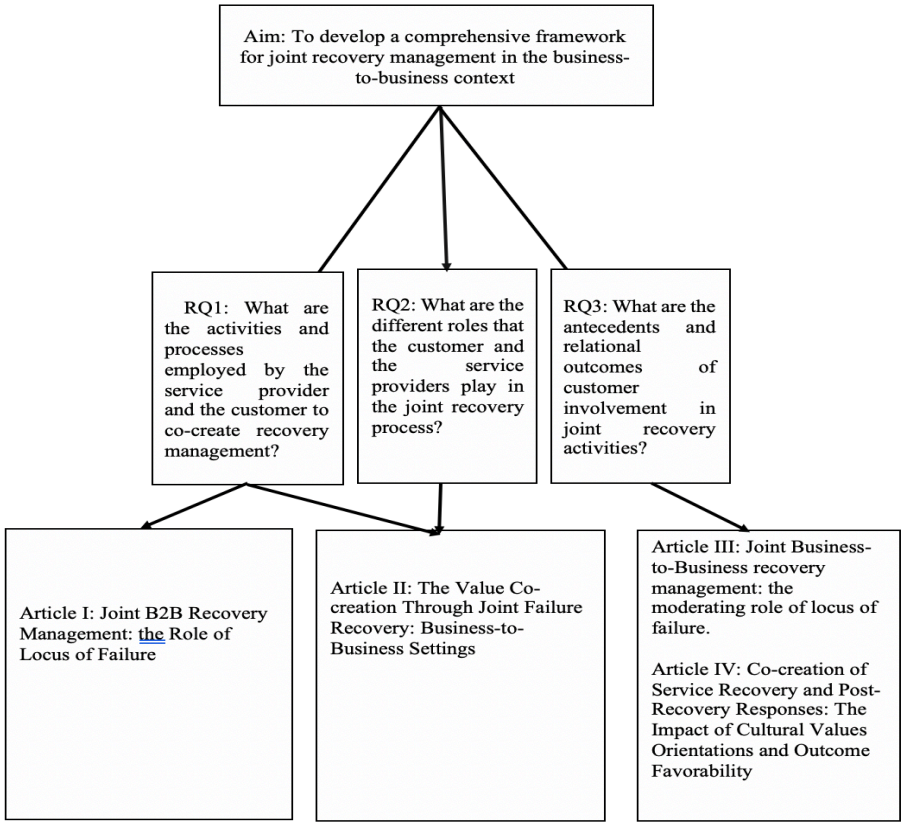

Figure 1. *Aim of the thesis, research questions, and published articles Source: Author*

My doctoral thesis **contributes** to the B2B recovery management literature by presenting a framework for joint recovery management that is specific to B2B markets. By establishing the relevance of the phenomenon of customer participation in B2B recovery management, I integrate the four important streams of marketing literature and provide guidelines that facilitate the realization of value co-creation through joint recovery management in B2B markets. Thus, I contribute to the scientific literature on B2B recovery management (Zhu & Zolkiewski, 2015; Vidal et al., 2016; Shin et al., 2017; Hübner et al., 2018; Baliga et al., 2021) by introducing the new construct of *joint* recovery in B2B markets and developing a framework that specifies the antecedents, processes, and relational outcomes of joint recovery management. My research also contributes to S-D logic and service logic (e.g., Vargo & Lusch, 2008; Grönroos, 2011) by exploring the processes involved in the implementation of value co-creation in recovery management practices (e.g., Vargo & Lusch, 2008; Grönroos, 2011) (see Articles I and II).

Regarding **managerial and practical implications**, the proposed joint recovery management framework serves as a managerial tool for service providers, specifically strategic managers as well as operational employees who design and implement the recovery activities to determine the critical role of collaboration in recovery activities and the role of parties and resources they contribute to recovery activities. Thus, it facilitates joint recovery activities and value co-creation practices and strengthens post-failure relationship quality in the business environment. Insights from this research are broadly applicable to the contexts of recovery management and the dyadic and collaborative process of value co-creation in B2B markets. Specifically, my recommendation to the companies is to strengthen the post-failure relationship through collaboration and effective joint recovery management, which, in turn, encourages customer engagement and collaborative activities during recovery processes in the future (see Article III) and ensures that employees of the service provider and customer firms are well aware of their role in the recovery process, the available resources they can contribute to the recovery activities, and the driven values from the joint recovery activities (see Article II). It is also important for a firm to be aware of specific characteristics of recovery management in B2B markets (see Articles I and II) and the important role of the locus of failure in the expected level of collaboration during the recovery activities (see Articles I and III).

This thesis is divided into five main chapters. Chapter 1 provides an overview of the theoretical framework, with a focus on recovery management, value co-creation, and service logic. It discusses existing relevant knowledge on recovery management in B2B markets. Chapter 2 explains the research design and methodological choices. Chapter 3 presents the main results, and the applications are analyzed and discussed based on the theoretical background provided in Chapter 1. The results are discussed in detail in Chapter 4. Chapter 5 presents suggestions for future research on recovery management in B2B markets and discusses the limitations of the study.

Abbreviations

B2B	Business-to-business
B2C	Business-to-consumer
CRC	Customer resource integration
IFCR	Intention of future co-creation recovery
RI	Resource integration
SRC	Service provider resource integration
SP	Service provider

Explanations of abbreviations used in the thesis.

1 Literature background

1.1 Service failure in B2B markets

The nature of B2B markets inherently and substantially differs from B2C markets in several dimensions, such as market, service, relationship, and customers (Döscher, 2013; Oflaç et al., 2021). In contrast to B2C markets, B2B markets have derived a larger volume of demand (Baliga et al., 2021): "Derived demand refers to the demand for any goods or services, which is derived from any related goods, services, or intermediate goods or services" (Sweta, 2022, para. 1). In the business market, the service provider's products or services directly or indirectly enter into the products or services of their customers; thus, failures in a service provider's products or services in business markets have a domino impact on the quality of the products and services of the customer and the "customer's customer" (Döscher, 2013, p. 20). The services in B2B markets are often customized based on the customer's demand, and the services display more functionality and complexity (Backhaus & Bauer, 2001; Anderson et al., 2009). In B2B markets, suppliers are service providers that make value propositions by integrating their resources and offering "input for the customer's resource-integrating, value-creation activities" (Vargo, 2008, p. 214). Moreover, service providers support customer value actualization through various processes such as service recovery (Grönroos, 2011). Customers in the B2B markets are institutions and firms, including a larger group of professional decision makers with high purchasing power and rationality (Tsiros et al., 2009; Battaglia et al., 2012; Hutt et al., 2014) that realize value out of the service provider value proposition by applying their resources and using the services/products in their context (Gummesson, 2008; Vargo et al., 2008). There is high functional and operational interdependence between service provider and customer in B2B markets, thus adding to the complexity of B2B service occasions (Brennan et al., 2013; Baliga et al., 2021; Oflaç et al., 2021). Most importantly, due to the greater relational nature of B2B service processes, maintaining the business relationship after a failure occurrence is critical in B2B markets (Kuster- Boluda et al., 2020; Oflaç et al., 2021).

Often, in the service industry, service providers cannot ensure 100% error-free service. Indeed, service failures are inevitable in B2B markets (Oflaç et al., 2021). Service failures in B2B markets are often complex and dynamic; their harsh consequences are amplified through the entire value chain and spread to the customer's customers via "domino effects" (Zhu & Zolkiewski, 2015; Brennan et al., 2015). For example, a late delivery that occurred upstream at the service provider may move downstream to negatively affect the service receiver's customers and lose their customers' business (Zhu & Zolkiewski, 2015).

Service failures occur due to poor value delivery or value destruction (Borah et al., 2019; Baliga et al., 2021) and have been defined as "any type of error, mistake, deficiency or problem that occurs during the provision of a service, causing a delay or hindrance in the satisfaction of customer needs" (Koc, 2017, p. 1). Service failures in B2B markets are predominantly related to core services, service processes, and their outcome issues (e.g., Baliga et al., 2021). Business customers often use two comparative schemas to evaluate a failure recovery. The customers often form their expectations of service recovery based on their forecasts of what would happen during a forthcoming exchange (Kelley & Davis, 1994). When an incident happens, the business customers also expect the service provider to keep the promises made explicitly or implicitly in the contractual agreement

or form of service guarantees (Goldstein et al., 2002). Thus, a lack of adequate and appropriate recovery mechanisms often causes customer dissatisfaction (Harsono, 2018), negative word of mouth (Xu & Li, 2016), and collapses in commitment (Döscher, 2013) and loyalty (Gelbrich & Roschk, 2011; Bougoure et al., 2016). Unlike B2C markets, simple recovery mechanisms such as apologies provide less value to customers than the actual improvement and correction of behavior (Blodgett et al., 1997). While a single negative incident is mostly tolerated, repeated service failures increase the likelihood that customers will switch service providers (Baliga et al., 2021). By the same token, recovery management, as the extended service offering, is an important aspect of relationship and service marketing, exerting effort to convert that negative state into a positive one (Grönroos, 1988). This is discussed in the following section.

1.2 The characteristics of recovery management in B2B markets

In B2B markets, service providers must focus on what needs to be done after the failure situation (Döscher, 2013). Correcting the error and rectifying the problem can help service providers regain customer satisfaction, attain customer retention, gain customer loyalty, increase profitability, and strengthen business relationships (e.g., Kuster-Boluda et al., 2020; Michel et al., 2009; Schreiner, 2015; Rasoulian et al., 2017; Baliga et al., 2021). Recovery management following a failure incident is regarded as the top priority for service providers and their stakeholders to develop and maintain long-term customer relationships and to ensure that the company will have a good image in the marketplace (Döscher, 2013; Oflaç et al., 2021). Thus, appropriate recovery mechanisms are imperative when errors cause value co-destruction in B2B service delivery (Baliga et al., 2021). Service providers often develop mechanisms or systems for preventing the failure in the first place, and they design appropriate recovery strategies where failure is unavoidable for identifying, tracking, and analyzing the failure situation. Through proactive recovery, service providers often initiate recovery efforts before the customer notices the failure in order to speed up the recovery and improve the post-failure relationship quality (Döscher, 2013; Baliga et al., 2021).

Recovery management consists of three stages: pre-recovery, recovery, and post-recovery (Van Vaerenbergh et al., 2018). The pre-recovery phase is important for shaping recovery expectations (Van Vaerenbergh et al., 2018). The pre-recovery period may be linked to the rapport of employees – the formation of a personal relationship with the customers' employees. It also involves the prevention of failure to "anticipate recovery needs" and, later, the identification of failures as the service provider's spotting incidents (Döscher, 2013). The immediate recovery stage includes the activities of notifying customers of the failure, offering an explanation and feedback and compensation, and, most importantly, the resolution of the failure (Smith & Karwan, 2010; Gonzalez et al., 2010). In the follow-up/post-recovery stage, service providers track the failure recovery and improve the service/product (Gonzalez et al., 2010). Grönroos (1988) and Döscher (2013) also specified three dimensions of recovery management: outcome, process, and interaction. Outcome concerns tangible compensation and shows what is done. Process, or the functional dimension, refers to how it is done, and interaction shows how it is done (employee interaction with the customer). All three dimensions influence customer perceptions of a service provider's service recovery and play a key role in the establishment and maintenance of business relationships in B2B markets (Sheth & Sharma, 2006).

However, one of the main barriers that retards effective recovery management is attributed to the poor understanding of customers' problems and the changing nature of customers' needs and expectations (Zhu & Zolkiewski, 2015; Shin et al., 2017; Gandhi et al., 2019). Service providers can bridge this gap through knowledge sourcing and a high level of interaction with their customers to reveal the customers' unmet explicit needs and hidden implicit needs and expectations (Van der Heijden et al., 2013; Ashok et al., 2018). It is often expected that the exchange parties keep relational norms and engage in collaborative activities through the course of their relationship (Zhao et al., 2014) to uncover the parties' expectations about each other's behavior, which are not explicitly stated, in order to benefit the relationship (Poppo et al., 2008; Baliga et al., 2021). In the same line, in the recovery context, customers can participate in the process of recovery and serve as "partial employees," contributing their knowledge, effort, or other resources to aid the recovery functions (Dong et al., 2008; Park & Ha, 2016). The following section discusses joint recovery in B2B markets.

1.3 Joint recovery management in B2B markets

Effective recovery management requires extensive interaction between the service provider and the customer, making them more dependent on each other's knowledge and resources (Döscher, 2013). Thus, the recovery literature encourages service providers to treat customers as active recipients of service recovery in order to provide them with a heightened sense of control, help the customer make an informed choice, and allow the service provider to understand the customers' needs and expectations (Wei et al., 2013; Guo et al., 2016; Park & Ha, 2016; Hazée et al., 2017). The aim is to achieve greater value for the customer (Roggeveen et al., 2012) while simultaneously benefiting the service provider (Edvardsson et al., 2011). Despite the recent development of recovery management in B2B markets (e.g., Oflaç et al., 2020) and the acknowledgment of the negative consequences of failure in B2B relationships (Döscher, 2013), as well as customer engagement in recovery activities (Dong et al., 2008; Park & Ha, 2016), joint recovery has not been documented in B2B markets.

Joint recovery management is built on two well-established service perspectives – namely, service-dominant (S-D) logic and service logic (SL) – and the recovery management literature. According to service marketing principles, service, as the basis of exchange, can be defined as the application of specialized knowledge and skills by one exchange party for the benefit of another entity. Having such competencies, all firms are service providers in nature (Grönroos, 2008, 2011). Firms are the configuration of resources (operand and operant) that represents a service system and are connected by value propositions (Vargo & Lusch, 2004). Value and value creation are at the heart of service and play a key role in B2B marketing; thus, they are the primary activities of any firm (Möller & Senja, 2006; Lindgreen et al., 2009).

S-D logic emphasizes the value-generating activities that happen in the co-creation process, focusing on the nature of the actors' resources and how operant resources are integrated (Kleineltankamp et al., 2012; Hughes & Vafeas, 2018). S-D logic states that the service provider makes a value proposition and that customers actualize the value by applying their knowledge and skills, and the use of service provider offerings actualizes value in use (or context). Thus, value is always co-created in the interaction and resource integration of exchange parties and in interactive mutual exchange configurations (Vargo et al., 2008). Value-in-use (context) may be created before, during, and after the purchase (Heinonen et al., 2010). Thus, "value resides not in the object of consumption,

but in the experience of consumption" (Frow & Payne, 2007, p. 91) and is always determined by the beneficiary (Vargo & Lusch, 2008). Based on S-D logic, value co-creation extends beyond the current interaction between a service provider and a customer and also includes past and future experiences and expectations (Heinonen et al., 2010). Thus, even with a single transaction and not an extended relationship, the service provider is not freed from the normative purpose of the customer's relational perspective. Even a discrete exchange comes with social contracts, promises, assurances, and warranties that result in the provision of valued services often for extended periods. Similarly, customers are not freed of relational involvement, as they interact with the service provider over some period that extends beyond the transaction (Vargo & Lusch, 2008). However, according to service logic, the value creation process includes service providers' coordination with internal and external stakeholders to provide resources and support the customer's everyday practice (e.g., Grönroos & Voima, 2013; Nätti et al., 2014).

S-D logic and service logic commonly acknowledge that customers can take part in the joint production of core and extended offerings as a co-producer (Lusch & Vargo, 2006; Grönroos, 2011). The dominant roles of customers specify that in addition to the consumption of the service provider's offering, the customer can contribute to the creation and delivery of the service (Bendapudi & Leone, 2003). In simple terms, co-production has been defined as customers' "participation in the development of the core offering itself" (Lusch & Vargo, 2006, p. 284). Co-production emphasizes customers' active role as partial employees, moving them from a passive peripheral position to a more active central position by taking additional efforts in the service encounter and improving the service provider's value proposition and extended service beyond the transactions themselves (Prahalad & Ramasyamy, 2004; Zhao et al., 2014). The co-production of the offering is distinct from value co-creation but is a component of the co-creation of value (Vargo & Lusch, 2008). While the co-creation of value is not optional, co-production can vary from none at all to extensive co-production activities by the customer (see Figure 2) (Terblanche, 2014).

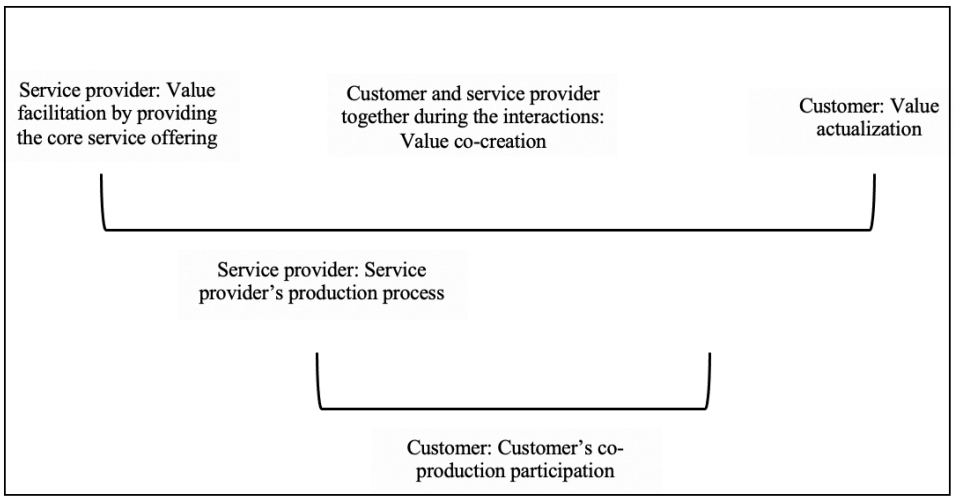

Figure 2. *Co-creation and co-production from a value-in-use perspective*
Source: Terblanche (2014, p.3)

The research on customer participation in the service process states that the co-production of service offerings – the influx of customer inputs – boosts service quality, reduces cost, and enhances productivity gains, leading to positive relational outcomes such as customer satisfaction. (Nuttavuthisit, 2010; Fellesson & Salomonson, 2016).

In the same vein, based on the intersection of two growing streams of service science[7] (service logic and service dominant logic) and recovery management, I argue that the customer can engage in recovery management in B2B markets as the co-producer of recovery activities. My doctoral thesis suggests that in the recovery management context, both the service providers and customers play an active role in the production of service recovery by applying specialized skills and knowledge through which value is co-created in B2B markets. Thus, the value is mutually created by the service provider's value proposition and extended activities and the customers' actualization of value and participation in the extended service offering. However, the mutual processes of value co-creation through joint recovery management in B2B markets have scarcely been studied (Dong & Sivakumar, 2017; Baliga et al., 2021). Moreover, there is no general definition of joint recovery management in the B2B recovery management literature (e.g., Hübner et al., 2018; Oflaç et al., 2021). To further develop the understanding of joint recovery management, it is essential to define the term. My definition of joint recovery management – based on S-D logic (Vargo & Lusch, 2004), service logic (Grönroos, 2011), and B2B recovery management (Döscher, 2013) – is as follows:

> *Joint recovery management is the interaction and resource integration of the service provider and the customer to jointly prevent, handle, and resolve product or service failures through which value is co-created in the context of business-to-business markets.*

Previous research has established that joint activities in B2B markets are expected to result in positive consequences for the development of the relationship (e.g., Hollebeek, 2019). So far, however, there has been little discussion about the impact of joint recovery management on post-failure relationship quality in B2B markets. The next section sheds more light on the concept of relationship quality in the recovery management context.

1.4 Joint recovery management and relationship quality

Developing a solid relationship with customers is the foundation for the long-term survival of a business (e.g., Kandade et al., 2021; Hani et al., 2021). Blau (1968) uses the term "social exchange" to refer to the "voluntary actions of individuals that are motivated by the returns they are expected to bring and typically do in fact bring from others" (p. 91). It means that exchange partners develop and continue exchange relationships with the expectation that the resulting benefits and economic or social outcomes will be exchanged continuously (Emerson, 1976). Social exchange theory contributes significantly to our understanding of the "continuation of exchange relationships" in B2B markets (Döscher, 2013 p. 62). According to this theory, the exchange parties evaluate the economic or social benefits obtained from the exchange and compare these outcomes to their expectations and alternative exchanges (Blau, 1968). Then, they will continue the exchange relationship if its overall benefits outweigh their expectations and other alternative exchanges. However, because of the

[7] Service science is the study of service systems (Grönroos, 2008).

long-term orientation of the exchange parties, the benefit of the current exchange in B2B markets might be sacrificed in favor of the future outcome of the exchange if the exchange relationship is expected to result in a fair distribution of benefits (Dwyer et al., 1987).

Since the business relationship is a social exchange, several studies have acknowledged that social exchange theory is a solid theoretical foundation for analyzing and understanding how exchange parties communicate and how the exchange relationship is maintained (e.g., Akarsu et al., 2020; Ferm & Thaichon, 2021). As Nammir et al. (2012) state, "Social exchange theory is best understood as a framework for explicating movement of resources, in imperfect market conditions, between dyads or a network via a social process" (p. 29). According to social exchange theory, every exchange relationship includes both economic and social outcomes, and exchange partners establish and continue the relationship when there is a benefit for them (Emerson, 1976, p. 359). In the course of exchange, parties might exchange tangible (e.g., money) and intangible (e.g., ideas) resources and values with the expectation of some benefits (Nammir et al., 2012). Social exchange theory proposes that the outcome of exchange determines the parties' social behavior. More specifically, if the risks and costs of the social relationship outweigh the rewards and benefits, customers will terminate or abandon that relationship (Emerson, 1962). The three main behavioral outcomes of the comparison process of social exchange theory are trust, satisfaction, and commitment (Blau, 1968).

Trust is necessary to continue exchange relationships, showing the commitment of the exchange partners to the business relationship. According to Morgan and Hunt (1994), trust is the "confidence in the exchange partner's reliability and integrity" (p. 23). The reciprocation of benefits over time and several trades build trust in exchange relationships. (Blau, 1968; Gansser et al., 2021). Two main components of trust are credibility (i.e., exchange parties can be relied on) and benevolence (i.e., the welfare of exchange parties is important for others) (Doney & Cannon, 1997), which are mandatory attributes in B2B markets.

Commitment is crucial for continuing the exchange relationship; it refers to the mutual commitment and enduring desire of exchange partners to warrant maximum efforts in their reciprocal investments in the exchange relationship to yield shared benefits (Blau, 1968; Gansser et al., 2021). In simple terms, commitment refers to the "desire to develop a stable relationship, a willingness to make short-term sacrifices to maintain the relationship, and a confidence in the stability of the relationship" (Anderson & Weitz, 1992, p. 19).

Satisfaction refers to the "cognitive and affective evaluation based on personal experience across all [...] episodes within the relationship" (Roberts et al., 2003, p. 175). Customer satisfaction indicates the customers' general evaluation of the product or service experience. If the benefits derived from exchange relationships exceed the customer's expectations and other available alternatives, the exchange relationship continues (e.g., Kim et al., 2019; Mayhoub & Rabboh, 2021; Lai et al., 2021). The occurrence of critical and negative incidents (e.g., service failures) significantly influences customer satisfaction (Baliga et al., 2021).

In the recovery management context, social exchange, satisfaction, trust, and commitment constitute the leading attitudinal and behavioral outcomes displayed by customers in response to recovery activities, and together they constitute relationship quality in B2B markets (Döscher, 2013). Repeated service failures raise the risk that

customers may switch service providers, whereas a single unfavorable incidence is typically accepted (Baliga et al., 2021).

In the recovery management context, relationship quality refers to "the strength of a customer relationship with a service provider" (Holloway et al., 2009, p. 386). As discussed above, service failure can severely damage and significantly threaten long-term customer relationships or even lead to the termination of exchange in B2B markets (Baliga et al., 2021). While service providers may not be able to completely prevent service failures, they have the possibility to develop recovery management mechanisms to effectively recover from these incidents (Hart et al., 1990). The service provider's recovery efforts after a failure can alleviate the negative impact of failure occurrence and positively impact the customer's satisfaction (e.g., Jin et al., 2019), trust, commitment (e.g., Döscher, 2013), and relationship quality (Baliga et al., 2021). Thus, recovery management aims to secure long-term customer relationships and even use the failure situation as an opportunity to impress the customer and enhance the post-failure relationship quality (Döscher, 2013; Oflaç et al., 2021). However, based on social exchange theory, the perception of recovery activities is not equally effective under all conditions (Nammir et al., 2012). In this thesis, I consider two conditions: participation in recovery management and the locus of failure.

Marketing theory frequently suggests that co-creation through joint activities facilitates positive customer experience and long-lasting relationships (e.g., Ballantyne & Varey, 2006). However, in the recovery management context, the relational outcome of joint activities is less understood. Customer participation in recovery management enables customers' extra efforts and resource contributions to recovery activities to create superior value (Dong et al., 2008; Park & Ha, 2016). However, to date, most studies in the field of B2B recovery management have only focused on the relational outcome of recovery; little research explores how joint recovery management from the customer perspective affects their perception of relationship quality (e.g., Zhu & Zolkiewski, 2015; Vidal et al., 2016; Shin et al., 2017; Hübner et al., 2018). It is expected that customer participation results in positive consequences for the development of the relationship, but there is little quantitative analysis of the relationship between joint recovery management and post-failure relationship quality in B2B markets. By examining the relationship between joint recovery management and post-failure relationship quality, my study contributes to business-to-business recovery management and practice and expands our understanding of the relational outcome of joint recovery management.

Furthermore, in the recovery management context, the locus of attribution of service failure is expected to influence customers' responses to service recovery (Dong et al., 2008; Swanson & Hsu, 2011). The locus of failure refers to the source of failure or what/who should be blamed for the problem (Maxham & Netemeyer, 2002; Weber & Sparks, 2010; Oflaç et al., 2021). In the service recovery context, the locus of failure tends to impact the customer's perception and evaluations of recovery efforts (Ye & Luo, 2016; Van Vaerenbergh et al., 2019). For instance, when service failures occur, the locus of failure can impact the customer's perception of justice (Oflaç et al., 2021). Previous studies on recovery management have found a different locus of failure, such as customer-induced error (Oflaç et al., 2012). Also, it has been reported that attributing service failures to external factors beyond the control of the service provider, such as natural disasters, often reduces the likelihood of switching a service provider (Mattila & Ro, 2008). Thus, the locus of failure plays an important role in service failure and recovery situations (Swanson & Davis, 2003; Sparks & Fredline, 2007).

Through participation in recovery activities, customers contribute to recovery activities as "partial employees" and have specific responsibilities. The value created from the joint recovery activity should outweigh the resource contribution (cost) made to the failure resolution. When the locus of failure is on the service provider side, customers might attribute the recovery efforts more to the service provider than to themselves. Participation in recovery activities may be considered as an extra input in the business exchange and less as a perceived value. This might negatively impact post-failure relationship quality in B2B markets (Döscher, 2013). Thus, the perception of relationship quality might be partially dependent on the locus of failure (Zeithaml & Bitner, 2003). So far, however, there has been little discussion about the impact of the locus of failure on the relationship between joint recovery management and post-failure relationship quality in B2B markets. As service failures are unavoidable in B2B markets, my focus is on the post-failure relationship quality. I emphasize the locus of failure to provide better insights for assessing the impact of joint recovery and decision making for the level of customer participation in a recovery intervention. The next chapter covers the philosophical framework, structure, and methods of this study.

2 Methodology

2.1 Research philosophy and design

Although several methodologies for this research are available, there is no right or wrong decision regarding the methodological aids required to achieve the aim of the research and ensure answers to the research questions (Silverman, 2015).

This chapter addresses the methodological choices and epistemological issues related to the research topic and provides explanations for the research philosophy, approach, and strategy adopted in the current thesis.

Ontology and epistemology are the two main aspects of research philosophy (Silverman, 2015). They play a crucial role in identifying the conflict among the social science researchers (Neuman, 2014). According to Grix (2010), ontology is concerned with the basic element of reality and is the starting point of any research. Thereafter, the nature of knowledge and the epistemological elements should be revealed. Two ontological positions are objectivism and subjectivism (Wilson, 2014). Researchers adopting an objectivist ontological position see themselves as existing in a reality that is external and independent of both the researched phenomena and the social actors (Wilson, 2014). Researchers using a subjectivist ontological position, meanwhile, believe that the social interactions between themselves and the researched person assist them in understanding the studied phenomena (Wilson, 2014; Alameri, 2018). Thus, objectivism and subjectivism affect the researchers' perceptions of the social world around them, which affects how they approach their research (Grix, 2010).

Epistemology portrays the individuals' beliefs about the nature of acceptable knowledge, which has an impact on how individuals understand and explore their environments (Wilson, 2014). Two epistemological positions are the foundationalist and anti-foundationalist positions (Grix, 2010). Researchers with the foundationalist position believe that true knowledge is not dependent on their own knowledge, whereas anti-foundationalist researchers believe that true knowledge is dependent on their own knowledge. Based on these two different positions, researchers construct their epistemological positions (e.g., interpretivism, positivism, and pragmatism), which affect several aspects of their research (Alameri, 2018).

In the current thesis, I only discuss pragmatism as the epistemological position and how it affects the choice of research methodology, approach, and strategy to achieve the research aim and answer the research questions. Creswell (2014, p. 6) states, "Although philosophical ideas remain largely hidden in research [...] they still influence the practice of research identified." Therefore, while selecting my research topic, I examined research philosophy along with research methodology, approaches, strategies to achieve the aim of my research and answer the research questions.

When responding to the study questions, my approach was to take into account both epistemological stances and study the themes found in the literature review. I encountered the following questions: Are joint recovery management and its components observable for my study? Can I explain joint recovery management and its components (positivism)? Can I interpret human roles through my lenses, and should I do this using direct interactions with research participants using appropriate research methods (interpretivism)? Should I administer a questionnaire or conduct interviews?

According to the marketing literature, the interaction between the service provider and the customer is more complex – and the consequences of failures are more severe

– than in B2C markets (Van Doorn & Verhoef, 2008). Because of the larger complexity of transactions in B2B markets, critical incidents are more likely to occur (Backhaus & Bauer, 2001). Previous studies show that failure may occur in all processes in B2B markets and that it is often unpredictable (Tsarenko & Polonsky, 2007). Therefore, the aligning of organizational resources and organizational planning for mutual processes of value co-creation through joint recovery actions is more challenging and complex compared to regular service activities. The specific characteristics of B2B markets and the complexity of the relationship between the service provider and the customer emphasize the complexity pertaining to an investigation of the phenomenon of joint recovery management in B2B markets. Therefore, my focus is on a question of epistemology: What is acceptable knowledge in the study of joint recovery management in B2B markets?

When choosing between the positivist and interpretivist research philosophies, I considered which approach could provide adequate answers to the research questions. My focus was first on the research questions and then on the methods appropriate for answering them. To gain a profound understanding of joint recovery management as a complex phenomenon and answer the research questions, I focused on adopting a multi-strategy approach. My belief is that distinguishing which strategy is "better" depends on the research questions, and qualitative and quantitative methods are compatible and are both highly appropriate in the current thesis. Also, value plays an important role in interpreting the results of a study in the recovery management context. As a result, I chose pragmatism as a research philosophy, which allows for the wisdom of both qualitative and quantitative viewpoints. Pragmatism allows for the strength of both positivist and interpretivist epistemological views in one research philosophy (Saunders et al., 2009). I adopted an interpretivist epistemological position in the qualitative phase of the study and a positivist epistemological position in the quantitative phase of the study.

Therefore, I believe that the philosophy adopted can be described as "a continuum rather than opposite positions" (Tashakkori & Teddlie, 1998). For answering RQ1 and RQ2, I collected data from narratives; for answering RQ3, my focus was on the collection and analysis of "facts."

To select the research approach, I focused on the direct connection between the research approach and the theory. My position was that by adopting an inductive research approach, it is possible to develop new theories; this is important because it allows for exploratory research on joint recovery management as a complex phenomenon, which is usually related to qualitative research (Wilson, 2014). As one of the objectives of the research is to explore the underlying process of joint recovery management in B2B markets and determine the different roles for the customer and service providers to play in the joint recovery process, I believe that qualitative research is more appropriate than quantitative because it allows for open-ended questions and enables a deeper exploration of joint recovery management through the collection rich and real data. Such data offer a more precise way to assess joint recovery management in B2B markets.

However, a deductive approach enables the development of a hypothesis based on a known theory for evaluating the antecedents and relational outcomes of joint recovery management as observable reality, which is usually related to quantitative research (Neuman, 2014). The qualitative approach seems more useful in the evaluation of the antecedent and relational outcome of joint recovery management because it allows the researcher to link the study to an existing theory, design the research hypotheses,

employ the experimental design, and collect the data from a larger sample. As the pragmatist research philosophy is selected in this thesis, both inductive and deductive approaches are highly appropriate in this study.

Pragmatism is "an attractive philosophical partner for mixed methods" (Mitchell, 2018, p. 106). In this study, the strengths of quantitative and qualitative data are merged into one mixed-method research project to produce helpful conclusions, answering the research questions and understanding the phenomenon under investigation.

My choice was to employ the mixed-method strategy to use both qualitative and quantitative methods, data collection techniques, and analysis procedures sequentially, leading to superior research on joint recovery management in B2B markets. I adopted a sequential exploratory mixed-method study design (Johnson et al., 2007; Creswell & Clark, 2011; Othman et al., 2021) based on the nature and objective of my research. The first phase of the research (Articles I and II) used qualitative design to explore and analyze the data, and the findings were applied to the quantitative phase of the research (Article III). I believe that quantitative research is less appropriate for the first phase of the study as the use of experimental design and closed-ended questions limit immersion in the field of joint recovery management, yielding less insight into joint recovery management than qualitative research.

Recovery research is particularly difficult because recovery actions are dependent on failure scenarios that are difficult to recreate for systematic empirical research (Smith & Bolton, 1998). Previous studies have shown that qualitative methods enable the researcher to create new knowledge in the field of recovery management (Colgate & Norris, 2001). In particular, qualitative research on recovery has proven to be useful in gaining a holistic knowledge of recovery in B2B markets (Döscher, 2013). Thus, due to the unique characteristics of B2B markets and the scarcity of comprehensive research on joint recovery management in B2B markets, a qualitative study was conducted to gain a better understanding of the roles played by actors, the underlying process, the level of collaboration, and the driven value of joint recovery in B2B markets.

In the qualitative phase, I used grounded theory (Strauss & Corbin, 1990) as a methodological approach because it enabled me to develop the joint recovery management framework "from the ground." As a set of systematic inductive methods, grounded theory streamlines and integrates the collection and analysis of the data (Goulding, 2002). It allows the researcher to build middle-level theories directly from the data analysis. I believe that the grounded theory approach is especially useful in the study of joint recovery management in B2B markets, which has been relatively ignored in the recovery management literature. I used the grounded theory approach in the first phase of the research because it is one of the more practical ways of guiding exploratory research, structuring data collection, and analyzing qualitative data for the study on joint recovery management in B2B markets.

In the literature, there is an ongoing debate about the theoretical paths of the grounded theory methodology. Some scholars have focused on independent theory development without linking to existing theoretical knowledge (e.g., Glaser, 1992). In this study, aligning with the approach of Strauss and Corbin (1990), I apply existing theoretical knowledge from S-D logic, service logic, and contemporary recovery research to structure the research and data analysis. Subsequently, the first phase findings were used to design the scenarios for the quantitative analysis of the post-failure relationship quality and the relationship between joint recovery management and post-failure relationship quality, considering the role of the locus of failure.

Based on the ontological and epistemological assumptions of pragmatism, the most appropriate research strategy was chosen for the second phase of the research. My focus was on the antecedents and relational outcomes of joint recovery management in B2B markets. Quantitative research is more appropriate here than qualitative research for the following reasons. First, quantitative research is especially useful in the study of antecedents and relational outcomes of joint recovery management with an experimental research design. Second, it allows for the collection of observations and analysis of more accurate data from large sample sizes, using statistical techniques to answer the research question.

In the quantitative phase of the research, a scenario-based experimental design was employed to collect research data and test the research hypotheses. Scenario-based experimental design is currently the most popular method for evaluating service encounters involving both failure and recovery (i.e., Park & Ha, 2016; Nik Bakhsh, 2019). As recovery actions are dependent on failure situations, scenario-based experimental design allows the research participants to project themselves into experimental failure situations and display their feelings and predict their behavior (Patterson et al., 2006). The scenario-based experimental design avoids the problem of high expenses and time, which are the drawbacks associated with the use of other designs such as survey-based research. In addition, scenario-based experimental design was chosen to avoid the biases associated with retrospective self-reports, such as memory lapse, rationalization tendencies, and inconsistency. It is also one of the more practical ways of operationalizing manipulations, which provides control over uncontrollable variables (Smith et al., 1999). Thus, the scenario-based experimental approch was chosen as the most appropriate method for data collection in the second phase of the research.

The design of this study ensured that the conclusions of the subsequent phase would build on the findings of the previous phase, providing deeper insights for addressing the research gap (Fetter et al., 2013). At the end, the findings of the first and second phases were integrated to answer the research question and reach the research aim (Guetterman et al., 2015). Figure 3 depicts the conceptual framework for the sequential exploratory mixed-methods research design.

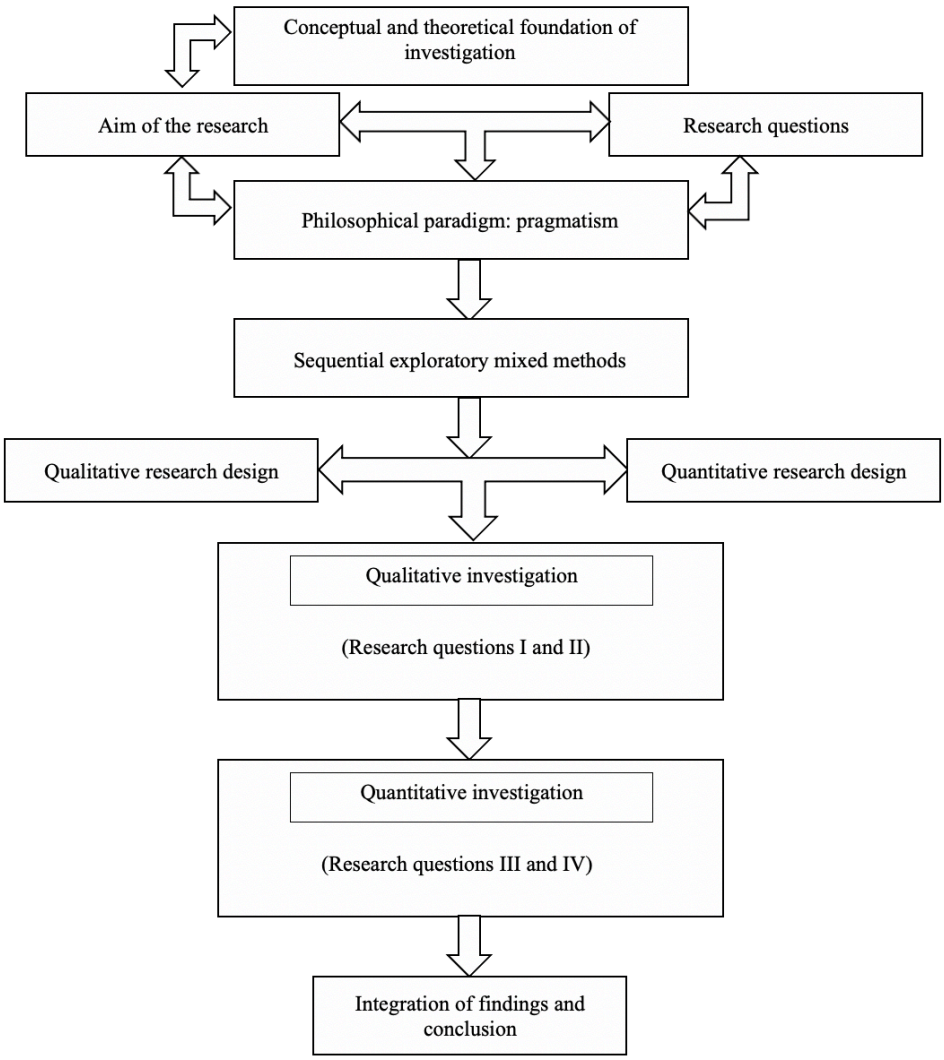

Figure 3. *The conceptual framework for the sequential exploratory mixed-methods research design*
Source: Author, based on Creswell (2014) and Othman et al. (2021)

2.2 Data collection

The data collection process for this thesis was divided into two phases. In each phase, the sampling and data collection approaches were applied in accordance with the research strategies, the nature and objective of the research, and the ontological and epistemological assumptions of the pragmatist research philosophy.

In the qualitative phase of the research (Articles I and II), in line with the exploratory nature of the study, expert qualitative interviews were used as the most appropriate method to provide valuable information in the field of joint recovery management in B2B markets. According to Johnston and Fern (1999), "[t]icking boxes would not be able to capture customer's views and would have limited the recovery ingredients [...] whereas other recovery activities may emerge from a free response style of questioning" (p. 75).

Thus, qualitative interviews with customers and service providers with knowledge, background, and insight in the field of recovery management in B2B markets allowed for a profound understanding of the underlying process and the roles of the service provider and the customer in joint recovery management.

One of the most well-known sampling methods in the grounded theory approach is theoretical sampling, which allows the researcher to collect the data, code it, and analyze it simultaneously and recursively in order to develop the relevant categories of the emerging theory (Glaser & Strauss, 1967). Using theoretical sampling, a researcher continues collecting data for a category until no new information can be generated and the category is "saturated" (Charmaz, 2003, p. 689). This thesis used theoretical sampling because it enables the making of iterative decisions in data collection, exploring the categories of the emerging theory and determining a new theory based on the data.

Using theoretical sampling in two phases and expert interviews, the data were collected from senior team members with an average of 11 years of professional experience, from a diverse range of the largest B2B sectors, such as technology, food, machinery, and telecommunication in Iran (see Appendix). All the interviews for the qualitative and quantitative phases were conducted online via Skype due to the COVID-19 crisis in 2020–2021.

Table 1. *List of company overviews*

Company	**Industry**	**Overview**
Service provider I	Telecommunication	Founded in 2005, this telecommunications company operates 2G-3G-4G-4.5G-5G mobile networks, telecom antenna, and fixed wireless TD-LTE internet services.
Service provider II	Machinery	Founded in 1995, this company produces steel parts and iron castings for OEM, the automotive market, heavy parts, mining, and the construction industry. It has more than 600 employees.
Service provider III	Technology	Founded in 2009, it is a cloud-based Saas company and developer of the web/mobile CRM app. It has more than 500 employees.
Service provider IV	Food/dairy	Founded in 1991, this Iranian dairy, food, and drink company was founded as an industrial food company. In 2010, it had the biggest share of the Iranian cheese market.
Customer firm I	Telecommunications	Founded in 2006, this company operates in the field of design, equipment supply, installation, commissioning, testing, and the delivery and maintenance of telecommunication systems.

Customer firm II	Machinery/auto	Established in 1984, this company produces small rubber components (UHF curing and CLM technology) for vehicles in Iran. It has 600 employees.
Customer firm III	Technology	Established in 2011, this data and technology company provides data management and integrity services to media companies.
Customer firm IV	Food/dairy	Founded in 2006, this dairy products company produces more than 10 types of dairy products in Iran and has 830 employees working in different departments.

Two semi-structured interview guides, one for service providers and one for customers, were designed based on the previous findings on the main aspects of recovery management – process, interaction, and outcome (e.g., Döscher, 2013; Baliga et al., 2021). These were used to structure the interaction between the interviewer and the participants during the interviews (See Appendix). Developed in line with the research objective to develop joint recovery management in B2B markets, the intreview guides were designed to learn about the respondents' experiences and get knowledge about the activities taking actually place. The advantage of semi-structured interviews is that they allow the participants to describe an experience in their own words and express themselves freely, while simultaneously allowing the researcher to focus on the areas of interest and assist the interviewees in answering the predetermined open questions (Fisher & Buglear, 2010).

Interviews with the service providers began with a brief description of the research background and assurance of confidentiality for the data collected from the interviewees. The interviews with customer firms were conducted using the knowledge derived from the service provider interviews; they began with an introduction of the study, followed by the purpose and benefits of the research and a statement of data confidentiality. The interview questions were developed based on the main themes identified in the recovery management literature review and organized by priority. These prepared questions were used only as a guide, and supplementary questions were asked if more elaboration was needed.

The questions elicited information on the type and severity of failure, the process and outcome of failure recovery, and the outcome and benefit of collaboration between service providers and customers in B2B markets. To ensure agreement on the service failure situation, an explanation of typical failure situations in B2B was offered to the research participants. This explanation was inspired by previous findings on failure situations in B2B markets that cause the customer dissatisfaction (e.g., Döscher, 2013; Baliga et al., 2021).

This study aggregated the responses of the service providers and of the customer firm employees from different departments; thus, the organizational level was selected as the unit of analysis to extend the results of the research to the population of all the organizations. The qualitative data were analyzed using the coding process.

In the quantitative phase (Article III), to examine the impact of joint recovery management on the customer perception of relationship quality, considering the role of

the locus of failure, three single-factor experimental designs were used. The six scenarios were presented based on the locus of failure attribution (environmental factor, service provider–induced error, customer-induced error). The manipulation applied to the approach was that failure is resolved (co-creation vs. non-co-creation). Respondents were selected using purposive sampling, which allowed for the selection of the quantitative research sample from top, middle level, and operational managers working within agricultural machinery manufacturer organizations or service providers in Iran. The data were gathered from different samples in the second phase of the research to test the hypothesis in different industries and add generalizability to the findings.

Initially, 40 firms listed in a B2B services business directory, the Industrial Management Institute in Iran, were contacted. The firms were medium or large companies[8] with an average size of more than 200 full-time employees and an average age of 10 years. A total of 30 firms met the criteria and were accepted to participate in this study; 210 usable questionnaires were received, constituting a response rate of 62%.

In the validating article (IV), the relational outcome (outcome favorability, satisfaction, and repurchase intention) of joint recovery is evaluated in the consumer market using a 2×2 scenario-based experiment to collect data from post-graduate students from Iran (n=264) and Denmark (n=250) to maximize the variance within each cultural dimension. I selected Iran and Denmark as they have very different profiles based on Hofstede's (1980) national scores. In each scenario, the questionnaire collected data regarding the manipulation developed in the service recovery strategy (co-creation of service recovery and non-co-creation) and the participants' answers regarding outcome favorability, satisfaction, and repurchase intention.

2.3 Data analysis

Consistent with the research method and the design of each phase, two data analysis approaches were applied in this thesis.

In the qualitative phase (Articles I and II), I used a coding process (see Appendix). More specifically, the data was analyzed in Nvivo and Microsoft Excel using a systematic multiple-step soft coding process (Gummesson, 2008, p. 1) involving open coding, axial coding, and selective coding (e.g., Döscher, 2013). In the open coding stage, a list of categories and conceptual codes was generated, indicating the fundamental thoughts for theory development. In this stage, 152 unique concepts were established.

Then, through axial coding and establishing the relationships between the categories in the previous stage, a higher level of abstraction was reached, developing the theoretical concepts and stipulation of relationships with other relevant categories. In this stage, 95 unique core categories were developed.

Using selective coding, I identified the core categories and the relationship between them and other categories to develop profound theoretical concepts, which were later combined into a larger framework. In this stage, 54 theoretical concepts were generated to reflect a theory on the general process of joint recovery management in B2B markets. The interpretation was discontinued when no new information was generated by further coding.

The quantitative data were analyzed using IBM SPSS version 24 and Microsoft Excel 2018. Three ANOVAs were conducted to analyze the differences among group means in

[8] These are defined as companies with more than 50 persons employed (Kvitka & Kramarenko, 2018).

the sample and compare the perception of relationship quality in three experimental groups using two recovery approaches (co-created recovery vs. non-co-created recovery) and changing the locus of failure. Participants from the three groups were randomly assigned to one of the two experimental conditions (co-created recovery vs. non-co-created recovery). Then, my analysis focused on the impact of relationship quality dimensions on the customers' intention of future co-creation recovery (IFCR) on the pooled data from all respondents, using regression analysis in Excel.

In the validating article (IV), Amos 24.0 and Microsoft Excel 2018 were used to run CFA and a two-way ANOVA with replication for the data analysis. First, I used a two-way ANOVA to compare the perception of outcome favourability between two groups of Iranian and Danish students in the two different situations of co-created recovery and non-co-created-recovery. Then, using regression analysis, the relationship between outcome favourability and customer satisfaction and repurchase intention was evaluated. Table 2 presents an overview of the research design, samples, data collection, and analysis methods.

Table 2. *Overview of the research design, samples, data collection, and analysis methods*

Methodological choice	Sequential exploratory mixed method		
Phase	Qualitative phase (Articles I and II)	Quantitative phase (Articles III and IV)	Quantitative phase (Article IV)
Strategy	Grounded theory	Experimental	Experimental
Data collection method	Expert interview	Questionnaire	Questionnaire
Sampling approach	Theoretical sampling	Purposive sampling	Purposive sampling
Sample	21 members of industrial firms (Iran)	Agricultural machinery manufacturer/service providers (Iran)	Post-graduate students (Iran and Denmark)
Analysis method	Coding process	Regression analysis/ ANOVA	Regression analysis/ ANOVA

To protect the rights and dignity of research participants and maintain scientific integrity, the stages of data collection and analysis incorporated ethical considerations. In the first phase of data collection, before starting the interviews, participants were informed that participation in the research is voluntary, the interview will be recorded and transcribed for the purpose of further analysis without any personal information, the participants have the right to stop their participation and ask to withdraw their data without explanation in the next two months (after completion of the interview), and the participants have the right to refuse to respond to any questions they are not interested in. Similarly, the questionnaires asserted the anonymity and confidentiality of participants.

2.4 Evaluation of methodological choices

My choice was to implement rigorous measures throughout the whole process of research design, methodology, analysis, and interpretation of results to decrease the risk of research bias. The validity and reliability of the qualitative and quantitative data were gained separately.

In the qualitative phase (Articles I and II), to ensure the reliability of data, I selected participants with a sufficient level of knowledge on failure resolution, transcribed the interviews, and shared the fundamental insights derived from the transcripts with four previously interviewed participants to ensure the consistency and validity of the conclusions. In the quantitative phase (Article III), the manipulations were pre-tested, and the items of the questionnaire were subjected to factor analysis, AVE, and reliability tests. In the validating article (IV), I ensured translation equivalence by using back translation, as a bilingual speaker familiar with Danish and Persian culture. Also, the research scenarios were pre-tested, the confirmatory factor analyses were used to test the measurement model, and validity and reliability tests were conducted.

3 Overall results and discussion

This section focuses on the antecedents, underlying process, and relational outcome of joint recovery management in B2B markets. It presents an overview of the main empirical findings of this thesis from Articles I–IV for the development of a joint recovery management framework.

Based on my findings, I acknowledge that recovery management in B2B markets is a complex phenomenon that requires a high level of interaction and resource integration, providing an opportunity to engage the customer in these extended offerings. More specifically, both the service provider and the customers can play an active role (Vargo & Lusch, 2008) with reciprocal resource integration, including operant and operand resources to co-create value in B2B markets. To answer the three research questions presented in the Introduction, the main contributions of the empirical findings are summarized in the following section.

3.1 Activities and processes employed by the service provider and the customer to co-create recovery management

Article I addresses the main source of failure in B2B markets, the "locus of failure." It is essential to have sufficient understanding of the main sources of failure to determine the level of collaboration between the service provider and the customer in a failure situation. Four main sources of failure in B2B markets were found – service provider – induced errors, customer-induced errors, environmental factors, and unknown source of the issue – along with two recovery perspectives – reactive recovery and proactive recovery.

This finding is in accord with recent studies indicating that the failure might be caused by different sources in B2B markets (e.g., Zhu & Zolkiewski, 2015; Oflaç et al., 2021), while adding the new category of "unknown source of failure" to the existing locus of failure possibilities. In addition, the findings show that the service provider can take a reactive or proactive recovery perspective to handle the failure situation, which matches those of earlier studies (e.g., Döscher, 2013).

Article I reports how the level of collaboration in recovery activities is related to the locus of failure. The results show that the different loci of failure in the service provider recovery management perspective play an important role in joint recovery management. The locus of failure is one of the main determinants of collaboration level in the B2B recovery management context.

More specifically, the level of customer collaboration in recovery is at the lowest level when the locus of failure is on the *service provider side* and a *proactive recovery* is taken by the service provider. This result may partly be explained by the limited extent of the customer's knowledge of the service provider's upstream activities when the internal processes are limited and the customer is not yet aware of the failure.

In the case of *environmental-factor-induced failure*, the level of collaboration in recovery activities increases slightly, with the engagement ofthe customer in resolving the failure and deciding the most favorable alternatives, as well as in implementing the solution. If the service provider adopts reactive recovery strategies, the role of the customer in recovery activities gets more distinguished; as a result, the level of joint recovery increases with recovery activities increasing. The findings also indicate that when the failure is caused by the customer, the main recovery initiations remain on the *customer side*. While the service provider can engage in recovery management and

contribute to the failure analysis, resolution, and implementation of the solution, the main recovery activities remain on the customer side. Therefore, a higher level of collaboration from the customer is expected.

The most interesting result was that collaboration in recovery activities reaches the highest level when the *source of failure is unknown*. This finding is likely to be related to the high level of interaction between the service provider and the customer for main recovery activities, as almost the same level of recovery activity is expected from both sides of business exchange.

The insights gained from this article add to the rapidly expanding field of recovery management in B2B markets (e.g., Zhu & Zolkiewski, 2015; Vidal et al., 2016; Shin et al., 2017; Hübner et al., 2018; Baliga et al., 2021) and contribute to the current literature of service marketing by identifying the influential factor in the co-production of services/extended service offerings (Vargo & Lusch, 2004, 2006, 2008, 2016).

Article II shows that the intrafirm and interfirm interactions of employees are essential for value co-creation through joint recovery activities, which often can be formal and informal. Interestingly, the finding indicates that the intrafirm interaction of the service provider and the customer happens in parallel to the interfirm interaction, which facilitates resource integration during joint recovery activities. This supports the previous research, demonstrating that resource integration occurs between and within the service provider and the customer sphere because any customer/service provider interaction requires some resource integration activity both before and during interactions (Hollebeek, 2019) and value creation (Vargo & Lusch, 2008, 2016). The findings of this thesis contribute to the existing knowledge of value co-creation by putting emphasis on the parallel informal/friendly interaction and resource integration required to faciliate joint recovery activities.

Unexpectedly, it was observed that informal/personal relationships play an important role in handling the failure situation in B2B markets. Thus, early development of personal relationships between service provider and customer employees enables them to jointly handle the failure situation. These results add to the rapidly expanding field of value co-creation (Vargo & Lusch, 2008, 2016) and recovery management in B2B markets, which had merely focused on formal communication between the service provider and the customer and on the role of the service provider in the failure situation (e.g., Brennan et al., 2013; Oflaç et al., 2021).

The findings of Article II indicate that joint recovery management leads to a better understanding of customer needs and their implicit expectations. In addition, the findings show that joint recovery management helps the customer in learning, giving them a higher sense of control and helping them make the informed choice. Joint recovery enables the customer to achieve greater value while simultaneously benefiting the service provider.

The value created through joint recovery management can be explained in monetary and non-monetary terms. In terms of monetary value, the findings of Article II show that when the service provider contributes to the resolution of customer-induced or environmental-induced failure, the cost of recovery is lower for customers. In addition, joint recovery management decreases the customer's financial loss. In particular, joint recovery management allows for more communication and clarification of needs between the service provider and the customer. This enhances the prevention of failure, which in turn decreases the likelihood of low quality/delay of service delivery and interruption of the customer's production line, unnecessary costs to failure activity, and

revenue loss in the market. The findings also indicate that service providers help failure resolution even when the source of failure is on the customer side. The service provider allocates resources to customer-induced failure, increasing the speed of resolution and decreasing the cost of resolution for the customer. Additionally, with early identification and notification of failure, joint recovery management enables the customer to use alternatives and make informed choices. Thus, the customer is able to prevent the domino effect of failure on their own customers in the marketplace and prevent revenue loss in the future.

In terms of non-monetary value, joint recovery management that involves high information sharing, communication, and customized resolution increases perceptual value, such as higher satisfaction, commitment, and loyalty. However, there might be variations based on the locus of failure. This answers the call by previous studies on the nature of value in B2B markets (e.g., Grönroos, 2011) that recommended more studies on the process and nature of value creation in B2B markets. This finding broadly supports the work of other studies in this area linking joint activities in a business environment with the co-creation of superior value (e.g., Agrawal & Rahman, 2015; Kohtamäki & Rajala, 2016; Marcos-Cuevas et al., 2016).

3.2 Customer and service provider roles in the joint recovery process

Article II shows that service providers and customers play various roles in different stages of joint recovery management, in which interfirm and intrafirm communication and resource integration are vital.

The findings indicate that value co-creation through joint recovery management requires resource organization and contributions from both parties. More specifically, interfirm and intrafirm resource integration are needed to contribute to the recovery from failure activities. Thus, service providers adopt the role of a value process organizer, a value protector, a value supporter, a value retriever, a value option counselor, a value booster, and a value facilitator. At the same time, customers engage in recovery activities as a co-organizer of resources, a co-preventer of failure, a co-diagnoser of failure, a co-notifier of failure, a co-evaluator of the solution, and a co-advertiser. The findings of Article I contribute to previous studies (Nätti et al., 2014; Marcos-Cuevas et al., 2016; Hollebeek, 2019) suggesting that the roles played by parties in the value co-creation process in service business relationships should be identified so that the service provider and the customer are aware of the important roles they can play during joint recovery management to co-create superior value. The result of the article confirms the results of previous studies (Aarikka-Stenroos & Jaakkola, 2012) reporting that in the collaborative process of value co-creation in B2B markets, both the parties' roles and resource integration are critical, facilitating joint activities, optimizing resource utilization, and leading to superior value creation through interaction between service providers and customers. The result indicates that in the recovery management context, customers can participate and integrate their resources into six main recovery activities from which value is co-created: prevention, identification, notification, analysis, resolution, and implementation of the solution (see Figure 4).

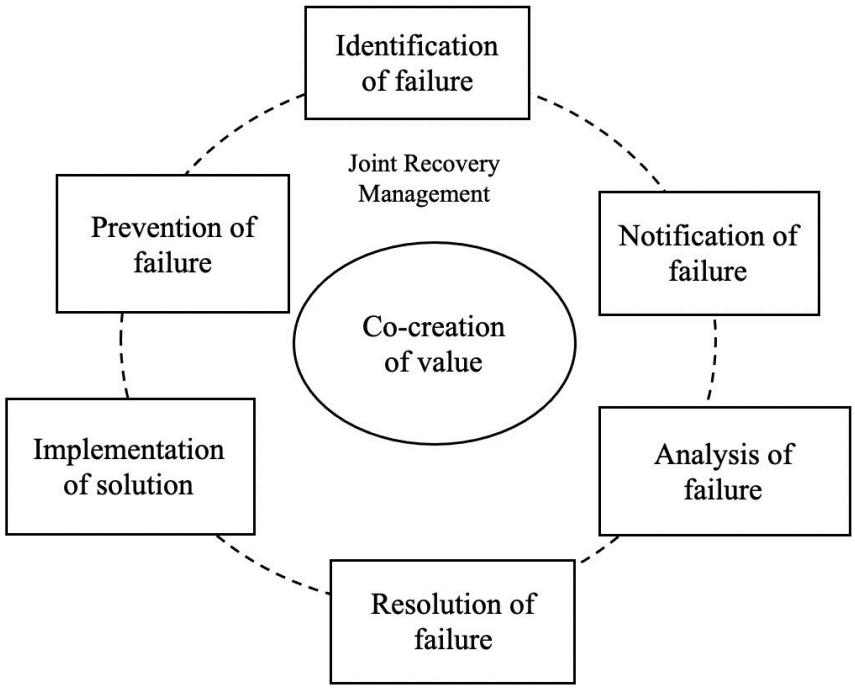

Figure 4. *The joint recovery activities*
Source: Author

Thus, the findings add to the previous framework of recovery management (Döscher, 2013; Vidal et al., 2016; Shin et al., 2017; Hübner et al., 2018), which only viewed recovery management from the service providers' position. The findings therefore shed more light on the role of service providers and customers in the dynamic and interactive process of recovery management in B2B markets (Zhu & Zolkiewski, 2015; Baliga et al., 2021). More specifically, the result shows that the prevention of failure in the pre-recovery phase is faciliated by developing a mutual understanding of requirements and expectations (Döscher, 2013; Hübner et al., 2018). Meanwhile, customers can play an active role through clarifying expectations and identifying and notifying the service providers of the failure when it happens after the service delivery through the customer's internal processes and resource integrations. The information provided by the customer is a critical resource contributing to the prevention and identification of failure, which requires the customer's interfirm and intrafirm resource integration.

To analyze and identify the root cause of failure and its resolution, a high level of interaction and information sharing is needed within and between the parties. When the failure is caused by customer-induced error (Zhu & Zolkiewski, 2015), failure recovery remains mainly on the customer side, while the service provider might engage in failure resolution through their resource contribution and support for customer value actualization. This finding is contrary to previous studies that have merely discussed recovery management from the service provider perspective.

The findings of this research show that the high level of interaction and resource integration between the service provider and the customer before, during, and after

service recovery provides a solid base for customer engagement in recovery activities. Moreover, recovery management is not solely the responsibility of the service provider, but whether both the service provider and the customer can engage in recovery activities depends on the locus of failure and the allocation of resources to failure recovery, through which superior value is co-created in B2B markets.

3.3 Antecedents and relational outcomes of customer involvement in joint recovery activities

The findings of Article III show that when the locus of failure is attributed to the service provider side (Baliga et al., 2021), customer engagament in recovery management decreases the customer perception of the relationship quality (Döscher, 2013). Joint recovery management needs the customers' resource contribution (Grönroos, 2011). However, when the failure is caused by the service provider, the customer's resource contribution to service recovery does not add any extra value to them. The outcomes might not be apparent to customers, so their trust, commitment, and satisfaction in the relationship with the service provider might decrease. Thus, when customers attribute the locus of failure to the service provider or to an environmental factor, they may experience a negative impact on the clarity and perceived value of their role.

This contrasts with the finding of Article IV that the co-creation of recovery increases the perception of outcome favorability from the recovery process in the consumer market. The results also reflect that customer perception of relationship quality increases when the locus of failure is on their side. A possible explanation here might be that service provider contribution and resource investment to failure recovery exceed the service provider's contractual obligations (Döscher, 2013). Then, customers consider it as an extra value proposition from the service provider side and, as a result, perceive a higher value in joint recovery management as an exchange situation (Nammir et al., 2012). Thus, they might have perceived higher satisfaction, commitment, and trust in the service provider's exchange relationship.

However, the findings show that in the case of failure induced by environmental factors, joint recovery management increases the customer's perception of relationship quality. This finding may be partially explained by the fact that the rapport of employees, service provider employee feedback, and the empowerment and clarity regarding the role that the customer can play result in a positive outcome when customers trade off their resource investment and the value driven by joint recovery management. The findings show that the customers' trust, commitment, and satisfaction are all to a large extent positively associated with the intention to participate in recovery activities in the future (IFCR). Among them, the impact of trust was bigger on IFCR, followed by commitment and satisfaction. Thus, customer satisfaction, commitment, and trust might be considered the antecedents of customer involvement in recovery activities.

While this result confirms previous findings regarding social exchange theory (Blau, 1968; Nammir et al., 2012), S-D logic (Vargo & Lusch, 2004, 2006, 2008, 2016), and value co-creation (Nätti et al., 2014; Hollebeek, 2019), it contributes to the current literature that highlights the importance of further investigation on the relational outcomes of customer engagement in recovery activities in B2B markets (e.g., Döscher, 2013; Oflaç et al., 2021). Using the findings of Articles I, II, III, my research efforts concentrated on the development of the joint recovery framework in B2B markets presented in Figure 5.

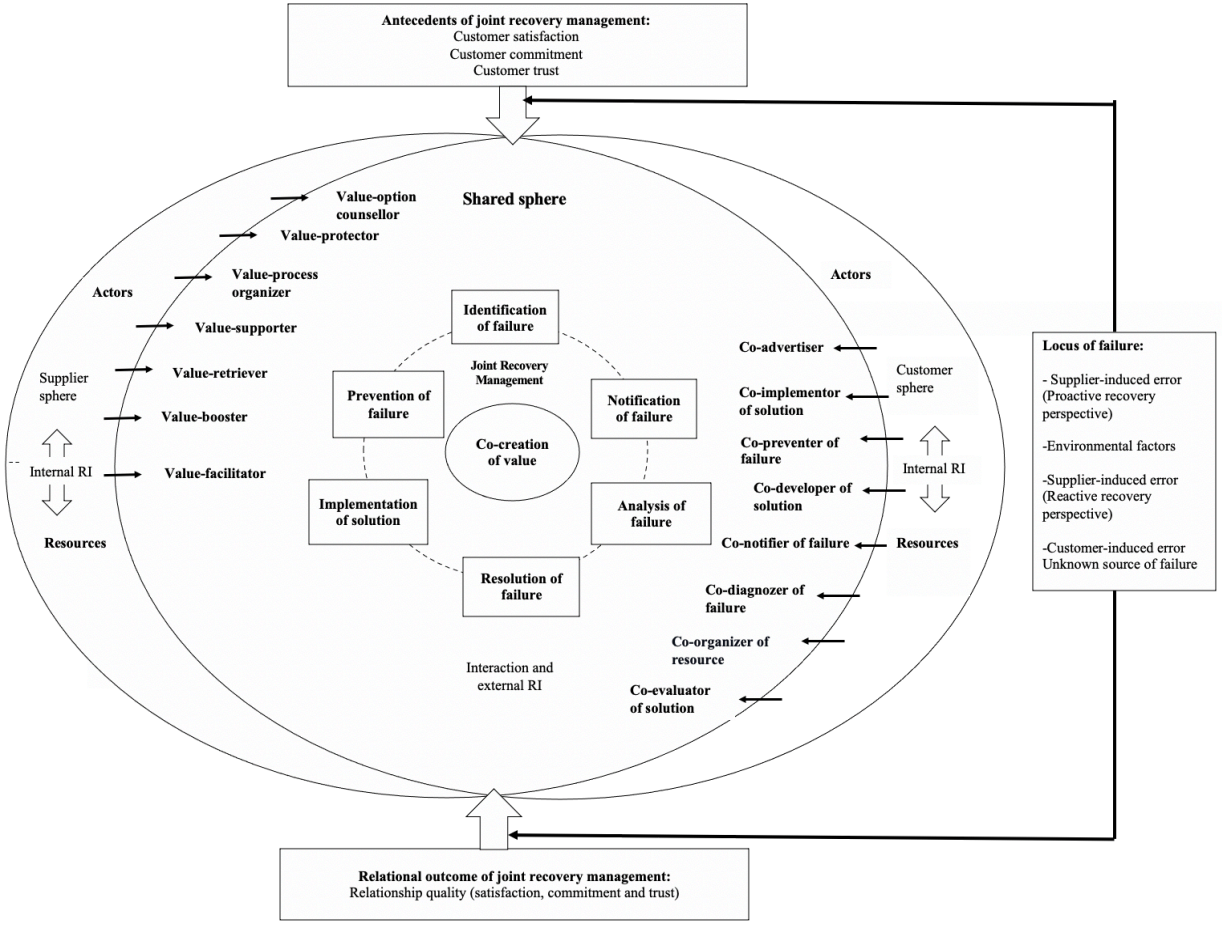

Figure 5. *The framework of joint recovery management in B2B markets*
Source: Author

The joint recovery management framework developed in this thesis first presents the antecedents of joint recovery management in B2B markets that increase the customer's intention for future participation in the recovery management activities. These antecedents are customer satisfaction, customer commitment to the service provider, and customer trust in the service provider. Second, it presents the process of resource integration through parallel interfirm and intrafirm service provider and customer interactions in their sphere and in the shared sphere. Third, it presents the various roles that the service provider and the customer play to jointly undertake recovery management (see section 3.2). The six recovery management activities the service provider and customer often participate in are the prevention of failure, identification of failure, notification of failure, analysis of failure, resolution of failure, and implementation of solution. Fourth, it presents co-created value through joint recovery management: monetary value and non-monetary value. Fifth, it presents the locus of failure as an important determinant of the collaboration level in recovery management and the customer's perception of relationship quality. Finally, it presents the relational outcomes of joint recovery management, including customer satisfaction, trust, and commitment.

This joint recovery management in B2B markets framework contributes to the existing knowledge of recovery management in B2B and service marketing research, which is discussed in the next section.

4 Conclusion

In the current thesis, my aim was to develop a framework for joint recovery management (see Figure 5) that encompassed the antecedents, underlying process, and relational outcomes in B2B markets. The findings report on two conceptually different but intertwined processes: the process of value co-creation through extended service offerings and the disciplines of recovery management in B2B markets.

I posed three research questions: 1) What are the activities and processes employed by the service provider and the customer to co-create recovery management? 2) What are the different roles that the customer and the service provider play in the joint recovery process? 3)What are the antecedents and relational outcomes of customer involvement in joint recovery activities? Answers to the research questions allowed me to develop a framework that facilitates value co-creation through joint recovery activities in B2B markets.

Answers to RQ1 enabled me to identify the main loci of failure and recovery management perspectives in B2B markets and the level of customer collaboration associated with the locus of failure and recovery management strategies (Article I). Figure 6 shows the level of customer collaboration in each failure situation.

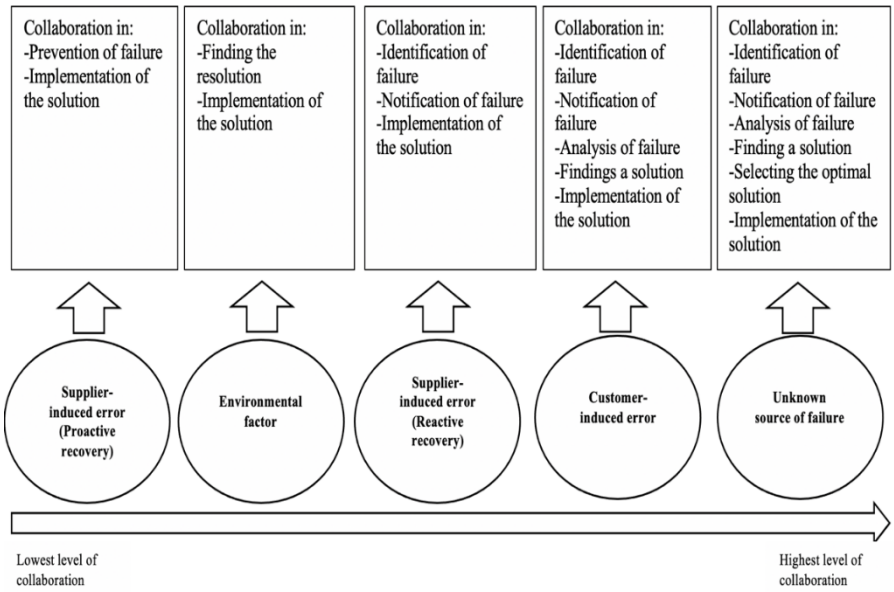

Figure 6. *The level of customer collaboration and the locus of failure*
Source: Author

The findings of Article II indicate that the customer is engaged in six recovery activities through which monetary and non-monetary value are co-created in the context of B2B markets. These joint recovery activities include prevention of failure, identification of failure, notification of failure, analysis of failure, resolution of failure, and implementation of the solution (see Figure 4).

The findings show that despite some similaries in the activities to B2C joint recovery management, such as planning for recovery managament and offering an apology and compensation, joint recovery management in B2B involves different requirements for

the service provider and the customer. The activities are more complex and require a high level of communication and resource integration.

The findings of Article II also indicate that parallel intrafirm and interfirm employee interactions are essential for value co-creation through joint recovery activities. These interactions between the service provider and the customer in the shared sphere can be formal and informal, and they facilitate resource integration during joint recovery activities (see Figure 7).

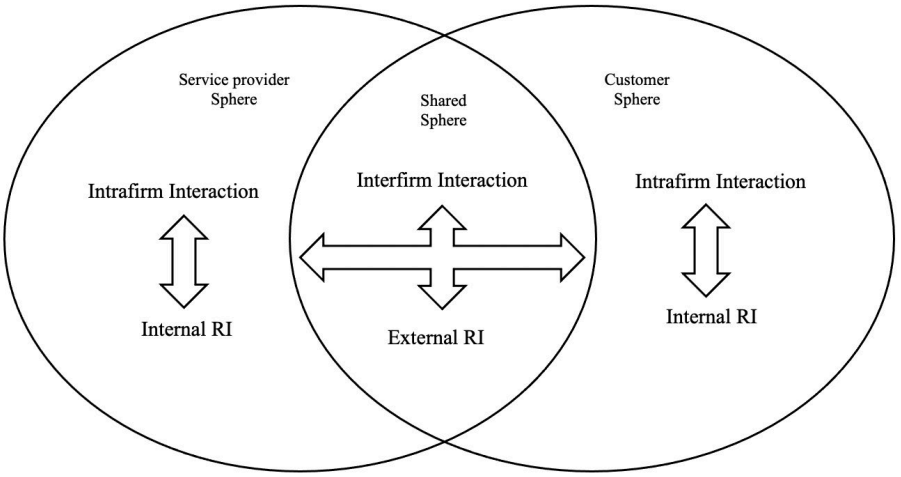

Figure 7. *The underlying process of interaction and resource integration in joint recovery management*
Source: Author

Regarding RQ2, the findings show that service providers and customers play various roles in the different stages of joint recovery management (Article II). The findings indicate that value co-creation through joint recovery management requires resource organization and contributions from both parties. More specifically, the findings indicate that the service providers adopt the role of a value process organizer, a value protector, a value supporter, a value retriever, a value option counselor, a value booster, and a value facilitator. At the same time, customers engage in recovery activities with the role of co-organizer of resources, co-preventer of failure, co-diagnoser of failure, co-notifier of failure, co-evaluator of the solution, and co-advertiser. Figure 8 depicts the roles of the service provider and the customer in joint recovery management.

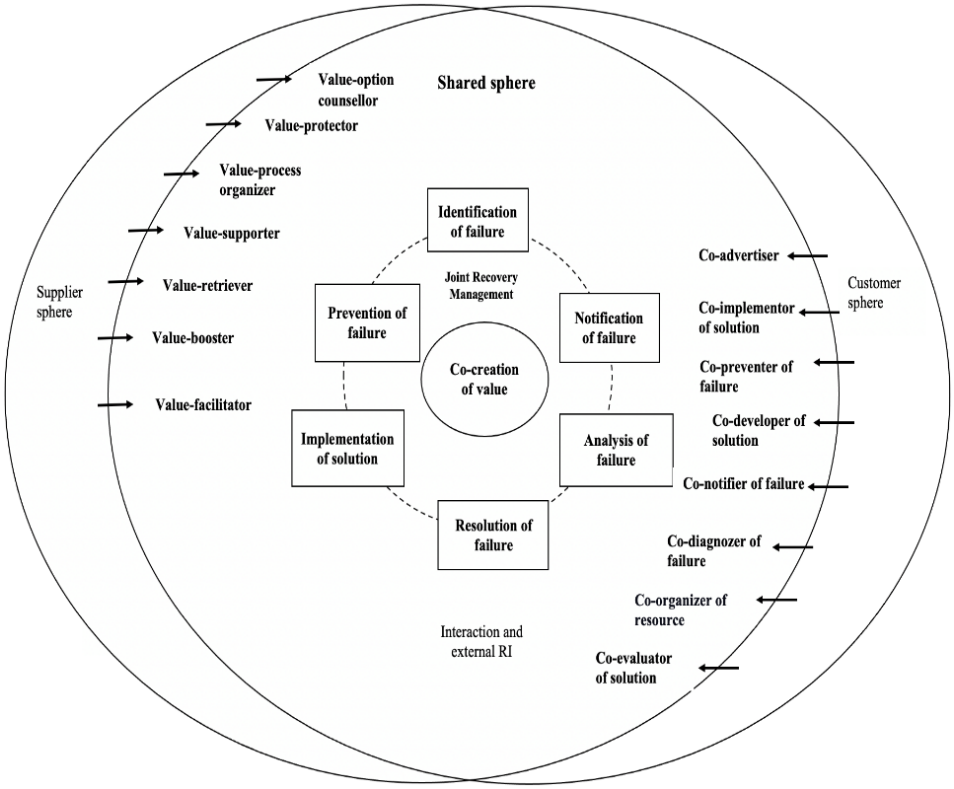

Figure 8. *The role of the service provider (supplier) and the customer in joint recovery management*
Source: Author

To anwer RQ3, my study focused on the impact of joint recovery management on the customer's perception of relationship quality (satisfaction, trust, and commitment). The type of impact depends on the locus of failure (Article III). More specifically, the customer's perception of relationship quality increases when the locus of failure is on the customer side or when the failure source is an environmental issue. At the same time, the customer's perception of relationship quality decreases when the locus of failure is on the service provider side. The findings also indictate that the customers' trust, commitment, and satisfaction encourage them to participate in future recovery activities. The findings show that the customer's trust is the biggest antecedent of participation in recovery management, followed by commitment and satisfaction.
The antecedents, the parties' roles, the process, and the relational outcomes of joint recovery management in B2B markets contribute to the development of a framework from which joint recovery management can be developed or on which decisions on joint recovery activities can be based (see Figure 5). Based on the above, the theoretical contributions of my study are as follows.

Contribution to the recovery management literature in B2B markets

Previous studies on B2B recovery management were merely based on service provider activities and have failed to address joint recovery activities in which the customer plays active roles. More specifically, the existing conceptualizations of recovery management in B2B markets have focused on the service provider's resource contribution to the recovery activities and neglected the customers' role in such extended service offered in B2B markets. The findings on joint recovery management are limited to B2C markets, which substantially differ from B2B markets in terms of demand, services, customers, and relationships. Therefore, the conceptualizations developed for B2C markets are likely to fail under B2B market conditions; they are non-transferable to B2B markets and result in misleading findings.

Very little had been known about the activities, processes, and roles of the customer and the service provider in B2B joint recovery management. Given that the value of co-creation through joint activities has well-recognized benefits and that recovery management is vital to securing post-failure relationship quality, the lack of research on joint recovery management in B2B markets has been a major gap in the marketing literature. This indicates a need to understand the process, activities, and various roles of the service provider and the customer in joint recovery management in B2B markets. This thesis is the first study on joint recovery management in B2B markets, and my research contributes to the existing knowledge of recovery management in several ways.

First, it advances knowledge in the field of B2B recovery management by exploring the "joint" aspect of recovery management in B2B markets. I provide empirical evidence for joint recovery in B2B markets and develop a framework specific to B2B markets that accounts for the service provider and customer roles, the underlying process of joint recovery activities, and the nature of value-driven activities from the activities neglected in the previous research (Articles I and II).

Second, it develops knowledge in the field of B2B recovery management by exploring the role of the locus of failure on the level of customer collaboration in recovery activities. So far, there has been little discussion about the qualifying conditions or terms for when joint service recovery is appropriate and for when the service provider and the customer benefit from doing so. This research is one of the first attempts to thoroughly explore the role of the locus of failure on the level of customer collaboration in recovery activities. The findings of this study strengthen the idea that the locus of failure, as one of the contingency factors, plays a pivotal role in customer and service provider decisions in engaging in recovery activities. The presented framework provides deeper insight into joint recovery activities by emphasizing the locus of failure, thus providing ground for further studies on joint recovery management (Article I).

Third, it advances existing knowledge in the field of B2B recovery management by providing new insights on the relational outcomes of joint recovery management in B2B markets. The present study examines the impact of joint recovery management on the customer perception of relationship quality. Previous research on recovery management has largely focused on post-recovery relationship quality, and there has been little discussion about the effects of joint recovery activities on the customer's perception of relationship quality in B2B markets. Also, the developed joint recovery model constitutes the first empirical approach to considering the role of the

locus of failure in the relationship between joint recovery management and customer perception of relationship quality. Thus, the findings of this thesis contribute to the understanding of the relational outcomes of customer engagement in recovery activities in B2B markets. Furthermore, far too little attention has been paid to the antecedents of customer participation in recovery management in B2B market. The findings of this thesis contribute empirical evidence on the antecedents of customer intention for engagement in recovery activities. Customer perception of relationship quality positively impacts their intention for future co-creation activities in B2B markets, which extends the knowledge of joint recovery management in B2B markets (Article III).

Fourth, the thesis contributes to understanding the differences between B2C and B2B joint recovery management frameworks. Due to the contextual differences of B2B and B2C markets, questions have been raised about whether a universal recovery management framework can be applied to B2B and B2C markets. The findings of Article IV show that there are some similarities in the joint recovery management in B2B and B2C markets, such as resource integration and having control over both the process and the recovery solution. However, the process, activities, and relational outcomes are different. The findings show that joint recovery management results in more favorable customer experiences in B2C, whereas the findings of Article III indicate that the relational outcome of joint recovery management depends on the locus of failure. Furthermore, previous published studies on B2C joint recovery management showed that the customer complaint is often the starting point of joint recovery activities in B2C markets, while the findings of the current thesis indicate that the customer can participate in the B2B market even before the failure situation occurs, to prevent the failure. In B2C markets, the customer participates in recovery activities to shape or personalize the content of the recovery, whereas this thesis shows that the customer participates in recovery management for various reasons, such as mutual agreement or to prevent a domino impact on end customers. In addition, the studies in B2C joint recovery management suggest that some demographic characteristics, such as customer gender and age, should be taken into account in joint recovery management, while joint recovery management in B2B markets appears to be unaffected by such characteristics.

Contribution to the service marketing literature

The findings of Articles I and II contribute to two mainstream service research disciplines: S-D logic and service logic. Despite the S-D logic and service logic perspective acknowledging the collaborative nature of value creation, little empirical research has been conducted on what those joint activities are. Previous research on the co-creation of value has mainly discussed the roles of the service provider and the customer on a rather theoretical and non-specific level, and there is scant elaboration on the service provider and customer roles and resource contribution to co-creating value in B2B markets. This indicates a need for greater in-depth exploration of the processes and implementation of value co-creation to get a more precise picture of the service provider and customer roles in co-creation activities and the antecedents and outcomes of co-creation. The thesis provides more empirical examples of value co-creation and makes the co-creative practice more tangible in B2B markets by examining value co-creation practices and their implementation. Therefore, the presented framework provides guidelines that facilitate the actualization of value co-creation in B2B

markets and encourages further academic research on value co-creation practices and implementation. Future research on recovery management may address the nascent domain of joint recovery management in B2B markets and shed more light on this important but neglected field of research.

4.2 Managerial implications

First, the presented framework can serve as a managerial tool for service providers and customers to improve service management by identifying the essential resources, interactions, and roles performed by service providers and customers to facilitate joint recovery activities and co-create superior value. In particular, it provides the service provider and their employees with the knowledge and skills to enhance their own ability to realize their roles and resources and facilitate sustained purposeful engagement in recovery activities. Service providers may therefore use this framework to conduct internal audits and enhance the effectiveness of their recovery management. Service providers can manage and better engage customers in the joint recovery process if they acquire a deeper grasp of the numerous roles played and resources contributed by customers during the recovery management process. The developed framework for joint recovery management provides managers with guidance on how to control and promote communication and interaction processes in service recovery scenarios. Managers can utilize the framework to analyze their capabilities and procedures at each stage of recovery phases in order to optimize their roles and resource contributions.

Second, the findings of this thesis might interest service providers willing to adopt a proactive and collaborative approach with customers to fully understand their expectations and needs, using joint recovery activities other than developing pre-defined solutions, because customer knowledge may become more critical in the recovery management context. Managers can accomplish this by addressing and agreeing on the flexible contractual agreement that encourages the development of mutual understanding, common goals, and information sharing to prevent failure situations. The service providers also are recommended to create briefing templates, discussion methods, and user-friendly extranet platforms to help customers provide sufficient and high-quality resource contributions.

The findings of this research refer to an opportunity to develop a mutual understanding of what is expected before, during, and after the failure resolution from both service providers and customers, which is pivotal. Therefore, my suggestion is for service providers and customers to develop communication platforms and procedures that encourage interaction and information sharing concerning collaborative recovery activities, facilitate the identification of misunderstandings, and prevent unnecessary investments of resources.

This study recommends that service providers focus more on engaging their customers when they see an advantage, but they should also take the locus of failure into account. While using the customer's resources and guiding them to participate in recovery activities is beneficial, contingency factors such as the locus of failure should be taken into account in order to have a positive relational outcome, as disregarding them may result in dissatisfied customers experiencing low value. The findings of the present thesis help decision makers reach a better decision on the participatory and non-participatory style of a recovery intervention based on the locus of failure. For instance, participatory recovery mechanisms might be a suitable option when the

source of failure is known. Less participatory recovery mechanisms would be a possibility if the failure situation is caused by an error on the service provider side and the service provider practices proactive recovery. This research thus shows that collaborative recovery mechanisms are a viable alternative for B2B markets, but it also warns that they should only be used after careful consideration of the situation. Since the findings show that the perception of relationship quality impacts customer intention for future engagement in recovery activities and investment of sufficient resources, service providers should make an effort to fulfil customer expectations regarding an effective failure resolution and restore and enhance relationship quality after handling the failure situations through a high level of interaction and resource contribution to the failure resolution.

Also, the findings encourage both service providers and customers to not neglect their responsibilities in collaborative recovery management. They should understand that intrafirm interactions, the sharing of information on needs and expectations, and the integration of their applicable resources allow them to develop optimal solutions that generate greater value-in-use and contribute to a favourable value-co-creation outcome. The findings also show that customers should comprehend the meaning of co-creation even more than they do presently and should take a more active role in tailoring offerings to their demands to fully benefit from service recovery. Thus, the present research suggests that customer training and education (e.g., through visits, meetings, and conferences) are prerequisites for exploiting the customers' potential in playing a role in recovery activities.

4.3 Limitations and avenues for future research

Despite these fundamental contributions and implications, the generalizability of the research results is subject to certain limitations. First, the study is limited by a small sample based on one country (Iran), including only specific industries. Thus, more research is needed to assess joint recovery activities in different countries and industries to take into account the role of culture or industry-specific characteristics in joint recovery management practices. Thus, future research can be replicated in different countries and cultural contexts. Since the study was limited to samples from medium and large private companies, young and small companies might approach the presented framework with some caution because of their limited organizational resources. Therefore, further research should focus on joint recovery management in small companies and compare the findings with the presented framework.

Second, the dyadic service provider-customer perspective was adopted in the data collection for the qualitative phase, rather than the network perspective. It is possible that important aspects of joint recovery management for B2B markets were disregarded as a result. Therefore, more research using a network perspective is needed.

Third, the bias caused by qualitative expert interviews and the small sample size used for data collection in the qualitative phase and artificial experiments in the quantitative phase may be considered methodological limitations. Thus, future research that can be replicated in a study should be repeated using different research design and data collection approaches to compare the findings.

Fourth, in this study, the locus of failure is considered as the sole contingency/situational factor, though there are others, including the type of relationship (transactional vs. collaborative), the length of the relationship, the severity

of the failure, and the frequency of failure. For this reason, future research is recommended to investigate the role of these contingency factors on the effectiveness of joint recovery and the level of collaboration during recovery activities.

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Abstract

Joint recovery management in business-to-business markets: Antecedents, process, and relational outcomes

Recovery management, as an extended service offering, is one of the fundamental aspects of the value generation process in business-to-business markets. Business-to-business (B2B) recovery management is a major area of interest, as customer value actualization may be restrained by failures that frequently occur in the course of B2B exchanges and relationships. The failures may significantly impact the long-term relationship between the customer and the service provider, threaten service provider profitability, or even lead to the termination of the business relationship. Thus, service providers often consider failure recovery activities as an opportunity to increase customer satisfaction and strengthen the business relationship. Studies of recovery management prescribe a high level of interaction and information sharing between involved parties before, during, and after failure situations to gain a better understanding of customer needs and expectations. Although previous studies have stressed that customer engagement in recovery management might be beneficial in understanding their expectations in a failure situation, many service providers and customers engaged in B2B markets nevertheless often find it difficult to undertake joint recovery management because the antecedent of customer engagement and the role of customers in recovering from failure have not been explored, nor have the process of resource integration or the relational outcomes of customer participation in B2B service recovery been studied.

While recovery management in B2B markets is not a new phenomenon, B2B recovery management studies to date have tended to focus on the recovery activities from the service provider perspective rather than on joint recovery management. Thus, little is known about the roles of service providers and customers, the process, the antecedents, and the relational outcomes of joint recovery management in B2B markets. Research on customer engagement and joint recovery has mostly been restricted to consumer markets, which differ contextually and significantly from B2B markets; thus, such findings are not transferable to B2B markets. So far, customer engagement in recovery activities and value co-creation through joint recovery activities remain rather abstract concepts, without much empirical development and implementation in practice.

With respect to these deficiencies, further knowledge on joint recovery management in B2B markets is required to address these limitations. This thesis develops a framework of joint recovery management with the underlying processes, the parties' roles, the antecedents, and the relational outcomes of joint recovery activities in B2B markets. Therefore, the thesis poses three research questions:

RQ1: What are the activities and processes employed by the service provider and the customer to co-create recovery management?

RQ2: What are the different roles that the customer and the service providers play in the joint recovery process?

RQ3: What are the antecedents and relational outcomes of customer involvement in joint recovery activities?

This thesis provides answers to these research questions through four peer-reviewed research publications. The theoretical foundation of this thesis builds on two service marketing perspectives (S-D logic and service logic), social exchange theory, and B2B

recovery management studies. Methodologically, these articles represent two different types of research design (mixed-method design and exploratory-sequential approach) and the grounded theory research design based on an experimental scenario. The articles use expert interviews and questionnaires as the methods of data collection and coding, ANOVA, and regression analysis as the methods of data analysis.

The findings of this thesis establish that interfirm and intrafirm interaction and the resource integration of parties are essential for co-creating value through joint recovery activities, including the prevention, identification, notification, analysis, and resolution of failure, as well as the implementation of the mutually selected solution. The findings of this research also indicate that the service provider and customers contribute to the value creation process through recovery activities, depending on the locus of failure and by performing different roles, which result in the co-creation of monetary and non-monetary value in B2B markets. Surprisingly, the level of customer collaboration depends on the locus of failure and on the recovery management perspective of the service provider. More specifically, the lowest level of collaboration is related to a situation in which an issue was caused by the service provider but the service provider has taken a proactive recovery perspective, while the highest level of collaboration is related to situations in which the root cause of failure is unknown.

The qualitative findings show that the locus of failure has an interplay role in the relationship between joint recovery activities and customer perception of relationship quality. The level of customer perception of relationship quality after joint recovery management varies depending on the locus of failure, reaching the lowest level in the case of service provider–induced error and the highest level in the case of customer-induced error.

This thesis supports the S-D logic, service logic, and recovery management literature. In doing so, it applies value co-creation principles and their perspective in the recovery management context; it sheds light on the processes involved in the implementation of value co-creation in recovery management practices. This thesis also contributes to the scientific literature on B2B recovery management while exploring different aspects of recovery activities in which collaborative recovery activities are possible in B2B markets.

In addition to the empirical evidence and theoretical contributions, the developed framework of joint recovery management might serve as a managerial tool to identify the essential resources, interactions, and roles performed by service providers and customers to facilitate joint recovery activities and co-create superior value through such activities. It might also help decision makers make a better decision on the participatory and non-participatory style of recovery intervention based on the locus of failure.

Lühikokkuvõte

Äripartnerite ühine taastamistegevus: eeldused, protsess ja tulemused ärisuhtele

Taastamise haldamine laiendatud teenusena on üks põhiaspekte äriklientidele väärtuse loomisel. Äripartnerite vaheline taastamisjuhtimine on oluline valdkond, kuna äriprotsessi ja vastastikuste suhete käigus võivad kaasneda vead ja ebaõnnestumised. Need võivad aga kahjustada kliendi ja teenusepakkuja pikaajalist suhet, ohustada teenusepakkuja tulu ja viia isegi ärisuhte lõpetamiseni. Seetõttu peavad teenusepakkujad tegevusi ebaõnnestumiste taastamiseks sageli võimaluseks, et suurendada kliendirahulolu ja tugevdada ärisuhet. Taastamisjuhtimise alased uuringud soovitavad intensiivset koostööd ja teabe jagamist enne ebaõnnestumissituatsiooni, selle ajal ja pärast seda, et saada parem arusaam kliendi vajadustest ja ootustest. Kuigi varasemad uuringud on rõhutanud, et kliendi kaasamine taastamisjuhtimisse võib olla kasulik tema ootuste mõistmisel ebaõnnestumissituatsioonis, leiavad teenuspakkujad ja ärikliendid, et ühist taastamistegevust on raske läbi viia, sest ei kliendi osalemise eeldusi ja rolli ebaõnnestumise taastamisel ega ka ressursside integreerimise protsessi ning kliendi osaluse mõju äritegevuse taastamisele pole uuritud.

Kuna taastamisjuhtimine äriturul pole uus nähtus, on sellekohased uuringud seni pööranud rohkem tähelepanu teenusepakkujale mitte aga ühisele taastamistegevusele. Seetõttu teame vähe ühise taastamishalduse rollidest ja protsessidest, eeldustest ja tulemustest ärisuhetele. Uuringud kliendi kaasamise ja ühise taastamise kohta on peamiselt piirdunud tarbijaturuga mis erineb kontekstuaalselt ja oluliselt äriturust, seetõttu ei ole need uuringutulemused ülekandtavad äriettevõtete vahelisele tegevusele. Siiani on kliendi kaasamine ja väärtuse koosloome ühise taastamistegevuse tulemusena endiselt abstraktne kontseptsioon väheste empiirilise uuringute ja rakendamisega praktikas.

Arvestades eelpoolöeldut, vajab ühine taastamisjuhtimine äriturul lisateadmisi. Selleks töötab doktoritöö autor välja ärituru ühise taastamisjuhtimise raamistiku, mis sisaldab taastamistegevuse protsessi, osapoolte rolle, taastamistegevuse eeldusi ja tulemusi ärisuhtele. Doktoritöö püstitab kolm uurimisküsimust:

(1) Milliseid tegevusi ja protsesse kasutavad teenusepakkuja ja klient ühises taastamisjuhtimises?

(2) Millised on kliendi ja teenusepakkujate rollid ühises taastamisprotsessis?

(3) Millised on kliendi osavõtu eeldused ja tulemused ärisuhtele ühises taastamistegevuses?

Nendele kolmele doktoritöö uurimisküsimusele pakuvad vastuseid neli avaldatud teaduspublikatsiooni. Töö teoreetilise viiteraamistiku moodustavad teenusekeskse turunduse põhikontseptsioonid (S-D loogika ja teenuse loogika), sotsiaalse vahetuse teooria ning äriteenuse taastamise juhtimise uuringud. Metodoloogiliselt kasutavad avaldatud teadusartiklid järjestikuse seletava uuringu disaini ja põhistatud teooria disaini, mis omakorda põhineb eksperimendi stsenaariumil. Artiklites kasutatakse ekspertintervjuusid ja küsitlusi andmete kogumise ja kodeerimise meetoditena ning ANOVA- ja regressioonianalüüsi andmete analüüsimise meetoditena.

Uurimistulemused näitavad, et osapoolte sisemine suhtlus ning ressursside integreerimine on olulised väärtuse koosloomiseks läbi ühise taastamise tegevuste, mis sisaldavad ebaõnnetumise tuvastamist, sellest teavitamist, analüüsi, lahenduse leidmist

ning lahenduse rakendamist. Uurimistulemused näitavad ka, et teenusepakkujad ja kliendid panustavad väärtuse loomise protsessi läbi taastamistegevuste sõltuvalt vea tekke asukohast ja rollidest, mida osapooled täidavad. Selle tulemuseks on rahalise ja mitterahalise väärtuse koosloomine äriturul. Üllataval kombel sõltub koostöö tase kliendiga vea tekke asukohast ja teenusepakkuja poolsest taastamise juhtimisest. Madalaim koostöö tase on seotud olukorraga, kus vea põhjustas teenusepakkuja võttes ennetava taastamise vaatepunkti, samas kui kõrgeim koostöö tase on seotud olukorraga, kus vea põhjus ei ole teada.

Kvalitatiivse uuringu tulemused näitavad, et rikke asukohal on vastastikune roll ühise taastamistegevuse ja kliendi suhtekvaliteedi tajumise vahel. Kliendi suhtekvaliteedi tajumise tase pärast ühist taastamistegevust varieerub sõltuvalt vea asukohast, ulatudes madalaimale tasemele teenusepakkujast põhjustatud vea korral ja kõrgeimale tasemele kliendi põhjustatud vea korral.

Doktoritöö panustab teenusekeskse turunduse kontseptsioonidesse ja taastamisjuhtimisega seotud teaduskirjandusse. Töös on rakendatud väärtuse koosloomise põhimõtteid ja nende perspektiivi taastamishalduse kontekstis. Seega käsitleb doktoritöö protsesse, mis on seotud väärtuse koosloome rakendamise ja taastamisjuhtimise praktikatega. Doktoritöö tulemused annavad panuse ka ärituru taastamisjuhtimise teaduskirjandusse, uurides erinevaid võimalikke taastamistegevuse aspekte ärituru osaliste koostöös.

Lisaks kogutud empiirilistele materjalidele ja teoreetilistele panustele võib välja töötatud ühise taastamishalduse raamistik olla juhtimisvahendiks, et tuvastada olulisi ressursse, suhtlusi ja rolle, mida teenusepakkujad ja kliendid täidavad ühiste taastamistegevuste hõlbustamiseks ja lisaväärtuse loomiseks selliste tegevuste kaudu. See võimaldab aidata otsustajatel teha paremaid valikuid osalus- ja mitteosalusstiilis taastamissekkumiste kohta, lähtuvalt ebaõnnestumise ilmnemise asukohast.

Appendix 1

Publication I

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JOINT B2B RECOVERY MANAGEMENT: THE ROLE OF LOCUS OF FAILURE

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Abstract

The benefits of the co-creation of failure recovery are well recognized in the literature. So far, however, there has been little discussion about the collaborative process of joint recovery management and the role played by the locus of failure in this process in the Business-to-Business context. Drawing on service-dominant logic and service logic, this paper attempts to explore the main sources/locus of failure and their roles in the level of supplier and customer collaboration during the failure recovery activities. Through the qualitative interviews with suppliers and customers firms based in Iran, the authors identify the main locus of failure and analyze the level of collaboration in recovery activities between the supplier and customer firms. The result reveals there are four main sources of failure (supplier-induced error, customer-induced error, an environmental factor, and unknown causation of failure) and two recovery management perspectives (reactive vs. proactive) in the B2B context. Our findings indicate that the level of joint recovery changes depending on the source of the failure in the business environment. Particularly, the level of joint recovery can be shown on a spectrum where the minimum level of collaboration is possible when the error is caused by the supplier and the maximum level of joint recovery happens when the root cause of failure is difficult to identify.

Keywords: Recovery Management, Business-to-Business, Locus of Failure, Service Failure, Iran

1. Introduction

Co-creation of value through customer participation in supplier service offering and supplier resource contribution to customer process of value actualization is frequently prescribed in the Business-to-Business (B2B) settings (Lindgreen *et al.* 2009; Aarikka-Stenroos and Jakkola, 2012; Franklin and Marshall, 2019; Hollebeek, 2019; Bell, 2019; Lechner, 2019). Based on 'extended service offering', the success of suppliers appears to be positively related to how well they interact with customers, make resource contributions, and support customers' value actualization processes (Grönroos, 2011; Brodie *et al.* 2011). The customer's value creation

process, however, can be restricted by the failures that frequently occur during the value generation process and negatively impact customers' operational and financial situation, and restrain the customer-supplier relationships (Van Doorn and Verhoef, 2008; Döscher, 2013; Nik Bakhsh, 2019). Although supplier firms may not be able to offer 100% error-free service, failure recovery is possible (Hart *et al.* 1990; Döscher, 2013; Baliga *et al.* 2020). Recovery management in the business environment plays a pivotal role in the customer value actualization process (Grönroos, 2011), as the financial and operational performance of customers highly depends on the supplier's error-free service offering (Baliga *et al.* 2020). Therefore, suppliers are often motivated to go the extra mile (Nik Bakhsh, 2019; Nik Bakhsh and Riivits-Arkonsuo, 2021) to support the customer value actualization process (Weinstein, 2020) through effective recovery strategies.

Recovery management in B2B settings has been defined as "a systematic approach for the development, implementation and controlling of activities by the seller firm to handle product or service failures to regain customer satisfaction and attain customer retention in the context of business-to-business markets" (Döscher, 2013, p. 18). This definition labels the failure as the problems in supplier value proposition/service offering and failure recovery responsibility has been attributed to the supplier firm only. However, in the present study, the authors define failure as potential problems that might occur in the entire value generation process from supplier service offering to customer actualization of value and caused by different sources rather than only supplier-induced failures.

According to service-dominant (S-D) logic and service logic, customers can involve in the supplier recovery management and play the role of co-producer of extended offering and co-create a solution by applying their operant resources such as expertise, capability, and competency (Vargo and Lusch, 2004; Dong *et al.* 2008). The value, therefore, is jointly created by supplier and customer through joint recovery activities, interaction, and resource integration (Aarikka-Stenroos and Jaakkola, 2012; Hollebeek, 2019).

Although service recovery is a high-participation service context (Iglesias *et al.* 2020), the co-creation of value through joint recovery activities in the business environment has been given little attention in the literature (Döscher, 2013; Nik Bakhsh and Riivits-Arkonsuo, 2021). Besides, it is still unknown whether the level of co-creation of recovery is dependent on the source of failure (Brodie *et al.* 2012) which represents a major gap in the B2B marketing literature. This study responds to such needs therefore, the aim of this study is two-folded: first to explore the main failure sources in the B2B environments, second, to shed more light on the level of joint recovery management with the different locus of failure. The authors hope this research opens a new field for future academic research in the co-creation of recovery management in the B2B context.

The remainder of this paper is divided as follows: the first part deals with the background of joint recovery management in the B2B context. In the second part, the authors discuss the methodology adopted for systematic collection and analysis of data. Then the authors present and discuss the findings, and finally, the conclusion and implications are presented.

2. Joint recovery in business-to-business settings

In contrast to Business-to-Consumer (B2C) markets (e.g., Li *et al.* 2014; Fejza *et al.* 2017; Msosa and Govender, 2020; Sheva, 2021), service failures in B2B environments display amplified impact or "Domino effects" through the business network (Zhu and Zolkiewski, 2015). Failures negatively impact the customers' operational and functional processes and often snowballed into clients' customers (Nik Bakhsh and Riivits-Arkonsuo, 2021). Whereas, a single negative incident is mostly tolerated or disregarded by business customers (Bozzo, 2008; Spreng *et al.* 2009), repeating service failures might eventually lead to the switching to another supplier (Döscher, 2013). Recent evidence suggests that post-failure supplier-customer relationship might be affected by several factors such as the previous successful and long-lasting relationship between customer and supplier, the customer loyalty and commitment, the

reciprocal purchase agreement, the mutual dependency, high switching costs, and customers fear of change (Zhu and Zolkiewski, 2015; Biyik, 2017; Alhathal *et al.* 2018; Arslan, 2020).

Despite the frequency of failure in the course of B2B markets, supplier firms may be able to alleviate the negative impact of failures through the development of recovery management to successfully resolve the failure situations (Döscher, 2013). Industrial suppliers may adopt proactive or reactive service recovery approaches. While proactive recovery reflects the supplier's activation of the recovery process before customers notice failure and start to complain, reactive recovery is initiated only when customers complain (Hübner *et al.* 2018). The literature suggests that proactive (vs. reactive) recovery strategies allow firms to mitigate the consequences of failure-induced damage, including by identifying potential failure causes, informing customers, and solving issues at the earliest opportunity (Döscher, 2013). In general, recovery management in B2B settings includes activities such as the prevention-, identification-, notification-, analysis-, solution-, and control of failure (Döscher, 2013; Baliga *et al.* 2020).

On the other hand, S-D logic and service logic argues that the co-creation of value is possible in the service chain from service delivery to service recovery. Service logic and S-D logic commonly agree that the customer can participate in recovery management and play an active role in the recovery activities as the main part of 'extended service offering' (Grönroos, 2011; Iglesias *et al.* 2020). In the same vein, the authors argue that in the 'value generation process' value is mutually created through the customer and supplier participation in recovery management (Vargo and Lusch, 2004; Grönroos, 2011) and their resource contribution to recovery management activities. To further develop our understanding of joint recovery management, the authors present a definition of the joint recovery management based on S-D logic (Vargo and Lusch, 2004), service logic (Grönroos, 2011), and B2B recovery management definition (Döscher, 2013, p. 18): 'Supplier and customer interaction and resource integration to jointly prevent, handle and resolve the product or service failures through which value is co-created in the context of business-to-business markets'.

The previous study in the B2B context shows that high relationship quality can encourage the customer to contribute and involve in the recovery management activities (Nik Bakhsh and Riivits-Arkonsuo, 2021), in turn, customer engagement in the supplier can lead to greater satisfaction, commitment, and trust (Hollebeek, 2019). However, this raises critical questions: what are the main source of failure in the business environment? And to what extent do customers and suppliers engage in the recovery activities? How does the level of joint recovery change depending on the locus of failure? These questions reveal a major gap in the B2B recovery management literature and highlight the aim of the present study. To bridge this gap, this study aims to answer these questions by conducting qualitative research in the B2B environment, therefore shed more light on the concept of co-creation in the business-to-business markets.

3. Methodology

Since the recovery research has challenging and exploratory nature (Božič *et al.* 2020), the author used a qualitative research design to develop the understanding of failure modes and level of joint recovery management in the business environment. Previous research has explicitly recommended the grounded theory (Glaser, 1992) as the adequate approach for the systematic collection and analysis of qualitative data in business-to-business markets (e.g., Wagner *et al*. 2010; Döscher, 2013; Božič *et al*. 2020; Maysami and Mohammadi Elyasi, 2020; Liu and Tseng, 2021). Thus, the authors selected the grounded theory as the research approach as the topic of joint recovery in business markets has been given superficial attention in the contemporary recovery literature.

To gain a profound understanding of the locus of failure and level of joint recovery in the business environment, the authors conducted a series of online semi-structured qualitative skype interviews with senior, middle-level, and frontline managers of nine industrial suppliers and customer firms in Iran during spring 2020. To prevent methodological error during interviews, the authors used semi-structured interviews to reach sufficient consistency across the interviews. In business environments, companies often hesitate to share information openly

due to the sensitivity of failure recovery topics, thus the authors assure them of the anonymity of companies, persons, regions.

3.1. Data collection

The theoretical sampling in two phases was conducted to collect the qualitative data from the research participants with an average of 11 years of professional experience. To increase the generalizability of findings, the authors conducted our research in diverse B2B sectors such as technology, food, machinery, and telecommunication from suppliers-customer perspectives. In the first phase of data collection, the authors interviewed five participants from the four supplier firms to understand the joint recovery activities from a strategic perspective. To develop a strategic and functional perspective on joint failure recovery, the interviewees were selected from the areas which frequently interact with industrial clients in failure situations and failure recoveries such as sales, service/product quality, service/product warranty, and customer relations departments. Then, the gained insights from the first phase helped the authors to conduct six additional interviews with participants (middle-level and frontline managers) from the same supplier firms until no new information was obtained. In the third phase of data collection, using the knowledge derived from first and second phase interviews, the authors performed ten qualitative interviews with participants (five from strategic and five from an operational perspective) from associated four customer firms in quality, purchase, and supply departments to comprehend joint recovery from the customer perspective. These industrial clients were contacted because they were the main customers of the suppliers' business had a long-term relationship with the respective supplier.

The first part of the interview with the supplier firm's employees included a description of the research background and assurance of data confidentiality collected from the interviewees. Then, the author asked the participants to narrate the main failures they often experience during the service delivery, the general process of recovery management in their organization, the resources they mainly utilize for the recovery activities, and the general process of internal interaction for failure resolution, from their perspective. In the second section, they were asked to clarify the roles of customers in the recovery management, when the customers get involved in the recovery process, how and to what extent customers take part in recovery activities, from their perspective. In the end, they were asked to describe the story of the most recent incident that happened in the service delivery process and the way the issue was resolved.

In the third phase of data collection, using the knowledge derived from the first and second phase, the authors conducted the interviews with employees of associated client firms in quality, purchase, and supply departments to comprehend the co-creation of recovery from a customer view with a long relationship with the respective supplier. Based on this process, the main failure they often experience, a fundamental understanding of co-recovery, the underlying interaction, and resource integration processes in business markets were developed. The customer firm interviews began with an introduction of research followed by the purpose and the benefits of the research, and data confidentiality. In the first section, the interviews narrated the main failures they often experience during the service delivery with the associated supplier as well as the general internal process of failure identification and notification of failure to the supplier in their organizations. Then in the second section, they were asked to elaborate their expectations on the recovery activities from their point of view. Subsequently, they explained when and how they get involved with the failure handling, what resources they have to contribute, and how they interact with the supplier during the recovery process. In the end, they were asked to explain the last issue they encountered during the service delivery and how it was resolved.

3.2. Data analysis

Based on a systematic three coding processes introduced by the grounded theory methodology, the authors analyzed the data gathered from the interviews. In this study using Nvivo, the open

coding process led to 82 concepts, in the next step, through axial coding, authors developed the relationships between the categories which resulted in 65 core categories. Then, in the last step using selective coding, the authors developed 25 profound theoretical concepts to represent a theory on the source failure and the level of collaborative recovery activities depending on the locus of failure in the business environment. To ensure the reliability of data, the authors selected the participants with a sufficient level of expertise on failure recovery and transcripted the interviews profoundly transcribed (Nascimento and Steinbrich, 2019). Then, fundamental insights driven from transcripts were verified by feedback shared by four previously interviewed participants to ensure the consistency and validity of the results.

4. Findings

The authors summarized the core findings of data analysis in this section. The main source of failures, the recovery perspectives, and the level of joint recovery management are discussed in the following sections.

4.1. Failure sources in B2B context

It is essential to have a sufficient understanding of the main sources of failure to choose and implement effective recovery activities in the business environment. The data indicates that the service failure in a B2B context has dynamic nature, is significantly complex, and requires high interactions between the actors across the business network. In general, failures occur in the business market when the contractually agreed characteristics and delivery of the product/service have not been met because of various reasons. As stated by participants, there are four main sources of failure in the business environment including supplier-induced errors, customer-induced errors, an environmental factor, or an uncertain source of the issue. More specifically suppliers' (SS) and customers' (CS) participants stated that:

"…Usually, all the product requirements are mentioned in our contract with the customer. While sometimes some issues arise unexpectedly and impact the quality and delivery of the product. Several factors can impact the process and some of them… we don't have control over all these factors like environment…" (SS)

"…We expect that the products reach us without any flaws as agreed in our contract with the supplier. However, the problem can happen for different reasons everywhere from placing the order until we get the product in the delivery point. Even when the items go to the production line…" (CS)

The findings also revealed that the failures can happen in upstream, internal, and downstream activities of the supplier. Some of the frequently mentioned examples of the problem in supplier's upstream activity can be listed as defected and low quality of raw material and the delay in the raw material delivery. The suppliers' internal errors are not limited to internal miscommunication and planning, producing low-quality products, incorrect invoicing, wrong product delivery, inadequate amount of safety stock, etc. The failures in the supplier downstream activities are mentioned as logistic and delay in service delivery. Finally, some of the failures happen during the supplier firm interaction with customers employees during the service offering such as impolite behavior of supplier employees, non-functional communication, misunderstanding the customer request, and lack of feedback.

The participants also mentioned several customer-induced errors such as providing the supplier with incorrect information, failing to provide the supplier with the latest changes in products, placing the wrong order, incorrectly using the product/service, over-ordering, and under-ordering the product.

"… A variety of problems often happen in our exchange with the customers, it is because of problem that we have with our suppliers, the logistic, the problem we have in our

production line and delivery … sometimes miscommunication between us and customer employees. for example, we did not ask the right questions or we misunderstood their request …" (SS)

"…There was a time when we ordered X more than we needed, the products had limited expiration time. I say even supplier helped us to solve the problem by returning them…" (CS)

Both suppliers and customers' participants referred to situations in which finding and analyzing the root cause of the problem is very difficult. The interviews revealed that, despite the importance of analysis of failures, sometimes identifying the causation for failure is time-consuming, difficult, and requires a high level of communication between supplier and customer but the cause of the failure remains unknown for a very long time.

"…We have been in several situations in which we could not find any problem in our processes or the customer. So we had to start looking at the issue from our side to find what caused the problem…the problem had to be somewhere that we could not find easily…it took time and effort from us and customer to find a solution…" (SS)

It was also confirmed by the interviews that failure might happen due to several environmental factors such as bad weather, natural disasters, recession, lack of raw material, pandemic, and political-economic restriction.

"…Sometimes we cannot find the raw material on time because of economic or political problems. Then we inform the customer in advance and we adjust our plans, produce similar/alternative product which might need amending from the customer too…" (SS)

"…There are some factors we cannot control like unstable weather… in this case, none of us can be held responsible for the problem…" (CS)

In conclusion, four main sources of failure (supplier-induced error, customer-induced error, an environmental factor, and unknown root cause) are identified in the course of the business-to-business market, which the authors call the "Locus of Failure" in the present research.

4.2. The level of joint recovery activities

The data indicate that the locus of failure and the recovery perspective plays a pivotal role in the level of joint recovery. The majority of interviewed the suppliers' and customers' employees suggested that the participation in recovery activities is dependent on the source and locus of failure.

"…Well, it should be specified why the service or products did not meet the expectations. Whose fault it is and who is responsible for the of the problem..." (CS)

The majority of respondents reflected that in the case of supplier-induced error, the customer might have a minor role in recovery activities because of limited knowledge of supplier internal process. Therefore, taking the proactive recovery perspective, the supplier is held responsible for the identification, proactive notification, analysis of the causation and the resolution of the failure, and providing the customer with a set of alternative solutions.

"…Often, we don't know how things work in our supplier companies, so it makes little sense to involve in recovery activities..." (CS)

However, the data indicates that the customer can play a pivotal role in the prevention of failure by providing the supplier with the correct information and update on their requirements

and expectations. Therefore, customers contribute to the recovery by reaching a consensus on the characteristics of the product/service and the recovery procedures.

"… We need to be informed about the latest changes in the customer products, relevant processes, and requirement. Sometimes it causes a severe problem when we are kept blind..." (SS)

In addition, the majority of respondents mentioned that the customers often participate in choosing and implementing the most favorable solutions. Therefore, a level of customer collaboration in recovery activities is expected from the customer through interacting and information sharing and implementing of jointly-created solutions.

"…Until the internal problem gets resolved we offer the customer couple of solutions…then we together can decide on which solution works the best in failure situation…" (SS)

Adopting the reactive recovery perspective, the customer role in recovery management is more tangible. As it was frequently stated by participants, the failure sometimes is identified by customers after the product delivery or in the production line. Often the product flaws are recognized by customers through inspection and quality tests. Therefore, customers can play an important role in identifying failure and escalating it to the suppliers through a formal standardized notification process or informal complaints. In addition, customers are often asked by suppliers to them provide more information through visiting, email, videos, phone calls. In this situation, the customer plays an important role in identifying failure, notifying the supplier, analyzing failure, and implementing of jointly created solution with the supplier.

"…We have two inspection stations... If we see the product has problem…we notify the relevant team in our company and they contact the relevant supplier through email, phone or complain management system…then we decide what to do with alternatives that supplier gives us…" (CS)

Several interviewees stated that the failure might happen because of environmental factors such as natural disasters and bad weather conditions which are out of suppliers' control, so neither supplier nor customers can be held responsible for the failure situations. The participants from the customer firms stated that unavoidable failures might easily provoke the customer sympathy and encourage them to involve in the recovery activities. As highlighted by respondents, the identification of failure and notification of failure mainly remain on the supplier side, however, the customer might involve with the resolution of failure and implementation of the solution. Therefore, a level of recovery activities is expected from both sides.

"…We recently had a problem receiving the raw material because of pandemic…then we decide to use alternative raw material in our product… then informed the customer and we decided what to do to reduce the negative impact of the problem…" (SS)

"…If something unexpected happens, like heavy rain or blocked road. We understand supplier is not responsible and it can happen to all companies' delivery …then we decide on the best solution …" (CS)

Some of the participants mentioned several customer-induced failures. Some of the most commonly stated examples of such failures are failing to provide the supplier with correct information, failing to understand the supplier systems, placing the wrong order, overordering or underordering the products, inappropriate storage of product storage, poor product installation, and production procedure. In such cases, the main recovery activities including the identification and notification of failure remain on the customer side. However, several respondents mentioned suppliers still can contribute to the recovery activities by helping the customer with

the resolution of failure. Then, a certain level of joint recovery can be achieved through the resolution and implementation of failure resolution.

"…Sometime customers inform us that an environmental parameter negatively impacts on the product then they ask us for the solution... then this goes to our design team they change the product characteristics and inform production people to apply these changes and test and produce it…" (SS)

Overall, the research participants stated that sometimes, during the reactive recovery, the identification of the root cause of failure is very difficult. Therefore, the ultimate resolution of service or product failure might be challenging. In this situation, a high level of communication and interaction internally and externally among the suppliers and customers' actors is required. These activities may comprehend the sharing and assessing the failure-related information as well as the testing of the product/service itself. The respondents explained that in such situations many technical teams visiting, phone calls, emails, and video sharing are happening to eventually resolve the issue. Therefore, both parties can play an important role in taking the recovery activities by identification, notification, analysis, resolution of failure which requires results in a level of collaboration in recovery activities.

"…If something happens, we cannot tell it is hundred percent from our side or customer we have to mutually look into the issue…what exactly went wrong …" (SS)

Figure 1, briefly demonstrates the level of joint recovery depending on four sources (locus) of failure and two recovery perspectives in the B2B market setting. As figure 1 indicates, the lowest level of joint recovery occurs when the issue is caused by the supplier and proactive recovery is taken. On the other hand, as the other point of the arrow shows, the supplier-customer collaboration in recovery activities reaches its highest level when the root cause of failure is difficult to identify.

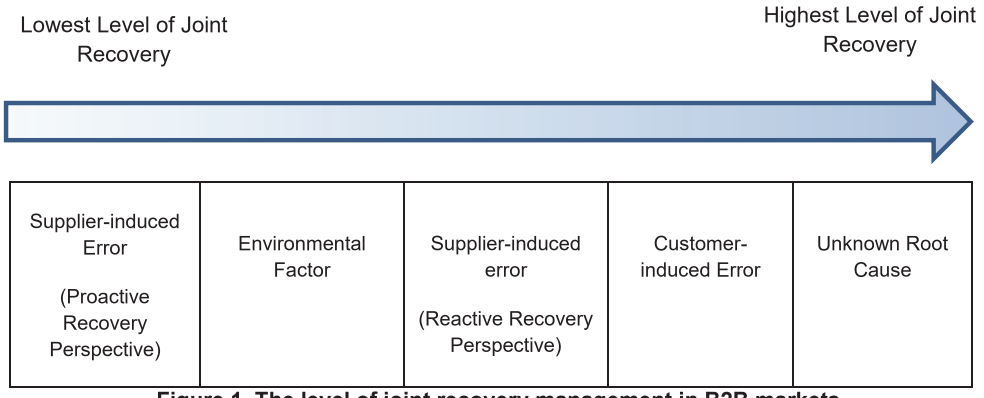

Figure 1. The level of joint recovery management in B2B markets

This finding is consistent with that of Dong *et al.* (2008) who state that the locus of failure plays an important role in the service recovery context. While, this result is contrary to previous studies which have concentrated merely on a supplier's effort to recover from a failure without consideration of the customer's role and resource integration (e.g., Döscher, 2013; Baliga *et al.* 2020). The results of this study indicate that customers can play an active role through participation in the recovery management and the level of their participation varies depending on the locus of failure and the supplier recovery management strategy.

5. Conclusion

Despite the recent emphasis on co-production of service offering and value co-creation in the business environment (Vargo *et al.* 2008; Grönroos, 2011), extant research provides little knowledge on the joint recovery activities in a business-to-business environment. This paper contributes by constructing an empirically grounded framework and identifying the main locus of failure and associated the level of collaboration in recovery activities in the B2B context, therefore opening a new avenue for future academic research in the co-creation of recovery management.

Despite the importance of co-creation in recovery studies, previous studies have mostly taken a supplier-oriented approach toward recovery management and highlighted the recovery efforts only from the supplier side instead of joint recovery management (e.g Döscher, 2013). Our findings however shed more light on the role of both parties in the recovery management activities. Therefore, the present study is among the first qualitative researches that have analyzed joint recovery management from a dyadic perspective in business markets. The analysis of qualitative data has developed our understanding of the nature of failure sources in the business-to-business context and further created fundamental insight into the level of joint recovery depending on the locus of failure. Our findings confirmed that failure recovery is a complex task and requires a high level of interaction within the firms and across the business network. Interestingly, four sources of failure were discovered along with two recovery perspectives. Some interviewees argued that the failure can be the result of supplier-induced error and the supplier can take a reactive or proactive recovery perspective to handle the failure situation. These failures might occur in upstream, internal, and downstream activities of the supplier or during the supplier employees' interaction with the customer employees. While others mentioned that the locus of failure might be the result of customer-induced error such as placing the wrong order and poor design of their product. Several participants also attributed the failure to an environmental factor. An important example of an environmental factor might be a force of major or unstable weather. A noticeable number of participants, however, mentioned that sometimes the root cause remains uncertain for a long time, even if possible.

Then, based on S-D logic and service logic, and the data obtained from the qualitative interviews, the authors integrated the concept of co-creation into the business-to-business recovery management and developed a model which consists of four different locus of failure, two recovery perspectives, and associated level of joint recovery activities. According to the model, that the level of joint recovery in B2B varies depending on the locus of failure and the supplier recovery management perspective. Specifically, the qualitative interviews indicated that the joint recovery is at the lowest level when the locus of failure is on the supplier side and a proactive recovery is taken by the supplier. This result may be explained by the fact that the customer might hold less knowledge of supplier upstream activities and internal processes. Therefore, they might contribute to the prevention of failure by providing the supplier with correct information and helping the supplier with choosing a solution, and implementing it until the supplier solves the main issue.

When the failure is caused by an environmental factor, the findings indicate that the level of joint recovery increases slightly by engaging the customer in the resolution of failure and decision on the most favorable alternatives as well as the implementation of failure. Then with the reactive recovery perspective, the role of the customer in recovery activities gets more distinguished and as a result, the level of joint recovery increases with the recovery activities increases. This increase could be attributed to the customer's further engagement in the identification of failure and internal and external notification followed by the situation in which the error is from the customer.

In the case of customer-induced error, the recovery activity such as identification and notification of failure remains on the customer side. However, the supplier can contribute to the failure analysis, resolution, and implementation of the solution, therefore, a higher level of collaboration is expected. The result of data analysis shows that the level of co-creation of recovery reaches the highest level when the root cause of failure is uncertain. This significant increase may be explained by the high level of collaboration between supplier and customer for

identification, notification, analysis, and resolution of failure. Then the authors argue that almost the same level of recovery activities is expected from both sides of business exchange.

Overall, the present research aimed to explore the main source (locus) of failures and analyze the associated level of joint recovery management with the different locus of failure in the business-to-business environment. This study has found four main locus of failure (including supplier induced error, customer induced error, an environmental factor, and unknown root cause), two recovery perspectives (reactive vs. proactive) which play an important role in the level of joint recovery in the business environment, therefore, bridges the major gap in the B2B recovery management literature. Furthermore, our finding shows unlike some earlier conceptualizations of B2B recovery management (e.g., Döscher, 2013), a level of co-creation is possible in recovery activities in the business environments. The recovery management literature commonly assumes that suppliers make the recovery effort through the identification, analysis, and resolution of failure, and customers only use what is offered to them (Döscher, 2013; Zhu and Zolkiewski, 2015). This study expands our understanding of the co-creation of recovery activities in the business environment and shows the customers play an important role in failure prevention, failure identification, resolution, and implementation.

5.1. Theoretical contributions

The present study provides a deeper insight into the locus of failures in the B2B markets. In particular, this study explores the fundamental sources of failure in the course of the business-to-business market. The present research, therefore, responds to the previous call in the literature for further research to identify characteristics of failures and recovery management in various business-to-business industrial sectors (Döscher, 2013; Zhu and Zolkiewski, 2015). The present study has gone some way towards enhancing our understanding of failures that might manifest in the course of business-to-business markets.

Second, this paper is one of the first attempts to develop our understanding of co-creation from the dyadic perspective in the B2B recovery management context. Existing conceptualizations of co-creation of recovery have mainly focused on consumer markets that are not directly transferable to the business environment. The present research has contributed to the advancement of existing marketing and recovery management literature in terms of identifying the areas in recovery management where collaboration is possible.

Third, this study has also contributed a profound understanding of the level of joint recovery depending on the locus of failure. The paper represents one of the few studies in the recovery context, which constitutes a framework for the level of joint recovery associated with the different locus of failure in the business environment. Therefore, it completes the previous research, which has recommended a deeper insight into the different strategies of recovery management in general (Döscher, 2013; Zhu and Zolkiewski, 2015) and the concept of co-creation in particular (Hollebeek, 2019) thus provides a solid ground for further research on infant domain of co-creation in B2B recovery research.

5.2. Managerial implications

The general implication of this study is to advance the skills and knowledge of suppliers, customer firms, and their employees to jointly handle the failure situations in the course of business-to-business context.

First, this study introduces four main sources of failure that frequently cause failure in the business environment and endanger the successful product/service delivery. Therefore, the findings of the present paper assist the supplier and customer firms' practitioners and decision-makers to develop their failure handling knowledge. The identification of locus of failure might be challenging in the business environment for both parties, therefore they should be actively involved in recovery activities to identify the causation of the failure and understand their role in failure recovery activities. The finding of this study shed more light on the expected level of collaboration depending on the source of failure thus assisting the supplier and customer decision-makers to make correct decisions and actions during the joint recovery management.

The co-creation of recovery in the business environment essentially differs from consumer markets. Therefore, a framework for the joint recovery in the business market was required to illustrate the fundamental aspects of joint recovery management such as the locus of failure and the level of joint recovery management in the industrial market. More specifically, our framework was developed based on both parties' perspectives to capture the specific activities required for collaborative recovery management. Our framework indicates that the level of joint recovery varies depending on the locus of failure. Therefore, different levels of co-creation are expected when the locus of failure is caused by different sources. This finding enables the supplier to understand how and to what extend the co-creation of recovery can be conducted in different failure situations to enhance the recovery management outcome. Furthermore, the findings of this study can assist the decision-makers within the supplier and customers firm about the correct way and right timing of intervention in the failure recovery activities.

In general, suppliers and customers may utilize our model for training workshops with internal or external parties to enhance the failure recovery processes within their organizations. As suggested by the findings of this study, suppliers, and customers both are required to adjust their internal processes and train their employees to ensure an effective failure resolution in the business environment. The recovery activities, based on the locus of failure, engage several actors across departments within the supplier and customer firms, therefore, training the employees can play a pivotal role in effective joint-recovery efforts.

5.3. Limitations and avenues for future research

Despite fundamental contributions, there are some limitations to the present study. Although the findings of this research indicate different levels of joint recovery, the role played by actors and the organizational resources within the supplier and customer firm for collaborative recovery in the business environment remain unknown. This would be a fruitful area for further work. This research mainly focused on the locus of failure as an important factor in recovery management, however, some other recovery measures were disregarded in this study such as the severity of the failure, the number of alternatives, the duration of the business relationship. Thus, more research on the co-creation of B2B recovery is needed to develop our framework.

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Publication II

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Article

The Value Co-creation Through Joint Failure Recovery: B2B Settings

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Abstract

The co-creation of value through joint recovery management has attracted increasing interest in the business-to-business (B2B) service context. However, the underlying process of joint recovery management is less understood. Through the qualitative interviews with suppliers and customers firms and applying the conceptual thinking of service-dominant (S-D) logic and service logic, this research explores the joint recovery practice through which the value is co-created in the context of B2B markets. The analysis reveals value emerges from interaction and their resource contributions to six main activities of joint recovery management, including the prevention, identification, notification, analysis, the resolution of failure and the implementation of the mutually selected solution. Interestingly, the findings indicate that the supplier supports the value creation process through recovery activities and by performing different roles, while the customer can engage in recovery management activities by their resource contribution to the recovery activities, which results in the co-creation of monetary and non-monetary values. The current study serves as a tool for scholars and managers who wish to enhance the value co-creation process through joint recovery management activities in B2B settings.

Keywords

Value co-creation, joint recovery, business-to-business, customer engagement

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Introduction

Value co-creation is one of the fundamental determinants of the supplier–customer relationship in the business environment (e.g., Vargo & Lusch, 2004). 'Value results from the beneficial application of operant resources sometimes transmitted through operand resources' (Vargo & Lusch, 2004, p. 7). According to service-dominant (S-D) logic, a supplier contributes to the co-creation of value by applying and integrating their resources for making the value proposition, and customers actualize the value using their resources in their context (Vargo & Lusch, 2008). Therefore, value is always co-created but determined by the beneficiary (Vargo & Lusch, 2008). S-D logic also stresses that the extended activities, promises and assurances are expected from both sides overtime after the value is already proposed (Vargo & Lusch, 2004). The service logic argues that suppliers extend their offering and play various roles to support customer practice in the actualization of value; thus, the customer is the sole creator of value, while co-creation of value is possible when the supplier establishes an interaction with the customer's value-creating processes (Grönroos, 2011). S-D logic and service logic also mutually agree that customers can participate in core and extended offerings at various levels (Grönroos, 2011; Vargo & Lusch, 2008). Co-production, nested within the co-creation of value, is defined as customer optional involvement in supplier offering and extended activities, especially when service is used in the customer processes (Vargo & Lusch, 2008).

Another stream of marketing research indicates that service failure frequently occurs in the course of the business-to-business (B2B) context and restricts the process of value creation (Hübner et al., 2018). Failure in the business environment has dynamic and complex nature (Nik Bakhsh & Riivits-Arkonsuo, 2021). The prevention and resolution of failure need high interaction between a supplier and a customer, and the customers' participation in the recovery provided might afford the supplier and the customer with opportunities to facilitate the value co-creation process (Payne et al., 2008), through jointly shaping the recovery management activities. Yet the process of recovery management is addressed predominantly from the supplier side. Mutual processes of value co-creation through joint recovery management, roles and resource contribution to joint recovery have seldomly been studied in B2B settings (Baliga et al., 2021). Besides, S-D logic and service logic provide a solid foundation for the studying of value creation. They provide little detail on the underlying activities and parties' role and resource contributions to the value creation process (Aarikka-Stenroos & Jaakkola, 2012). Thus, drawing on integration of S-D logic (Vargo & Lusch, 2008), service logic (Grönroos, 2011), and B2B recovery management literature, this article aims to first explore the underlying process of collaborative activities of recovery management and then identify the roles played and contributed resources by parties, and the nature of value emerges from the joint recovery activities in the business context.

Joint Recovery Management and Value Co-creation

According to Koc (2017, p. 1), service failure refers to 'any type of error, mistake, deficiency, or problem that occurs during the provision of service, causing a delay or hindrance in the satisfaction of customer needs'. Failures in the B2B environment destruct the process of value creation and typically snowball beyond the dyadic client–supplier relationship (Van Doorn & Verhoef, 2008). Therefore, suppliers often develop and implement a systematic approach that requires a high level of interaction and resource integration at the different organizational levels (Döscher, 2013). B2B recovery management has been studied as the sole suppliers' activity including the prevention, identification, notification, analysis, solution and control of failure (e.g., Baliga et al., 2021). However, based on service logic and S-D logic, customers can participate in such extended activities as co-producer (Grönroos, 2011; Vargo & Lusch, 2008).

In the business-to-consumer setting, the co-creation of recovery is defined as the '[j]oint creation of a service recovery through a series of interactions and dialogs between a customer and a service provider to identify a recovery solution that satisfies the customer's needs in the situation' (Park & Ha, 2016, p. 1). However, B2B recovery management literature elaborates on suppliers' resource contributions to recovery activities (e.g., Hübner et al., 2018). According to service logic, the supplier plays various roles to support the value creation process such as failure recovery (Grönroos, 2011). While, the roles performed by parties, the underlying process, and co-crated value driven from joint recovery management context remain unknown. To further develop our understanding of joint recovery management, the authors defined it based on S-D logic (Vargo & Lusch, 2004), service logic (Grönroos, 2011) and B2B recovery management definition (Döscher, 2013):

> 'Supplier and customer interaction and resource integration to jointly prevent, handle and resolve the product or service failures through which value is co-created in the context of B2B markets.'

This study responds to the call made by Vargo and Lusch (2008) to shed more light on the processes of value co-creation in the business context and recent studies on B2B recovery management to invest more effort in exploring the dynamics and different aspects of successful B2B recovery management (Oflaç et al., 2021).

Methodology

Due to the exploratory nature of the present study and the challenging nature of recovery research (Božič et al., 2020), the authors used a qualitative research design to answer the questions regarding the parties' role, the underlying processes and the driven value from the joint recovery activities, thus developing the understanding of the joint recovery management in B2B settings. Given the

superficial attention of contemporary recovery literature to the process of joint recovery management, we opt for the grounded theory (Glaser, 1992) as the research approach in this study. The authors conducted a series of online semi-structured skype interviews with senior, middle-level and frontline managers of nine industrial suppliers and customer firms in Iran because Iran experiences a high level of competition in the B2B market (Spivack, 2016), and businesses must offer high-quality services and extended offers, such as effective recovery management, to their customer to increase their market share.

An expert interview is a powerful tool commonly used in recovery research (Döscher, 2013), which enables us to capture participants' views on the recovery activity on the infant field of joint B2B recovery management. The interviews were conducted via skype because of the COVID-19 crisis during 2021.

To prevent methodological error during interviews, we used semi-structured interviews to reach sufficient consistency across the interviews. The interview questions consisted of open-ended and follow-up questions to develop positive interaction and increasingly engage the participants to acquire fresh ideas during the interviews. The questions were designed based on the previous findings on the main aspects of recovery management such as activities of supplier and customer, recovery perspective, possible outcome of failure and resolution (e.g., Döscher, 2013). Since the management of failure recovery represents a sensitive topic, the anonymity of companies and persons was promised.

Collection of Data

The theoretical sampling in two phases was conducted to collect the qualitative data from the research participants with an average of 11 years of professional experience. To increase our confidence in the generalizability of the findings and reach a certain degree of variance in recovery perspectives, we conducted our research in diverse B2B sectors such as technology, food, machinery and telecommunication which are lucrative but failure-prone industries in Iran. In the first phase of data collection, we interviewed five participants from the four supplier firms to understand the joint recovery activities from a strategic perspective. Thus, the directors of teams that frequently interact with industrial clients in failure situations and failure recoveries—such as sales, service/product quality, service/product warranty, and customer relations departments—were identified via phone calls, and they agreed to participate in the research. Then, the gained insights from the first phase helped the authors to conduct six additional interviews with participants (middle-level and frontline managers such as team leads and members) from the same divisions of the supplier firms until no new information was obtained. In the third phase of data collection, using the knowledge derived from the first and second phase interviews, we performed 10 qualitative interviews with participants (five from strategic and five from an operational perspective) from associated four customer firms in quality, purchase and supply departments to comprehend joint recovery from the customer's perspective. The saturation was reached at the 21st interview. These industrial clients were contacted because they were the main customers of the suppliers' business and had a long-term relationship with the respective supplier.

Data Analysis

Based on a systematic three coding processes introduced by the grounded theory methodology, we first analysed the qualitative using of open coding process with Nvivo 12 which resulted in 98 concepts. Then through axial coding, 76 core categories were developed. In the last step, using selective coding we continued the procedure of coding to find the higher-level constructs. As the result, the core categories were selected, the relationship between the core categories was developed, and the existing categories were refined (Strauss & Corbin, 1990). In the end, 54 theoretical concepts were generated to reflect a theory on the general process of joint recovery management in the business environment. The interpretation was discontinued when no new information was generated by further coding.

The author used multiple criteria to verify the quality of the data collection and analysis. For instance, to ensure the reliability of data, the participants with a sufficient level of knowledge on failure resolution were selected and the interviews were profoundly transcribed (Nascimento & Steinbrich, 2019). Then, fundamental insights driven from transcripts were verified by feedback shared by four previously interviewed participants to ensure the consistency and validity of the conclusions. To limit the subjectivity of coding, the procedure is replicated by another individual who was familiar with the research questions and procedure (Syed & Nelson, 2015).

Findings

The most important finding of this study is the emergence of the general framework of joint recovery management through which the value is co-created in the business setting. The framework presented in Figure 1 indicates the main roles performed by the supplier and customer, the process of interaction and resource integration underlying the joint recovery management which is discussed in the following sections.

Interaction and Organizational Resources

Table 1 shows the type of failures in each sector addressed by the participants. In general, the results indicated that intrafirm and interfirm interaction of employees are essential means for value co-creation through joint recovery activities which often can take formal and informal forms.

According to supplier employees' statements (SS),

> 'The early development of personal relationships with customer's employees helps you to handle things differently than when there is a formal business relationship, right?'

According to customer employees' statement (CS),

> 'Friendly and sometimes personal beside the working relationship is important … so, the problem can be fixed quicker'.

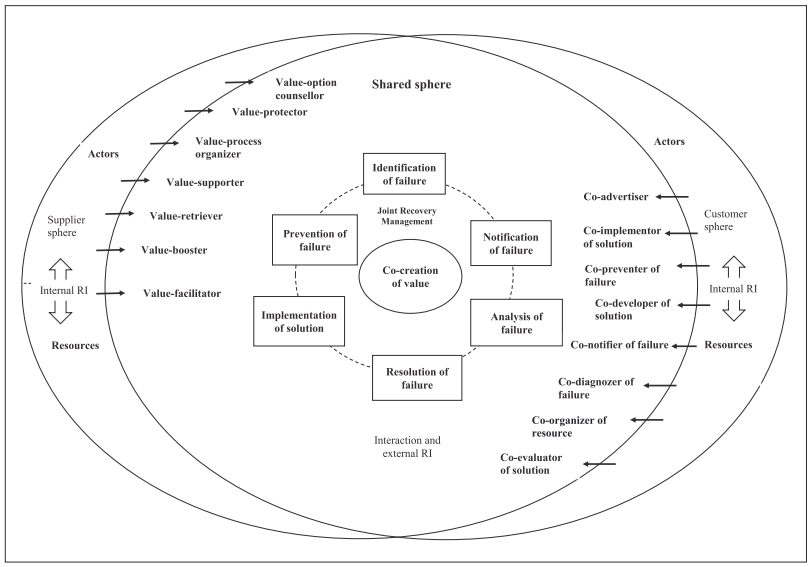

Figure 1. General Figure of Value Co-creation Through the Joint Recovery Management.

Source: The authors.

Table 1. Type of Failure in Each Sector.

Sector	Low Quality	Delay in Delivery	Incorrect Invoicing	Wrong Product Delivery	Non-functional Communication	Wrong Number of Product Delivery	Wrong Use of Items
Food	6	6	4	3	4	6	3
Technology	4	3	2	2	5	–	4
Machinery	5	4	3	4	3	4	4
Telecommunication	3	3	3	4	4	3	3

Source: The authors.

Through the interactions, suppliers and customers affect each other's processes and create a shared sphere in which the customer can engage in recovery activities and the supplier can contribute to the value creation process by extended activities.

Our results revealed that the suppliers' and customers' intrafirm interaction happens in parallel to interfirm interaction which facilitates the resource integration during the joint recovery activities. Besides, the interfirm interaction opens several doors to customer engagement in joint recovery management. The supplier firms' participants stated that the recovery activities require the allocation and integration of various operant and operand resources such as equipment, technological (database, customer profiling system, failure diagnosis systems), relational/social and financial resources, and human capital (e.g., skills, proactive attitude, reaction ability and willingness to help, understanding of customer need

and expectations). Based on these findings, we argue that the suppliers often adopt the role of value process organizer as they structure the organizational resources to support the value co-creation process through recovery activities.

> 'Depending on the situation, our experts integrate their skills, knowledge, and experience to solve the issue in a best way'. (SS)
>
> 'Our suppliers are resourceful; they know how to deal with the problem, and they have experts who have knowledge and resources to handle the problems'. (CS)

Customers can also play a role as a co-organizer of resources by integrating their interfirm and intrafirm resources to contribute to the failure recovery activities. The primary resources are mentioned as operand of physical (e.g., equipment and safety stock), technological, human (e.g., ability to express the expectations, ability to create a mutual understanding, willingness to share the information) and the relational/social resources (e.g., relationship with other suppliers in B2B network).

> 'Customer can give us information that helps us to narrow down the solutions. They also give us new ideas about problem-solving'. (SS)
>
> 'If a problem happens, for example in the production line, our experts analyse and discuss it with the supplier and provide them with required information on the situation'. (CS)

Roles of Suppliers and Customers

Our findings show that in the pre-recovery phase, the prevention of failure allows the supplier to avoid the unnecessary cost associated with the failure situation. However, the development of a manual understanding of product/service's requirements and expectations (e.g., through formal and informal communication/information sharing) is essential for preventing the failure situation and supporting the value creation process.

> 'We even ask our sales team to check the customers' previous order data because we think that this time the customer ordered something very different'. (SS)
>
> 'It is essential to make everything clear mutually with the supplier as much as possible; the information sharing beforehand helps with avoiding failures'. (CS)

The importance of failure identification to support value creation was confirmed by the customer and supplier employees. Several interviews conveyed that despite the supplier's failure identification effort, failures occur frequently in the B2B settings, and they are identified by customers themselves. In particular, the failures can be identified after the delivery through the customer's internal processes such as quality tests.

> 'To support our services and identify the potential problems, we use our expert knowledge and internal tool which help us to communicate the problem with customers as early as possible'. (SS)

> 'We have quality control engineers who control the items going to the warehouse … if there is a problem, we contact the supplier and tell them that their product has a problem'. (CS)

As the interviewed suppliers suggested, they act as a value-protector by preventing, identifying (caused by themselves or customers) and providing pre-defined alternative solutions to protect the value creation process against the negative consequences of potential failure situations. The customer's critical role through clarification of expectations in the pre-recovery phase was reported. The information provided by the customer is a critical resource contributing to recovery management, which requires the customer's interfirm and intrafirm resource integration. Then the customer can play the role of a co-preventer of failure in the pre-recovery phase.

The notification of failure depends on the locus of failure, which occurs from supplier-to-customer or customer-to-supplier. The interviewees commented that the early notification allows the supplier to immediately start the recovery process and enables the customers to make choices until the problem gets resolved. The results revealed that the notification failure comprises several activities that require internal resource integration in both supplier and customer firms to inform their parties on failures of services.

> 'When the supply team informs us of the delay in the delivery of the products, we contact the customer and inform them, and if there is any problem, the customer informs us.' (SS)

> 'We often check the batch when it arrives in our warehouse. If there is any problem … our quality team notifies our supply department and reports the problem to the supplier.' (CS)

Therefore, the failure should be precisely analysed to determine the root cause of the problem. Depending on the locus of failure, the analysis of failure is done by the supplier or customer. However, the collaborative analysis of failure is required when the failure's root cause remains uncertain or difficult to identify. In this situation, a high level of interaction and information sharing is needed simultaneously within and between parties.

> 'If the customer informs us that there is a problem, we might send them a team of quality engineers, who knows the product design, to check the product in the customer production line, and then we can look together'. (SS)

> 'Supplier technical team comes to find the root cause of the problem and the solution that serves the best of both of us.' (CS)

In the case of supplier-induced error, the resolution of failure should be held on the supplier side. Since service offering comes with contracts such as guarantees, often for extended periods, the supplier has some solutions and compensations ready. Then, through negotiation, they might collaboratively select the most favourable solution and decide on the related resource requirements. Interestingly, even customers help with the temporary resolution of failure (e.g., by amending

the product in the customer's premises). When the root cause of failure is hard to identify, the customer and supplier collaboration for the resolution of failure reaches the highest level. The participants also noted that failure is the customer's primary responsibility when customers themselves cause failure. In this case, the supplier might engage in the failure resolution through its resource contribution.

> 'That is why we do our best to find a way that gives them the product on that particular day … we together discuss this to determine which solution serves them better.' (SS)
>
> 'Sometimes, if the problem can be fixed in our production line, we process the items ourselves.' (CS)

Therefore, the supplier can adopt the value-supporter role through the resource contribution towards the recovery management activities and offer pre-defined solutions to customers to mutually agree on the shared sphere. The results indicate that the failure situations should be resolved quickly to retrieve the perceptional value such as customer satisfaction. Thus, the supplier plays the role of a value-retriever. In the cases of customer-induced problems, the suppliers play the role of the value-option counsellor by voluntarily applying their knowledge and offering solutions through their resource contribution. Thus, they increase the customer perceptional value and play the value-booster role and assist the customers in implementing and playing the role of a value-facilitator.

The customers play the role of a co-diagnoser of failure and co-notifier of failure by identification and notification of failure through resource contribution and diagnostic skills. The customers explained that they negotiate with suppliers on the solutions and evaluate the alternatives and the required resources to implement them. These kinds of interaction and communication enable the customer to play the role of a co-evaluator of the solution. The participants also mentioned that depending on the locus of failure, the customers contribute to the designing and implementation of solutions, thus playing the roles of a co-developer and co-implementor of the solution.

Jointly Created Value

Our results revealed that the role played by parties and the resource contribution to prevention, identification, notification and resolution of failure, as extended activities support and facilitate the value generation, often positively impact business relationships, operational efficiency and the economic situation of customer business. The customers' resource contribution and information sharing through participation in recovery activities facilitates the value actualization by helping suppliers to prevent the failure and offer them the customized and optimal solution which result in financial and perceptual benefits for customers. Thus, the value can be experienced in monetary and non-monetary forms. From the monetary perspective, the supplier's resource contribution to the environmental, uncertain root cause, or customer-induced failure resolution activities leads to a decrease in cost that customers dedicate to failure resolution.

Besides, the prevention of failure decreases the customers' monetary losses and the unnecessary cost of failure activity in the future. From the non-monetary perspective, most customer employees mentioned that the prevention of failure through information sharing has an impact on their relationship with their customers in the business network and their reputation in the marketplace. In addition to the relational benefits, the perceptual value (Grönroos, 2011), such as customer trust and satisfaction commitment, was perceived to increase after the joint recovery management. In general, the customer stated that the co-production of recovery activities, as extended activities, motivates them to spread a positive word of mouth and recommend the supplier to other firms in their community. Thus, customers can adopt the role of a co-advertiser.

Conclusions

Theoretical Contribution

The present study is among the first empirical research that contributes to our understanding of joint recovery management through which the value is co-created in the B2B recovery context. The S-D logic and service logic provide less information about the role of parties and process of resource integration in value-creation (e.g., Grönroos, 2011; Vargo & Lusch, 2008), and recovery management literature neglect the customers' role in co-production of recovery (e.g., Döscher, 2013). Although, recent researchers have shown an increased interest in joint recovery activities (e.g., Bagherzadeh et al. 2020), and the importance of value co-creation (e.g., Petri & Jacob, 2017), there is little published data on the joint recovery management constituting the value co-creation in B2B context.

Our study is one of the few to take a dyadic approach to study value co-creation in specific B2B service recovery settings, which indicates that in the service recovery context, customers in these settings can participate in recovery activities through resource integration and interaction with the supplier and play an important role through co-production of recovery activities. In contrast to earlier findings on B2B recovery management, this study has found that the customer can participate and integrate their resources into six main recovery activities from which value is co-created including the prevention, identification, notification, analysis, resolution and implementation of failure.

The current study sheds more light on the performed roles and the organizational resources allocated by supplier and customer to joint recovery activities to co-create value. Notably, this study's findings show that by recovery management, the supplier can support the value co-creation process through extended activities and by performing the value option counsellor, value protector, value process organizer, value supporter, value retriever, value booster and value facilitator roles; while the customers can engage in the recovery management and perform the role of co-preventer, co-organizers, co-diagnoser, co-notifier of failure, co-producer, co-evaluator, co-implementor of the solution and co-advertiser through their resource contribution to the recovery activities. The findings support

evidence from previous observations (e.g., Aarikka-Stenroos & Jakkola, 2012) on the various roles and resource contribution of exchange parties to the joint activities through which the value is co-created in the B2B environment.

Our findings also suggest that emerged value through joint recovery management can be evaluated in monetary and non-monetary terms. A notable example of monetary value is the decrease in failure resolution cost when the failure is caused by customer error or an uncertain factor, while non-monetary value can be listed as the increase in customers' perceptual value (satisfaction, trust, and commitment) as well as their reputation in the marketplace. Our study has enhanced understanding of the processes of value co-creation through joint recovery activities which contribute to value creation literature that has been discussed at the conceptual level (Vargo & Lusch, 2008) and added to the rapidly expanding field of B2B recovery management context (Zhu & Zolkiewski, 2015).

Managerial Implications

The implications of the presented framework, first, for value creation and, second, for recovery management in a business environment are extensive. Recovery management as extended and supportive activities has mainly been designed to support the value creation process. Customer participation in recovery management activities, through interaction and resource integration, can lead to the mutually created monetary and perceptional value, which are emphasized in a business relationship in the B2B setting. Therefore, shedding more light on the roles performed by the supplier in supporting value creation and the customer's role in recovery management gives the marketers and practitioners a better understanding of joint recovery management in the business environment. The framework with the underlying process of joint recovery management provides a beneficial managerial tool for developing the interaction and resource integration and offers more insight into joint recovery activities in the B2B settings. It also helps to analyse the processes, resources and capabilities to identify the areas where they can improve the collaborations with the customers to effectively prevent or handle the failure situation. This study also highlights the recovery activities in which the customers might engage and perform an active role. Particularly, this study indicates that customers can play different roles in all stages of recovery management from the prevention of failure to implementing the solution. This provides a deeper understanding that helps managers to improve the interaction and information sharing before and during the recovery process. Our findings emphasize the importance of joint activities in developing mutual understanding between supplier and customer, which in turn, helps the implementation of effective recovery management. Therefore, we significantly advise that parties establish various communication channels and platforms to provoke interaction and information sharing that concern the requirements and expectations before and during the recovery management. The supplier firms' managers and practitioners can utilize the proposed framework to understand their customer value creation process. The value such as higher satisfaction, commitment and trust might also open more avenues for future collaborative activities. The findings might be of interest to the

supplier firm seeking to increase customer engagement in the production activities. Our findings suggest that the supplier should guide the customer to engage in recovery management because customer resource contributions play an essential role in effectively preventing and handling failure situations. In conclusion, our framework enables both suppliers and customers to develop, implement and improve a joint recovery management system through which the superior value can be co-created in the B2B context.

Limitations and Avenues for Future Research

Despite these fundamental contributions, there are some limitations concerning the present study. First, our samples were collected only from Iran and different B2B sectors, thus contextual factors specific to each sector were disregarded. Although the informant interviews have been commonly used in recovery studies, it is possible that some of the important joint recovery measures were disregarded. Future studies are suggested to test the proposed model with a bigger sample size and identify how suppliers' and customers' roles vary depending on sectors and types of failures. Future research can also consider the role of digitalization in the presented model of joint recovery management in the B2B environment.

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Joint Business-to-Business recovery management: the moderating role of locus of failure

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Abstract. Agricultural machinery manufacturers and services providers increasingly experience failure in core products and service deliveries. Despite the importance of recovery management in context, scant research exists on studying recovery management, collaborative recovery activities, and the impact of joint recovery management on post-recovery relationship quality. More pressing is the lack of research on the impact of relationship quality on the customer's intention of future co-recovery activities. Using an experimental design with data from 30 agronomy machinery and equipment manufacturers and service providers in Iran, we investigate how customers' perception of relationship quality is influenced by the interplay of locus of failure and supplier recovery tactics (non-co-creation of recovery vs co-creation of recovery). The results reveal the locus of failure, interacts with the supplier recovery tactics to impact the customers' perceptions of relationship quality. Finally, all three dimensions of relationship quality (satisfaction, trust, and commitment) positively impact the customers' intention for future co-recovery activities.

Key words: business-to-business, co-creation, joint recovery management, locus of failure, relationship quality, agronomy machinery, agronomy services.

INTRODUCTION

One of the industries that experience failure frequently is agricultural machinery and services. The failure in supplying of items and materials by suppliers can cause a domino effect across the customers' business network, interrupt the farm operations, cause severe damage to the farm products (Afsharnia et al., 2014), restrain the customer relationships, and threaten the long-term profitability of the supplier firm (Döscher, 2013; Zhu & Zolkiewski, 2015; Borah et al., 2019; Baliga et al., 2020). Since the supply of high-quality agricultural machinery, equipment, and services are essential for farms' production growth as the end-users (Civcisa & Grislis, 2014; Gedzurs, 2016; Skarkova et al., 2016; Mitrofanovs et al., 2019; Buisson & Balasubramanya, 2019, Hu et al., 2020) and the manufacturers/service providers in this industry are highly dependent on their suppliers, an effective recovery management system is required to exert a positive impact on the post-failure quality of relationships and the financial performance of machinery and equipment supplier firms (Döscher, 2013; Sajtos & Chong, 2018). The recovery

management might also need the close collaboration between the suppliers and customers in the agronomy machinery industry as the supplier and customers are highly dependent and the collaborative activities might be needed to reinforce the relationship quality in this industry (Kukk & Leppiman, 2016; Franklin & Marchall, 2019; Hollebeek, 2019; Zhung et al., 2020). Up to now, however, far too little attention has been paid to the impact of joint recovery management on post-failure relationship quality in the agronomy machinery industry.

With the sensitivity of the agricultural machinery and services industry (Civcisa & Grislis, 2014; Gedzurs, 2016; Skarkova et al., 2016; Buisson & Balasubramanya, 2019; Mitrofanovs et al., 2019), the questions become: What happens to the customers' perception of relationship quality when the failure recovery is jointly created and implemented in this industry? More specially, does the customers' perception of post-failure relationship quality increase when the recovery is jointly created? Does the locus of failure impact the customers' perception of relationship quality after joint recovery management? Does the high relationship quality encourage the customer to participate in future recovery activity? These questions represent a significant gap in business marketing literature and focus on this research.

Answering these questions requires integrating two independent streams of marketing literature: research on value co-creation (Nammir et al., 2012; Chathoth et al., 2016; Kukk & Leppiman, 2016) and the B2B recovery management (Döscher, 2013; Baliga et al., 2020). Therefore, drawing on S-D logic and social exchange theory, the purpose of this research is two-folded: first to bridge the gap in the literature by investigating the relationship between the customers' perception of relationship quality and customer intention in future co-recovery in agricultural machinery and services industries environment. Second, to examine the role of locus of failure in the relationship between the joint recovery management and customers' perception of relationship quality.

CONCEPTUAL FRAMEWORK

Joint recovery management and relationship quality

We define failure as potential problems in service/product delivery and performance. Therefore, the failure in the agronomy machinery industry may be caused by different resources such as supplier-side problem (failure in upstream, internal, and downstream activities), the customer-side problem (internal customer problem, failure to provide the supplier with correct information, failure to use the service/product in a proper way) and the environmental factors such as natural disasters (Zhu & Zolkiewski, 2015). The recovery management in B2B context refers to 'A systematic approach for the development, implementation and controlling of activities by the seller firm to handle product or service failures to regain customer satisfaction and attain customer retention in the context of business-to-business markets' (Döscher, 2013, p. 18). In this definition, the failure responsibility has been attributed only to the supplier firm. Because typically, the suppliers shoulder the responsibility of failure activities based on the contractional agreement between supplier and customer (Döscher, 2013, Baliga et al., 2020). However, based on the S-D logic customers are active actors in the business processes (Grönroos, 2011; Kukk & Leppiman, 2016; Hollebeek, 2019). Under dominant service logic (S-D Logic), the value can be jointly created by customer and supplier through collaborative processes, interaction, and resources integration at different service chain

stages from service delivery to service recovery (Vargo & Lusch, 2004; Kukk & Leppiman, 2016).

One interesting example of the collaborative process is when customers engage in recovery activities or co-create the recovery activities with the supplier/service provider (Park & Ha, 2016; Bagherzade et al., 2020) through which the value can be co-created with the interaction and integration of resources. However, much less is known about joint recovery management in the agronomy machinery and services context indicating a need for a definition to develop our understanding of joint recovery management in this context. Therefore, drawing on S-D logic (Vargo & Lusch, 2004) and B2B service recovery definition (Döscher, 2013), we define the joint recovery management as:

'The suppliers and customer's interaction and the investment of operand and operant resources to jointly prevent, handle and resolve the product or service failures through which values are driven in the context of business-to-business market'

Besides, researchers have failed to address the impact of joint recovery management on the customers' perception of relationship quality between supplier and customer firm in the B2B environments (e.g., Döscher, 2013; Zhu & Zolkiewski, 2015; Baliga et al., 2020), particularly in agronomy machinery settings. The relationship quality implies on the strength of the relationship between supplier and customer firms in the context of business-to-business markets (Holmlund, 2008; Grégoire et al., 2009) and conceptualized as a higher-order construct of satisfaction, trust, and commitment (Döscher, 2013; Itani & Inyang, 2015). The relationship satisfaction judgment is associated with the development of cumulative relationship satisfaction, which is substantially influenced by the occurrence of critical incidents in the relationship (Döscher, 2013). In comparison, the construct of relationship trust has been referred to the 'Confidence in the exchange partner's reliability and integrity' (Morgan & Hunt 1994, p. 23). Trust has been identified to be related to partner reliability, honesty, and benevolence (Winklhofer et al., 2008). Commitment is said to occur when one party believes the business relationship is sufficiently important to warrant maximum effort to maintain it indefinitely (Segarra-Moliner et al., 2013). In addition, some contingency factors might impact customer responses to the failure situations in this environment. Some of these notable factors might be the existing alternative suppliers in their network, the length of the relationship, switching cost, reciprocal supply agreement, and the locus of failure (Döscher, 2013; Baliga et al., 2020). In this paper, we focus on the role of locus of failure as the important moderating factor that might impact the relationship between joint recovery management and the post-failure relationship quality in the agronomy machinery industry.

Hypothesis Development

According to S-D logic, value co-creation through collaborative activities requires a high level of interaction and resource investment from both sides of an exchange. Recovery management is essentially a social exchange (Patterson et al., 2006), and based on the social exchange theory, resource integration happens if the parties receive values from the exchange (Kotler & Zaltman, 1971). This value is related to the trade-off between the benefits driven by activities and the sacrifices of resources (Grönroos, 2011). Therefore, joint recovery management might have different relational outcomes based on the values driven from the collaborative recovery activities versus customer resource sacrifices. On the other hand, the relational outcomes of joint recovery management

might be affected by several factors (Heidenreich et al., 2015), such as the locus of failure. The locus of failure was perceived to impact the recovery management activities in the business environment (Zhu & Zolkiewski, 2015). In this paper, we argue that the locus of failure might play the moderating role in the relationship between joint recovery management and the customer perception of relationship quality. According to Döscher (2013), the recovery activities are defined in contractual agreements, and the recovery responsibility should be held on the supplier side. Also, customer firms hold less knowledge of the internal process and products/ services used in supplier firms; then they reflect the fewer competencies for identifying, analysing and resolving failures. Moreover, joint recovery management requires customer resource contribution, time, and effort.

If the problem is on the supplier side, the customer side's resource contribution might be perceived by customers as an extra loss, cost, and waste of resources. According to social exchange theory, the investment and exchange of resources happen when the exchange parties perceive the value in participation. When this value decreases, the customers might display less satisfaction, commitment, and trust in the supplier's relationship. Then, the joint recovery activities in this condition might negatively impact their perception of relationship quality. However, when the locus of failure is on the customer side, the resource contribution of supplier and their efforts into the solution of failure might increase the customers' perception of relationship quality. Since the supplier resource investment into failure recovery through the joint recovery management exceeds their contractual obligations, customers perceive a higher value driven from the recovery activities. They might display a higher level of trust, commitment, and satisfaction with the supplier and the business relationship. With the impact of the environmental factors on the service failures (Zhu & Zolkiewski, 2015), the joint recovery activities might increase the perception of relationship quality. Since the locus of failure is not from the supplier side, customers have clearer roles as participants in the recovery process, they receive an amount of control over the recovery activities and help find the optimal solution. Therefore, they perceive much more value in investing in their resources in the recovery activities and consequently perceive greater relationship quality. Based on the discussion above, we compare the customer perception of relationship quality when failure is caused by suppliers, customers themselves, and an environmental factor.

H_{1a}: when the locus of failure is on the supplier end, the joint recovery activities lead to a lower perception of relationship quality rather than when the locus of failure is on the customer end.

H_{2b}: when the failure is caused by an environmental factor, the joint recovery activities lead to a lower percepetion of relationship quality rather than when the locus of failure is on the customer end.

H_{1c}: when the failure is caused by an environmental factor, the joint recovery activities lead to a higher perception of relationship quality rather than when the locus of failure is on the supplier end.

The relationship quality and the intention for future co-creation

It has previously been observed that the relationship quality plays also a prompting role in customer engagement in business activities (Bowden, 2009; Hollebeek, 2011). This agrees with Chathoth et al. (2016), who suggest that customer engagement evolves from quality relationships between the customer and the supplier firm. The pre-established relationships based on satisfaction, commitment, and trust can also act as the antecedent to customer engagement (Hollebeek, 2011; Kumar & Pansari, 2016). According to the social exchange theory and S-D logic, we argue as the customers' satisfaction, trust and commitment with/to supplier increase they might be are more eager to participate in future joint recovery activities. More specifically, with a high perception of relational values, they might be more eager to invest their resources in supplier interactions to participate in future recovery activities. Fig. 1 represents the research conceptual model.

H_2: The higher perception of relationship quality is positively related to the customer intention for future joint recovery activities.

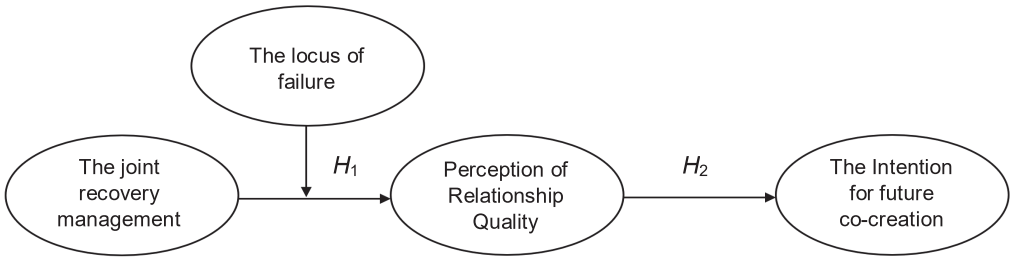

Figure 1. Conceptual model.

MATERIALS AND METHODS

Research design

We employed scenario-based experiments, to collect research data and test the research hypotheses. The scenario-based experimental design is currently the most popular method for evaluating service encounters involving both failure and recovery (i.e., Park & Ha, 2016; Nik Bakhsh, 2019). The scenario-based experimental design was chosen to avoid the biases associated with the retrospective self-reports, such as memory lapse and rationalization tendencies, and consistency. It is also one of the more practical ways of operationalizing the manipulations, which provides control over uncontrollable variables (Smith et al., 1999).

To test the H_{1a}, H_{1b}, and H_{1c} hypotheses, we used three single factor 2(co-creation vs no co-creation of recovery activities) × 2 (locus of failure) experimental design. To test the H_2, a regression analysis was conducted on the pooled data gathered from all participants of the research. Multiple methods have been employed to develop the scenarios, starting with a depth qualitative interview with nine managers to generate service breakdown ideas suitable for our study, brainstorming, and small group surveys. The scenarios were evaluated based on the criticality, frequency, and similar experiences (Dong et al., 2008). The final six scenarios were different based on the locus of failure's attribution. They described a delivery situation where the customer ordered

machinery/equipment or service to the supplier when the items arrived/delivered the quantity/quality of product/service did not meet the customer expectation. In each experiment, the cause of failure varied depends on the locus of failure. In the first experiment, after the quality/quantity check from the customer side and contacting the supplier, the problem was from the supplier side and then manipulation is applied to the approach that the supplier has taken to solve the failure (co-creation vs non-co-creation). The supplier either resolved the problem themselves or asked a customer to help with the resolution with amending the items, contact other suppliers, etc. In the second experiment, the failure is caused by an environmental factor (natural disasters and unstable weather conditions); therefore, none of the parties could be held responsible for the failure situation. Again, in one scenario supplier initiate the recovery activities and, in another scenario, the customer has been asked to help with the solution. In the third experiment, it is found out the problem has been from the customer firm side themselves since they placed the wrong order or inappropriately used the items/service, then with the help of supplier they find a solution and implement it. Then, either supplier helps the customer firm to solve the failure situation, or customer's employees solved the problem themselves. We compared the customer perception of relationship quality among the experimental groups. Respondents read one of these six versions of the scenario and rated their agreement on a seven-point Likert scale, which enabled us to compare the customer perception of relationship quality among the experimental groups. Besides, including in the description of scenarios, the other contingency factors such as length of the business relationship, number of previous failures, the number of alternative suppliers in the business network, and the switching cost were similar across all experiments.

Sample

The subjects in our experiments were top, middle level, and operational managers working within agricultural machinery manufacturer or service providers in Iran. We contacted 40 firms listed in a B2B services business directory, Industrial Management Institute in Iran. Most of the studied firms were medium-big sized companies with an average size > 200 full-time employees and an average age of 10 years. After identifying the target companies, 30 firms met the criteria and accepted to participate in this study.

Then we assessed all potential knowledgeable respondents through initial contact by email and ensured all 270 respondents are knowledgeable employees on the business relationship with the suppliers, have been familiarized with the concepts of failure recovery, and have experienced at least one service/product failure over previous two years. Then, the, 36% supply manager, 21% outbound preparation manager, 19% purchaser, 10% senior manager (CEO and vice president), 10% quality managers and 4% others. 60% of the respondents had over nine years of working experience; 30% had between 5 and 9 years, and 10% had less than five years. In the cover letter accompanied by the questionnaire, informants were guaranteed confidentiality. Finally, 210 usable questionnaires were received constituting a response rate of 62%. No questionnaires were returned incomplete.

Manipulation check

The manipulations were pre-tested on a sample of operational and middle managers (n = 60). The manipulation of the supplier's recovery strategy in the first and second

experiment was operationalized using the statements: 'Customer was asked to help develop and implement the solution' or 'The development of solution and implementation of it all done by the supplier without customer engagement'. Moreover, the manipulation of the recovery strategy in the third experiment was operationalized using the statements 'Supplier was asked to help develop and implement the solution 'or 'The development of the solution and implementation of it all done by the customer without supplier engagement'. Participants read one of the two versions of the scenario and rated their agreement that the recovery was co-created on a seven-point Likert scale. The *t*-test revealed that in the first version of the scenario respondents agreed that the recovery was co-created, but not in the second version (co-created recovery: *mean* = 5.15, non-co-created: *mean* = 2.81, $t = 10.93$, $p < .001$).

Measurement properties

The independent variable of the locus of failure was measured by three items developed by Maxham & Netemeyer (2002). This scale has been previously used to capture the attribution of failure responsibility. The dependent variable of relationship quality was captured by the three sub-constructs including the relationship trust (three items), relationship commitment (four items), and relationship satisfaction (three items) were adopted from Ulaga & Eggert (2006). Since no prior established scale was developed to measure customer intention toward future co-creation in B2B context, therefore we used the scale of 'Repurchase intention' introduced by Homburg et al. (2003). These 16 items were then subjected to confirmatory factor analysis (CFA) using SPSS (v. 20). After refinement, a final CFA model was estimated that demonstrated good measurement properties. *CMIN/df* = 1.06, *GFI* = 0.96, *AGFI* = 0.92, *CFI* = 0.97, *NFI* = 0.93, *IFI* = 0.97, and *RMSEA* = 0.053. The observed significant *Chi-square* = 76.280 (*df* = 35) was an appropriate Average Variance Extracted (*AVE*) > 0.63 (Fornell & Larker, 1981) were the evidence of discriminative validity of constructs, the factor loadings were all significant (*t-values* between 11.7 and 18.3) as the evidence of convergent validity, only one item (from commitment items) being omitted (factor loading < 0.5). All construct reliabilities were acceptable (0.72–0.91) (Cronbach,1951). Table 1 presents the result of CFA.

Table 1. Confirmatory factor analysis

Constructs and measures	Standardized parameters estimate	*T-value*	Average variance extracted	Reliability
Attribution of locus of failure			0.63	α = 0.87
To high extent the supplier was responsible for the problem that we experienced	0.79	14.7		
The problem that we encountered was all supplier's fault	0.73	12.3		
To high extent we blame the supplier for the problem	0.83	11.9		
Trust			0.66	α = 0.91
We believe, this supplier keeps promises to us	0.71	13.5		
We believe this supplier is always concerned that our business succeeds	0.80	14.2		

Table 1 continued

We believe, this supplier is also trustworthy in future	0.91	14.8		
Commitment			0.66	α = 0.72
Our firm genuinely cares about out business relationship with this supplier	0.88	18.3		
The relationship with this supplier deserves our business maximum effort to maintain	0.74	16.4		
Satisfaction			0.58	α = 0.75
Despite this problem, our firm is very satisfied with this supplier	0.83	15.6		
Our firm would still make order to this supplier if we had to do it all over again	0.71	14.1		
Despite this problem, we are very pleased with what this supplier does for us	0.84	14.9		
Intention toward future co-creation			0.54	α = 0.75
We will choose to collaborate with this supplier next time we encounter with a problem	0.71	12.3		
We collaborate this supplier and invest our resources to prevent, analysis, and solve the problem again if we had a choice	0.82	15.7		
We will choose to collaborate with this supplier next time we encounter with a problem service	0.67	11.7		

RESULTS AND DISCUSSION

Using Excel version 2018, we conducted three ANOVAs to analyze the differences among group means in our sample and to test each hypothesis with the perception of relationship quality as the dependent measure. These experiments were designed to test the moderating impact of the locus of failure on the customers' perception of relationship quality.

The manipulation included two recovery approaches, co-created recovery vs non-co-created recovery. Participants from the first group (n = 68), in which the locus of failure is on the supplier side, randomly assigned to one of the two experimental conditions (co-created recovery vs non- co-created recovery). Participants from the second group (n = 72), in which the failure caused by an environmental, randomly assigned to one of the two experimental conditions (co-created recovery vs non-co-created recovery). Similarly, participants from the third group (n = 70), in which the locus of failure is on the customer side, randomly assigned to one of the two experimental conditions (co-created recovery vs non-co-created recovery).

The first experiment was designed to test H_{1a}. An ANOVA with the first and third groups was conducted to compare the perception of relationship quality between the first and third groups. The result (F (35.4) > *Fcrit* (2.60) and *p-value* < 0.05) revealed that respondents felt a greater sense of relationship quality when the locus of failure is on the customer side, and the recovery is co-created. It is apparent from Fig. 2 that as expected, the sense of relationship quality decreases when the recovery is co-created, and the locus of failure is on the supplier end. Overall, the sense of relationship quality is higher with

non-co-created recovery when the failure is caused by the supplier. The first hypothesis is supported. Fig. 2 illustrates the result of the first experiments.

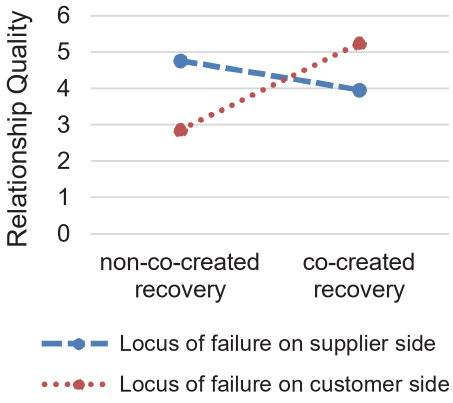

Figure 2. The recovery approach × The locus of failure (supplier vs customer side).

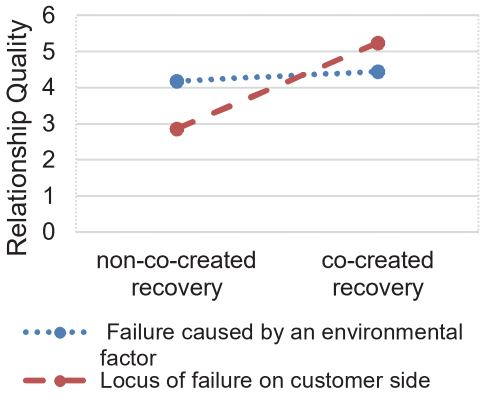

Figure 3. The recovery approach × The locus of failure (customer side vs environmental factor).

Similarly, in experiment two, an ANOVA with the second and third groups was conducted to test H_{1b}. The result is illustrated in Fig. 3. What is striking is the continual growth in all respondent's sense of relationship quality when the recovery is co-created; however, the relationship quality increases sharply for the respondent who perceived the locus of failure was on the customer side rather than an environmental issue (F (29.2) > $Fcrit$ (2.60) and p-$value$ < 0.05). These results provide further support for the H_{1b}.

It is apparent from Fig. 4 that as expected, the sense of relationship quality decreases when the recovery is co-created, and the locus of failure is from the supplier side rather than an environmental issue. The figure below shows that the co-creation of recovery slightly increases the sense of relationship quality when an environmental issue causes failure. In contrast, moving toward the co-creation of recovery, the sense of relationship quality decreases when they believe that the failure is due to the internal supplier issue. The result of ANOVA (F(42.4) > $Fcrit$(2.60) and p-$value$ < 0.05) supported the H_{1C}.

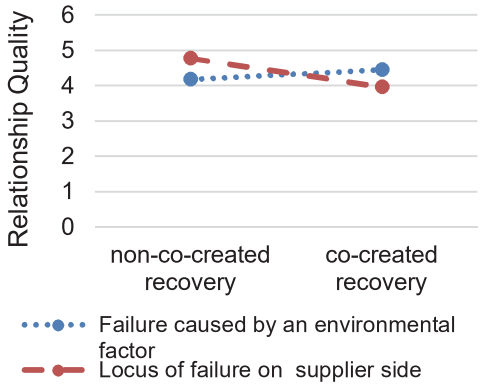

Figure 4. The recovery approach × The locus of failure (supplier vs environmental factor).

We analyzed the impact of relationship quality dimensions on the customers' intention of future co-creation recovery (IFCR) on the pooled data from our respondents (n = 139) using the regression analysis in Excel 2018. The adjusted R^2 value for the IFCR equations was .61 for pooled data from all research participants. The results indicate that perceptions of trust, commitment, and satisfaction were all significantly positively

associated with IFCR. The construct trust had the largest standardized coefficient ($\beta = 0.298$) followed by commitment and satisfaction ($\beta = 0.236$ and 0.191, respectively). Therefore, the result of regression provides strong evidence of a considerable amount of variance in IFCR is explained by the relationship quality constructs across all respondents: relationship trust, commitment, and satisfaction.

The findings reported here also shed new light on the role of locus of failure because of its unavoidable impact on customer response to joint recovery management in the agronomy machinery and services industry. More specifically, our study highlights the importance of locus of failure in the relationship between the co-creation of recovery and the relationship quality, which further impacts the customers' intention of future co-creation recovery. Therefore, it established a basis for promising future academic research on the recovery management in B2B environment particularly the agronomy industry.

The first question in this research was related to joint recovery management's impact on the customers' perception of relationship quality when the recovery activities were jointly created. The current study found that joint recovery management impacts the customers' perception of relationship quality. However, the type of impact (negative vs negative) depends on the attribution of locus of failure. The second question was designed to shed more light on the role of attribution of failure responsibility, which resulted in the most prominent finding from this study. According to our results, the locus of failure plays a moderating role in the relationship between joint recovery management and customers' perception of relationship quality. Therefore, in general, moving the locus of failure toward the customer side, the customers' perception of relationship quality increases significantly.

More specifically, when the locus of failure is attributed to the supplier side, customers are less likely to show a significant perception of relationship quality with joint recovery management activities. Our findings are supported by the social exchange theory and S-D Logic, as the recovery activities by the supplier reflect the contractual obligations when customer attribute the locus of failure to the supplier side activities, they hold expectations that supplier should comply with the failure handling procedures themselves as it is defined in their contractual agreements (Döscher, 2013). Therefore, the joint recovery management that required the customers' investment of their resources, might not add extra value for customers and might not be perceived by customers as increased outcomes from the exchange relationship. Since joint recovery management outcomes are not apparent to customers, their trust, commitment, and satisfaction on the relationship with the supplier decrease. The joint recovery management in the business market reflects a negative impact on the customers' perception of relationship quality. Another possible explanation for this might be that the customer firms likely hold increasingly less knowledge on the supplier's internal core procedure and products, or services used in their products or services. They believe the identification, the analysis of failures, response to the failure, resolution and controlling of them (Döscher, 2013) should largely remain with the supplier. This result also may be explained by the fact that despite the importance of failure notification, rapport of employees, feedback and explanation, and amount of cognitive control customer firms receive from the co-creation of recovery, when customers attribute failure and recovery activities more to the supplier firm than to themselves or an environmental factor, they may experience a negative impact on their role clarity and

perceived value. The yields in this study were higher than those of other studies in the consumer market that showed the positive impact of co-creation of recovery on customer post-recovery responses (Gohari et al., 2016; Park & Ha, 2016; Nik Bakhsh, 2019; Bagherzade et al., 2020). Interestingly, the customers' perception of relationship quality increases when the locus of failure to their side. Since the supplier contribution and resource investment to failure recovery exceed the supplier's contractual obligations, customers perceive a higher value in joint recovery management as an exchange situation. Therefore, based on the social exchange theory, they see extra values driven from the supplier resource contribution to the failure recovery activities. As a result of these extra values from joint recovery management, they might have perceived higher satisfaction, commitment, and trust in the supplier's exchange relationship. Another important finding was the failure situation when an environmental factor caused the failure. Our findings revealed that, in this situation, joint recovery management increase the perception of relationship quality in customers. This result may be explained by the fact that the rapport of employees, feedback of employees of the supplier as well as the empowerment and the clarity of role can be played by the customer, are valued by the customer. This might result in a positive outcome when customers' tradeoff their investment of resources and the value driven by joint recovery management. Therefore, joint recovery management increases the perception of relationship quality in customers. Consistent with Vargo & Lusch (2004), the co-creation of recovery positively impacts the perception of relationship quality, except when the attribution of locus of failure is on the supplier side.

To answer the third research question, we tested the relationship between the relationship quality dimensions (trust, commitment, and satisfaction) and the intention for future co-creation of recovery. Strong evidence of the positive association between relationship quality and the intention for future co-creation of recovery was found from the regression analysis. This finding broadly supports other researchers' work in this area linking co-creation and engagement activities with relationship quality (e.g., Hollebeek, 2019). It is also consistent with that of Chathoth et al. (2016) who argue that customer engagement evolves from the high relationship quality relationship. These relationships may partly be explained by customer's extra value in co-creation activities driven by customer trust, commitment, and satisfaction from the business relationship with the supplier.

CONCLUSION

The agronomy machinery manufacturers and service providers are frequently experiencing failure in their product and service delivery (Afsharnia, 2014) caused by different sources. Since the failures can make a butterfly impact on the farms and end user, there is a vital need for designing and implementing an effective recovery management system for the resolution of failure and reinforcing the relation quality after such incidents. Because of the high dependence of suppliers and customers in this industry, joint recovery management is introduced as a remedy in this study, and the moderating impact of locus failure on the relationship between joint recovery management and relationship quality is tested. Next, the authors examined how the perception of relationship quality encourages the customers to engage in future joint activities in this context.

In reviewing the agronomy literature, no data was found on joint recovery management and its relational outcome in agronomy research. Therefore, this study set out to extend our knowledge and understanding of the joint recovery management in the agronomy machinery and services market in which the high interaction between supplier and customer is essential to prevent and handle the failure situation and later avoid the failure domino effect on the farm productions.

The findings of the present research confirmed that locus of failure interacts with the supplier joint recovery efforts to impact the post-failure relationship quality. Another interesting finding is the customer perception of relationship quality impacts their intention for future co-creation of activities.

From a theoretical perspective, our research findings intend to advance the existing knowledge of agronomy industry research and the recovery management disciplines. In particular, the insights gained from this research offer four fundamental contributions to academic research associated with B2B recovery and agronomy industry literature.

First, it sheds more light on the concept of joint recovery management in the context of the agronomy machinery and services market. Existing research on co-creation of recovery mainly focused on the consumer market or other industries. Despite the sensitivity of the agronomy industry and farm operations, there remains a paucity of evidence on joint recovery management represents a significant gap in contemporary agronomy literature, and the current research represents one of the first studies on joint recovery for this context. In particular, the findings reported here focused on the condition in which the co-creation of recovery improves the relationship quality, which contributes to customers' intention for future co-creation of recovery. Therefore, our research establishes a base for future research to explore the infant domain of joint recovery management in the agronomy machinery and business markets in general.

Second, in this paper, we examined the moderation role of locus of failure on the customers' perception of the relationship's quality with the supplier in agronomy machinery industry. The present investigation responds to previous research, which has called for further research to identify the influential factors in the failure recovery (e.g., Döscher, 2013; Zhu & Zolkiewski, 2015). Therefore, the present study has gone some way towards enhancing our understanding of factors that might moderate the impact of different recovery strategies (non-co-creation vs co-creation) on the customers' perception of relationship quality.

Third, this research's findings contribute empirical evidence on the discussion about the impact of the customers' perception of relationship quality on the re-co-creation intention in recovery management in the agronomy machinery context. Therefore, the present thesis completes the previous research, which has suggested investigations on the relationship quality and customer engagement (Chathoth et al., 2016; Hollebeek, 2019). Based on these findings, the present study provides ground for further research on the role and the impact of collaborative activities in recovery management in agronomy research.

From a practical and managerial perspective, the insights derived from this study were supposed to contribute to the knowledge and practice in agronomy machinery and services industry. The findings of this study are helpful for the development of knowledge and skills of suppliers and their employees who intend to engage their customers in the failure recovery activities in the context of B2B, particularly in the agronomy machinery and services industry. The high interaction between suppliers and customers

in this industry can be used as an important tool to develop joint activities and create superior values. However, based on our findings, we propose that the value driven from the collaborative recovery management might not always be greater than the customer sacrifices (the investment of the resources) customers make, and as a result, positive relational outcomes might not always be expected. Although the feedback and rapport of suppliers play a key role in success of recovery activities in this industry, finding a solution with customer help might not increase the perceived value when the failure is on the supplier side. This research has identified that joint recovery management's effectiveness on the relationship quality varies depending on the locus of failure. This finding enables the supplier of machinery and services to understand how and to what extend the co-creation of recovery can be conducted in different failure situations to increase customer satisfaction, trust and commitment after the failure situation.

Besides, this study's findings can assist the relevant decision-makers within the supplier and customer firm in this industry about the right timing of joint recovery activities. Therefore, managers in the machinery manufacturer and service provider firm can distinguish when the co-creation and customer engagement strategies are beneficial in the failure situation and lead to a higher perception of customer relationship quality. This finding can help agronomy machinery manufacturers with improving their failure recovery systems. Although the notification, feedback, and rapport of supplier employee are essential in the industries in which the high interaction between supplier and customer is required, our empirical results show that the co-creation of recovery should only be done with caution to enhance the relationship quality when the failure is not from the supplier.

On the other hand, if the failure happens on the customer side, supplier engagement in problem-solving significantly increases the relationship quality. Therefore, the supplier should be encouraged to contribute to the failure resolution where it is possible to strengthen the relationship quality with the customer and make a higher perception of trust, commitment, and satisfaction in the customer. The joint recovery activities also can be recommended when the failure is caused by an environmental factor. When the customers have greater role clarity, require more cognitive control and feedback of recovery activities. Then customers more likely to show a greater perception of relationship quality with the joint recovery activities. For machinery suppliers and service providers in this industry, these collaborative recovery activities with the customers might be a great opportunity to open venues for building a strong relationship. More specifically, this study's results disclosed that higher satisfaction commitment and trust might increase the customers' intention for future co-creation after the recovery. Therefore, the manufacturers and service providers in the agronomy industry can take this opportunity to utilize customer resources in future recovery activities. Suppliers may use this finding for workshops and training sessions to illustrate, develop and optimize the inter-organizational process to handle the joint recovery management in agronomy machinery and services markets effectively.

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Co-creation of Service Recovery and Post-Recovery Responses: The Impact of Cultural Values Orientations and Outcome Favorability

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ABSTRACT

It is now well established from a variety of studies, that service recovery is essential for service providers to retrieve the customer's satisfaction after the service failure. Recent evidence suggests that the co-creation of service recovery has a positive outcome for both service providers and customers. However, very little is currently known about the impact of customers' cultural orientations in implementing co-creation of service recovery. In the present research, using an experimental design, first we examined the impact of co-creation on the perception of outcome favorability for the customers with high/low cultural values orientations and second, we measure the influence of perception of outcome favorability on the customer's post-recovery responses. The result revealed that the co-creation of recovery attributes is indeed associated with a higher perception of outcome favorability for customers with higher cultural values. The result also indicated that the customer's perception of outcome favorability is positively associated with satisfaction and repurchase intention.

KEYWORDS

Co-creation, Cultural Values, Outcome Favorability, Service Recovery

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1. INTRODUCTION

In recent years, there has been an increasing interest in the concept of co-creation in marketing researches (Park and Ha 2016; Prahalad and Ramaswamy 2004; Yi and Gong 2013). Co-creation is a novel worldview in the marketing and management fields that enables organizations and customers to create value through joint work and a series of communications (Galvagno and Dalli 2014). Co-creation stems from service-dominant (S-D) logic theoretical framework, emphasizes on integrating customers' resources such as tools, skills, knowledge with the organization's resources to maximize value creation (Park and Ha 2016; Rashid et al. 2014). Some researchers argued that co-creation is inherent in the service businesses as market offerings are created in the service encounter (Solomon et al. 1985; Bitner et al. 2000). Recently, organization are becoming interested in seeking opportunities to collaborate with customers and involve them in the various activities and develop a competitive advantage (Lusch et al. 2007; Vargo and Lusch 2004). Many types of researches conducted on developing of co-creation models and its relevant concepts (Prahalad and Ramaswamy 2004; Vargo and Lusch 2004). Recently, researchers started to focus on co-creation as a service recovery strategy to retrieve customer satisfaction after service failure (Dong et al. 2008; Roggeveen et al. 2012) and measure the effect of co-creation on customer post-recovery response. These studies mostly focused on behavioral consequences of co-creation and reported the positive impact of customer participation in the evaluation of co-creation experience, satisfaction and loyalty (Park and Ha 2016; Dong et al. 2008). However, previous studies on social psychology have reported that social exchanges are culturally contingent (Fiske et al. 1998) therefore customers' cultural values orientations likely affect the customers' perception of recovery outcome.

'Culture as a collection of practice, resources, norms, and meanings frames the co-creation of value and guide the evaluation of an experience' (Akak and Vargo 2013). So far, however, there has been little discussion about the effect of cultural values orientations on the outcome of the co-creation of service recovery. The objective of this research is two-fold: first to examine the impact of customers' cultural value orientation on the customers' perception of recovery outcome and second to measure the impact of the perceived outcome on their satisfaction and repurchase intention. Using an experimental design with data from two

different cultures, the author investigates how customer perception of co-recovery outcomes are influenced by customers' cultural value orientation which, in turn, affects their post-recovery responses. We suggest that co-creation is positively associated with a higher perception of outcome favorability for customers who are collectivist, higher in power distance, and higher in uncertainty avoidance orientations. Then, we analyze the impact of perception of outcome favorability on the customer's post-recovery responses.

2. REVIEW OF LITERATURE

2.1 Value Co-creation and Customer Value

A precise definition of value creation has proved elusive in service marketing, and in management in general (Carù and Bernard 2015; Sánchez-Fernández and Iniesta-Bonillo 2007). Grönroos (2008: 303) defined value for customers 'Value for customers means that after they have been assisted by a self-service process (for example cooking a meal or withdrawing cash from an ATM) or a full-service process (eating out at a restaurant or withdrawing cash over the counter in a bank) they are or feel better off than before.'

Lusch and Vargo (2006) argued that value in use is created when customers use products or services to satisfy their expectation and requirements. Holbrook (1996), identified main aspects of value of co-creation: (a) it is 'interactive' since it requires interactions between the customer and the company's offerings; (b) it is 'relativistic' because it depends on the situation, individual customers and customers' preferences among products or services and (c) it is 'preferential' as it depends on preferential judgment such as attitude, affect, and approach or avoidance. According to the service-dominant logic (S-D Logic) literature, 'customer is always a co-creator of value' (Vargo and Lusch 2004).

In the present study, we use the definition first suggested by Grönroos (2008) who saw it as the customer's creation of value-in-use. From his point of view, value is embedded in the customer's interactions with the service company's offering, such as services or products rather than in the service company itself. According to Vargo and Lusch (2004), every customer has unique consumption experience, preference, and goal, therefore; value is subjective to a consumption situation and customers are always valued co-creator and inseparable part of the value creation process.

Research on co-creation also identified two dimensions of efficiency and usefulness (utilitarian) and enjoyment (hedonic) that are the primary benefits of customer participation in service provision (Bateson 1985; Dabholkar 1996). Along the same line, Park and Ha (2016) indicated that in service recovery, the utilitarian value derived from co-creation enhances both equity and affect toward the service recovery. They also found that the hedonic value has a positive impact only on equity and affect toward the recovery is positively associated with repurchase intentions. The existing body of research on service recovery has shown that the value of co-creation is beneficial to both customers and service providers (Roggeveen et al. 2012; Park and Ha 2016). However, the effect of cultural values on perception outcome derived from the co-creation of service and the impact of outcome favorability on the customers' post-recovery responses are relatively unknown and are the focus of this study. Researches such as that conducted by Patterson et al. (2006) have shown that service encounter is essentially social exchange and it is culturally contingent. In the same vein, we suggest that co-creation is associated with a higher perception of outcome favorability for customers who are collectivist, higher in power distance, and higher in uncertainty avoidance orientations and, in turn, higher perception of outcome favorability is positively associated with customer satisfaction and repurchase intention.

2.2 Cultural Values Orientations

Widely varying definitions of culture have emerged. In 1980, Hofstede popularized the term 'culture' to describe ''interactive aggregate of common characteristics that influence a group's response to its environment'' (Hofstede 1980). According to Hofstede (1980), culture underlies every human behavioral dimension and is a foundation of how people share values, attitudes, and norms which distinguishes them from those of other groups. To date, Hofstede's cultural framework has shown to constitute, by far, the most influential and comprehensive cultural framework (Smith and Dugan 1996; Steenkamp 2001) in marketing researches. Hofstede (1980) proposes five cultural dimensions, however, in this paper we focus only on three dimensions: collectivism / individualism, power distance, and uncertainty avoidance. It is argued for the purpose of this paper that these three cultural dimensions are highly relevant to the service encounter and service recovery context (Patterson et al. 2006; Park and Ha 2016).

Collectivism/individualism seems to be the widely studied dimension in service recovery literature (Patterson et al. 2006). In a collectivist culture, the group is a fundamental concern and individuals give higher priority to their group's goal and interest than to his/her own interest. However, in an individualist culture, the individuals following achieving his/her own and interest than others' welfare (Hofstede 1980). Power distance refers to ''the extent to which less powerful members of organizations within a country accept the unequal distribution of power'' (Hofstede 1980). In a high-power distance culture, people obey orders commended by others who have higher status. While, in a low-power distance culture, people are more interested in participating in a decision-making process (Kale and Mclntyre 1991). In a high uncertainty avoidance culture, people tend to avoid ambiguity and unknown situation (Hofstede 1980; Patterson and Smith 2001) and they are willing to reduce the ambiguity, increase the written rules and predictability. In contrast, in a low uncertainty avoidance culture, people are comfortable with uncertainty, do not feel threatened by ambiguity or unstructured situations, they are usually risk-taker and more tolerant of the changes.

2.3 Cultural Values and Co-creation of Service Recovery

According to Patterson et al. (2006), 'In a failed service/product encounter, the customer perceives a loss due to a failure on the firm side' (Patterson et al. 2006). In this situation, the service provider initiates some recovery efforts to offset the loss and retrieve customer's satisfaction (Smith et al. 1999; Patterson et al. 2006). Extensive research has shown that recovery process leads to a series of interaction between two parties. Through co-creation of recovery, however; this interaction might increase by engaging customers in the recovery to achieve greater value for the for them (Roggeveen et al. 2012). Recent work by Park and Ha (2016) has established that perception of the customer from co-creation service recovery is value dependent. Patterson et al. (2006) also indicated that customer perceptions of recovery efforts vary, depending on their cultural value orientation. Similarly, Donthu and Yoo (1998: 59), stated that 'When marketing efforts fit the culture, their impact on service quality should be greater or more noticeable. In the same vein, author suggests that co-creation is associated with a higher perception of outcome favorability for customers who are collectivist, higher in power distance, and higher in uncertainty avoidance orientations. In the next section, the

author presents outcome favorability as one of the main aspects of customer decision-making mechanism in co-creation recovery context.

2.4 Outcome Favorability

The use of the justice framework has a relatively long tradition within the context of service recovery (Patterson et al. 2006; Jung and Seock 2017). Justice framework, however; has failed to address all variances in customer behavioral intentions and only between 43% and 63% of behavioral intentions can be explained by this theory (Gelbrich and Roschk 2011). In this study, we use outcome favorability as another aspect of customer decision-making mechanism in service recovery context. Although outcome favorability and outcome fairness are naturally related, they present two different aspects of the customers' decision-making mechanism (Hazée et al. 2017). The outcome fairness refers to the extent in which an outcome meets or justified by a defined standard, while outcome favorability shows 'Whether someone receives a positive rather than a negative result' (Kulik and Ambrose 1992; Stepina et al. 1991). In another word, while customers perceive the certain level of fairness in recovery outcome, they might not still perceive that the most favorable outcome. In this study, author defines outcome favorability as the outcome of interest which achievable through co-creation and results in finding the best solution among other alternatives.

2.5 Post-Recovery Response: Satisfaction and Repurchase Intention

Recently, researchers have shown that satisfaction with recovery plays an important role in the service industry. This is supported by several authors who write that the primary goals of service firms are to keep the customers (Blodgett et al. 1993). Oliver (1997: 13) defined satisfaction as the 'customer's evaluation that a product or service itself or its feature has been able to provide a pleasant level of consumption.' In service recovery context, satisfaction refers to satisfaction with complaint handling (Tax et al. 1998) and customer's evaluation of how well the provider deals with a service failure. Satisfaction with recovery refers to the customer's feelings and attitude after the consumption of services or service recovery. Retrieving customers' satisfaction after service failure helps to maintain healthy relationships with customers and achieve a significant competitive advantage (Fornell and Wernerfelt 1987).

Repurchase intention is another aspect of interest within the field of service recovery. Repurchase intention refers to 'the individual's judgment about buying again a designated service from the same company, taking into account his or her current situation and likely circumstances' (Hellier et al. 2003). Customers who feel grateful with service provider recovery efforts, likely repay the service provider with future purchases (Brdiger and Wood 2017).

2.6 Hypothesis Development

Evidence from the customer behavior literature suggests that norms and values are among the most important factors affecting the evaluation of customer from service recovery (Tax et al. 1998; Patterson et al. 2006). In the same vein, author hypothesizes that the perception of outcome favorability after co-creation of service recovery varies depend on customer cultural values. We also suggest that perception of outcome favorability, in turn, is positively the customers' satisfaction and repurchase intention. We measure cultural values along power distance, individualism/collectivism, and uncertainty avoidance cultural dimensions.

Uncertainty avoidance refers to people tolerance for ambiguity and amounts the threat they feel in an unknown situation (Hofstede 1980; Patterson and Smith 2001). High uncertainty avoidance orientation is associated with reducing the ambiguity and increasing the predictability, written rules, and structured relationships.

Previous research has established that customer participation in service recovery accompanies with information seeking, information sharing, sense of control, and personal interaction (Yi and Gong 2013; Lynn et al. 1993). It leads to joint discussion and more sense of personal and cognitive control as well as information over both the process and the recovery solution (Thibaut and Walker 1975; Kellogg et al. 1997; Guo et al. 2016). Having more information about the outcome of recovery efforts reduces customer uncertainty. Consequently, customers with a higher uncertainty avoidance perceive more outcome favorability when they participate in the service recovery process.

For a collectivist, the group is a fundamental concern. A collectivist (versus an individualist) is a person who sees himself as part of a group and places the group's goals as a priority over his/her own personal goals. In collectivist society keeping harmony and avoiding confrontation is highly valued. Since co-creation of recovery requires group working and high level of

cooperation between employees, we hypothesize that customers with a collectivist orientation find the recovery outcome more favorable. Power distance refers to the extent to which lower status people accepts that the power has been distributed unequally in the society (Hofstede et al. 1991). People with higher power distance orientation often value "control of material resources" as a fundamental component of power. The intense desire for gaining control over resources suggests that participation in service recovery would be more highly valued since giving customers a sense of control. Therefore, the outcome derived from co-recovery might be more favorable for customer with higher power distance orientation.

H_1: Customers with high power distance, high uncertainty avoidance, and collectivistic orientation perceive a higher level of outcome favorability than customers with a lower cultural values orientation when they participate in the service recovery process

In the follow-up phase of the study, we argue that the higher perception of outcome favorability in customers (Park and Ha 2016), in turns, is positively associated with satisfaction and repurchase intention.

H_2: Satisfaction with service recovery situation will be positively associated with the perception of outcome favorability.

H_3: Repurchase intention will be positively associated with the perception of outcome favorability.

3. METHODOLOGY

The use of experimental design has a relatively long tradition within the context of service recovery (Smith et al. 1999; Patterson et al. 2006; Roggeveen et al. 2012). This method is particularly useful in studying customer behavior after a service failure. In this study, we used a 2 (co-created recovery vs. non-co-created recovery)×2 (higher values orientation vs. lower values orientation) scenario-based experiment to collect data and test our predictions.

3.1 Participants

According to Triandis and Suh (2002), western culture is more individualistic and lower in

power distance and uncertainty avoidance orientations. Therefore, in this study, we recruited participants from post-graduates' students from Iran (n = 264) and Denmark (n = 250) to maximize the variance within each cultural dimension. We selected Iran and Denmark because they have very different profiles based on Hofstede's (1980) national scores. We run ANOVA on data from Iran (n = 111) and Denmark (n = 111) to compare these countries based on these three cultural dimensions. The ANOVA result confirmed that Iranian are collectivist (F = 32.23> F crit = 3.8, P value = 4.3) higher in power distance orientation (F = 93.6 > F crit = 3.1, P value = 2.7) and higher in uncertainty avoidance orientation (F = 18.59> F crit = 3.6, P value = 3.7). Using factor scores, the author weighted the participants' responses and then summed them to use in the calculation of three split medians. Using three split medians, the author assigned the participant to each cultural group (Any value that was below the median was assigned to 'Low' cultural values group and any value above was assigned to 'High' cultural values group). It is interesting to note that the high cultural values group and low cultural values groups almost included only Iranian respondents and Danish participants, respectively.

We selected undergraduate university student as the research sample to control the occupational and social class factors and also to enhance the sampling equivalence which critical issue in cross-cultural studies. We included only participants reporting Persian as their mother tongue in Iran and Danish in Denmark in our analysis. The samples were similar in terms of age (between 22-30), frequency of eating out at restaurants (Iran 2.43 times and Denmark 3.12 times in a typical week). The author used an experimental design including two groups of Iranian and Danish students to test H_1 and pooled the data from both samples to test H_2 and H_3.

3.2 The Stimulus

In each high and low cultural value group, participants received a similar scenario and manipulation emerged in the service recovery strategy (co-creation of service recovery and none-co-creation). The scenario-based method provides a means for minimizing the memory biases associated with self-reports and decreasing the negative effects of intentionally putting the customer in service failure situation (Smith et al. 1999). We developed the research

scenario using the brainstorming approach and small group surveys based on the frequency and similarity of experiences. The criteria of developing of the scenario were the familiarity of post-graduates student with the setting. Second, scripts were drafted by the researchers. The scenario's instruction helped the respondents to imagine themselves as the involved customer in the service encounter and failure. We selected the restaurant service context because the slow service and wrong orders are common in this industry (Tax et al. 1998). Research final scenario described a service situation where the customer orders food in a restaurant then after a long delay, servant approaches the customer with the wrong order.

3.3 Measurement Equivalence and Manipulation Test

Psychological equivalent and linguistic equivalence are critical issues in cross-cultural studies (Soares 2004). We ensured of translation equivalence using back translation (Cavusgil and Das 1997). A bilingual speaker, familiar with the Danish/Persian culture translated the original English instrument to (Danish/Persian) and they then were back translated by a different bilingual speaker. Using a questionnaire, we asked Danish and Persian students to answer 4 questions to ensure the meaning equivalence of key concepts. We received similar reactions to the service failure in the scenario from Danish (n = 81) and Iranian (n = 75), post-graduate students. Both groups similarly agreed that the scenario was realistic, the problem was major, and it was irritating, annoying for them. Table 1 shows the results of the pilot test.

Table 1. Test of Equivalence of Scenario Between Danish and Iranian

Test of Equivalence			
Based on your experiences with service provider:			
	Denmark (n = 81)	**Iran (n = 75)**	**T-value**
How do you view this problem? (1=minor and 7=major problem)	5.31	5.11	1.22
How angry would you be? (1=Not at all and 7=extremely so)	6.12	5.29	0.62
How irritated would you be? (1=not at all and 7=very irritated)	4.97	5.50	0.98
How annoyed would you be? (1=not at all and 7=very annoyed)	5.24	4.93	1.02

Source: Patterson et al. (2006).

Participants of the higher cultural values group were divided into two groups. Both groups received the same scenario, but the manipulation of scenario emerged in the recovery strategy (co-created Vs non-co-created). Similarly, participants of lower cultural values group were divided into two groups and received similar scenario but different recovery strategies. The author used these statements to operationalize the manipulation: "service provider asked you to help him/her to choose between a variety of options that interest you the most (co-creation of recovery) or "The service prover personally offered you one option to offset the loss" (non-co-creation). on a seven-point Likert scale, participants rated their agreement that in the first recovery strategy they joined and helped service provider to offset the loss. The result of T-tests showed that the participants agreed that in the second recovery strategy they helped service provider to find a solution for service failure, but not in the second strategy (Lower cultural values group: co-creation = 5.76, non-co-creation = 3.09, $t = 9.82$, $p < .001$ and higher cultural values group: co-creation = 5.11, non-co-creation = 3.98, $t = 9.23$, $p < .001$).

3.4 Measures

We measured three dimensions of collectivism/individualism, power distance and uncertainty avoidance using 16 items from original CVSCALE (Donthu and Yoo 1998). In each item, using a 5-point Likert scale, the author asked respondents to show their agreement with statements of each item. Using Amos 24.0, the author conducted exploratory (principal components analysis and varimax rotation) and confirmatory factor analyses (CFA) to test the measurement model for these 16 items. Exploratory factor analysis (provided strong evidence for existing of underlying relationships between measured variables (all loadings > .55), all the distributions were normal, and alpha Cronbach statistics for power distance, uncertainty avoidance, and collectivism were .72, .76 and .86, respectively. As a result of CFA, we eliminated 2 items (with factor loading < .50) and the final model showed a good model fit with our data. All factor loadings were reasonably high and significant ($P < .000$). We used the procedure introduced by Fornell and Larker (1981) to test for discriminant validity (Fornell and Larcker 1981). According to them, for each construct, the average variance (AVE) extracted should be higher the squared correlation between that construct and any other construct. We fount Strong evidence of discriminant validity since the average variance extracted (AVE) for each latent construct was greater than 0.5 and higher than squared correlation. The results of CFA and EFA are set out in Table 2.

Table 2. Exploratory and Confirmatory Factor Analysis Result

	Component			CFA	T-value
	Collectivism	Uncertainty Avoidance	Power Distance		
1. People in higher positions should make most decisions without consulting people in lower positions			0.66	0.60	7.09
2. People in higher positions should not ask the opinion of people in lower positions too frequently			0.58	_*	
3. People in higher positions should avoid social contact with people in lower positions			0.81	0.83	8.67
4. People in lower positions should not disagree with people in higher positions			0.71	0.61	8.05
5. People in higher positions should not delegate important tasks			0.55	0.67	10.00
6. It is important to have instructions spelled out in detail		0.71		0.60	8.50
7. It is important to closely follow instructions and procedures		0.73		_*	
8. Rules and regulations are important because they inform me of what is expected		0.73		0.84	9.24
9. Standardized work procedures are helpful		0.71		0.61	8.91
10. Instructions for operations are important		0.63		0.58	10.00
11. Individuals should sacrifice self-interest for the group	0.62			0.58	10.92
12. Individuals should stick with their group even through difficulties	0.74			0.75	14.30
13. Group welfare is more important than individual rewards	0.78			0.82	15.01
14. Group success is more important than individual success	0.76			0.75	14.02
15. Individuals should only pursue their personal goals after considering group goals	0.74			0.62	12.61
16. Group loyalty should be encouraged even if individual goals suffer	0.76			0.66	10.00
Variance explained: 22.41					
Cumulative variance explained: 54.42					
Cronbach alpha	0.86	0.76	0.72		
Composite reliability (CR)	0.87	0.84	0.76		

*These items are removed from the final measurement model (factor loading<.4)
CMIN/DF = 2.58, P < 0.00, CFI = .94, NFI = .91, IFI = .94, RMSEA = 0.06.

3.5 Dependent Measures

We captured outcome favorability using 2 items adapted from a measurement scale introduced by Hazée et al. (2017). For the post-recovery response construct (satisfaction and repurchase intention), the author used measurement scales developed by Oliver and Swan in 1989. The research instrument used 5-point Likert scale asked respondents to show their agreement with statements of each item. Table 3 below indicates the items and results of CFA for perceived outcome favorability, satisfaction with recovery and repurchase intention. All factor loadings were higher than .50 and significant (P < 0.00).

Table 3. The Result of Confirmatory Factor Analysis for Outcome Favorability

Items	Factor Loading	Cronbach Alpha	CR
Outcome favorability		0.76	0.88
1. The solution to my problem was the best alternative.	0.78		
2. In my opinion, the solution that has been found was the most suitable.	0.80		
Satisfaction with recovery		0.72	0.79
3. In my opinion this restaurant provided a satisfactory resolution to my problem on this particular occasion	0.55		
4. I am satisfied with this restaurant's handling of the problem	0.82		
5. Regarding this particular event, I am satisfied with the restaurant	0.67		
Repurchase intention		0.75	0.80
6. I will consider this restaurant as my first choice when going for eating again in the future.	0.79		
7. If there was another restaurant in the market offering the similar food, I would buy food from this restaurant again.	0.77		

To test the effect of cultural values orientations on the relationship between co-creation of service recovery and perception of outcome favorability, we designed an experiment with two groups of high cultural values and low cultural values. In each group, participant randomly received the same research scenarios with two different manipulations in the service recovery strategy. We asked the respondent how often they go to the restaurant to eat. We excluded those participants who had rarely eaten in the restaurant; however, we could not

find any instances. Respondents were asked to read the scenario and try to imagine themselves in the setting. Participants then responded to the dependent measures, outcome favorability and independent measures (CV scale dimensions). The entire procedure was using an online questionnaire.

Using Excel 2018, We run a two-way ANOVA with replication on high and low cultural values group and outcome favorability as the dependent variable. The test result revealed that individuals perceived the recovery outcome more favorable once they participate in service recovery, regardless of the cultural values orientations. The result also shows that in both groups perception of outcome favorability decreases once in non-co-creation service recovery, however; for higher cultural values group, the perception of outcome favorability decreased significantly compared to low cultural values group (F value (34.12) > F crit (3.8) with small P value = 1.01). The first hypothesis supported. The result of the first hypothesis confirms the importance of cultural values orientation impact on customers' perception of recovery outcome. The author suggests that this occurs because it might be more favorable for customers who are collectivist, with higher power distance and uncertainty avoidance orientation to participate and have cognitive control and during the recovery process.

Table 4. The Result of ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Sample	27,5	1	27,5	28,6729858	1,3891E-07	3,8628752
Columns	80,3272727	1	80,3272727	83,7535545	2,1754E-18	3,8628752
Interaction	32,7272727	1	32,7272727	34,1232227	1,0129E-08	3,8628752
Within	418,163636	436	0,95909091			
Total	558,718182	439				

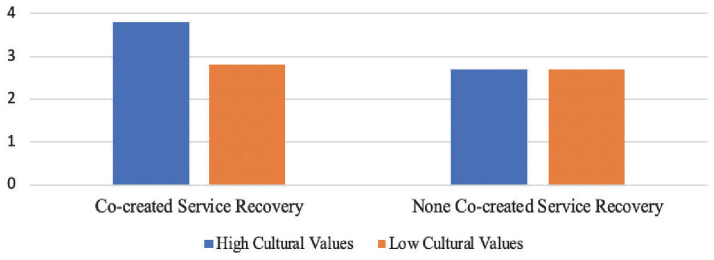

Figure 1. Comparison of Two Cultural Groups

To test H_2, the author conducted a one-way ANOVA on pooled data from higher cultural values group (n = 100) and lower cultural values group (n = 95). We tested the relationship between outcome favorability and repurchase intention. The results indicated that perception of outcome favorability is significantly and positively associated with customer repurchase intention ($F = 112.3$, $P < 0.00$) and with the large standardized coefficient for outcome favorability ($\beta = 0.45$). H_2 supported.

For test H_3, we set customer satisfaction after recovery as independent variable and outcome favorability as a predictor variable. ANOVA results revealed the significant positive impact of outcome favorability on satisfaction after recovery ($F = 93.3$, $P < 0.00$). Regression result confirms the significantly large standardized coefficient for outcome favorability ($\beta = 0.47$). H_3 was supported. Interestingly, the outcome favorability was observed to have a greater impact on customer repurchase intention than customer satisfaction.

4. DISCUSSION

This paper highlights the importance of cultural values orientation in customer evaluation of service recovery. We argue that cultural values orientation impacts the customer perception of co-created recovery outcome. In other word, the variations in customers' perceptions of co-created service recovery might be caused by fundamental differences in their orientations toward the world. The result of our experiments revealed that higher uncertainty avoidance, power distance, and collectivism orientations lead to a higher perception of outcome favorably. Evidence for the impact of culture on the evaluation of customer from service recovery in this study corroborates earlier findings in Xu and his colleagues' research (2014). According to Xu et al. (2014) research, a customer with higher collectivism orientation is more satisfied once they participate in the recovery process. The main message derived from our research is that co-creation of service recovery increases the perception of outcome favorability from recovery process regardless of cultural values orientations. However, the severity of changes in customer perception is culture dependent. This finding shows the importance of cultural values orientation on the perception of customers from the outcome of co-created service recovery. This finding shed more light on the role of cultural value orientation in the perception of co-created recovery outcomes and

contributes to service marketing literature.

Further statistical tests revealed co-creation of service recovery exerts customer satisfaction with recovery and customer repurchase intention. This result shows that the perception of outcome favorability accounts for a large percentage of the explained variance in perceptions of customers' satisfaction with recovery efforts and repurchase intention. Then we suggest that the perception of outcome favorability is a powerful predictor of customer satisfaction with co-created recovery and their repurchase intention. This finding broadly supports the work of other studies in this area linking co-creation of service recovery with customers' positive evaluation recovery efforts (Dong et al. 2008; Roggeveen et al. 2012).

5. THE THEORETICAL AND MANAGERIAL IMPLICATION

Theoretically, this research contribution lies in the use of outcome favorability as an alternative mechanism for customer decision making and post recovery response in co-recovery context. The results of this research support the idea that customer participation in the recovery process improves customer evaluation of service recovery outcome and enhances customers' post-recovery evaluations. Reactive recovery approach is costly for service industries since offering compensate to customer often is the main remedy for retrieving customer satisfaction. With co-creation, however; service providers are able to regain customer satisfaction and even repurchase intention with lower costs in a shorter time.

The result of experiments revealed that co-creation increases the perception of outcome favorability in customers regardless of cultural values orientations. However, the degree in which it increases the outcome favorability is culture depended. These findings give the service provider a better chance of designing and taking more appropriate recovery actions if they know the customer's cultural value orientations. The service company's operation in different regions and countries should be conscious of the cultural diversity of their customers' background. The customer who are collectivist, and with a high power distance and uncertainty avoidance orientations, more likely view a favorable outcome when participating in the service recovery process, rather than just receiving a non-co-created service recovery. The management implications are clear: Customer participation positively impacts the outcome of recovery efforts and can be helpful to enhance the recovery outcome,

retrieve customer satisfaction and increase the repurchase intention. However, if there is any limitation in implementing of co-creation of recovery, managers can prioritize it based on the customer's cultural background.

It might be unrealistic to expect service provider to constantly assess a customer's orientation, however; this finding help employees and managers to implement more effective co-creation recovery approach if it is embedded in companies CRM systems.

Using new technologies, service providers can categorize their most frequent customers, make a profile for customers in CRM system and design recovery approach based on the customers' profile. This segmentation can be helpful whenever a customer complaint, thus service provider can adopt an appropriate action to retrieve customer satisfaction.

The high cognitive control and group working provided through customer participation in the recovery process might increase outcome favorability more in customers with higher uncertainty avoidance and collectivism orientation. Managers should also use these findings in designing their training programs and workshop to empower and equip their employees, especially frontline employees, to adopt appropriate action when it is needed. It the point of view of training employees, the first step is inviting the customers to participate in the recovery process based on guidelines provided by managers. Next step is providing cognitive control through the recovery process, especially more for customers with higher uncertainty avoidance orientation. It might not be possible for employees to identify the customer orientation in single service encounter; however, they could provide more cognitive control during co-creation of service recovery by increasing the share of the customer in the recovery process. Actual team working between frontline employees and customers in finding the best solution could positively affect the customers' post-recovery evaluation from co-recovery.

Overall, this study strengthens the idea that customer participation increases customer satisfaction and repurchase intention due to high outcome favorability perception resulted from more cognitive control and group working result.

6. RESEARCH LIMITATION AND FUTURE RESEARCH

Since the study was limited to scenario-based experiment, it was not possible to take all details in actual failure circumstances. We also gathered our data from customers in a

restaurant setting, however; customer reactions to co-recovery also may depend on the characteristics of each service industry. This makes these findings less generalizable to all service settings. In spite of its limitations, the study certainly adds to our understanding of the cultural issues in effectiveness of co-creation of service recovery. For future research, other service settings can be to chosen and other mediators such as personality, age, and education level might be examined in co-recovery context.

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Appendix 2

Service Provider Interview Guide

Interviewees Information	
Participant number:	Date of interview:
Position:	Department:
Before starting the questions	
Give a brief explanation about the research title, the purpose of the research, the outcome and benefits, confidentiality/anonymity and participation right	
Title: Joint recovery management in Business-to-Business markets: Antecedents, process and relational outcome	موضـوع تز- مدیریت جبران خدمات در بازارهای سـازمان های تجاری: پیشنیازها، فرایند ونتایج
Introduction of topic	معرفی موضوع تحقیق
You are being asked to take part in a research as an experienced person on recovery management in your organization. Conducting this research we intent to explore the antecedents and process and outcome of collaborative problem resolution with business customers. This research is part of fulfilment of the requirements for the Doctorate of Business Administration program at Tallinn University of Technology.	شـــما به واســـطة تجربه بالا وفردی مطلع در راســـتای مدیرت جبران خدمات در ســـازمان برای شرکت در این تحقیق انتخاب شـــده اید. هدف از انجام این تحقیق بررسی پیشـــنیازها، فرایند ونتایج مدیریت مشـترک جبران خدمات با همکاری مشـتری تجاری می باشـد. این تحقیق بخشی ازپروژه دکتری در دانشگاه فنی تالین در کشور استونی می باشد.
Confidentiality /Anonymity/interviewee right/consent	محرمانه بودن / ناشناس بودن / حق مصاحبه شونده
The participation in this research is voluntary. This interview will be recorded and transcript for the	شرکت در این تحقیق اختیاری است. این مصاحبه ضبط شده ودر بعد از ان به نوشتار تبدیل می شود اما اطلاعات شخصی. شما -به غیر از نام صـنعت وبخشی-ـ که در ان مشـغول به کار هسـتید- از دسـترس عموم محفوظ می باشد. فقط محقق به داده های شخصی. شما (نام شما نام

purposes of further analysis, but without any personal information about you except for the industry and the department that you work in/for. The researcher will give a code (known to researcher only) to your personal data (your name, company name, phone and email) which will be kept in private. You have the right to stop your participation and ask for withdraw your data without explanation in next two month (after the interview is done). You also have the right to refuse to respond to any questions you are not interested in. You have the right to ask the questions before and during the interview. Please inform the researcher if you agree and the interview can be started.	شرکت تلفن وایمیل) به صورت کدگذاری شده دسترسی خواهد داشت. شـما حق دارید هر زمان که بخواهید از شرکت در این تحقیق انصراف یدهید یا درخواست توقف استفاده از داده را اعلام کنید (تا دو ماه بعد از انجام مصاحبه). همچنین می توانید در طول مصاحبه سوالات خود را مطرح کرده واگر مایل نیستید به سوالات پاسخ ندهید. لطفا رضایت خود را برای شروع مصاحبه اعلام کنید.
What to expect	پیش زمینه
In this interview, you will be asked a to provide detailed explanation about your experience when an issue happens before/during/after the service delivery so that this issue cause one of or all of following: you did not able to keep your promises mentioned in the agreement, the quality/timing of service does not meet the customer expectations, customer production line was interrupted by this issue. So you had to deal with unsatisfied/angry/annoyed customer. (explain what service failure and recovery management means)	در این مصاحبه، سوالاتی در مورد تجربه شما در هنگام بروز مشکلاتی که قبل/درحین/ بعد از خدمت رسانی پیش می اید پرسیده می شود. این مشکلات می توانند موجب: کاهش کیفیت یا تاخیر در ارسال محصول شود براورده نشدن انتظارات مشتریان (که در قرارداد تعیین شده) شود متوقف شدن خط تولید مشتری یا ایجاد مشکلاتی در ان بشود . وشما با مشتری عصبانی وناراحت روبرو شده اید (تعریفی از شکت در خدمات وجبران ان ارایه دهید)

Questions	سوالات
Please briefly, tell me about your role in the organisation and the previous job experience.	لطفا به صورت کوتاه نقش خودتان وتجربه کاری خود را توضیح دهید
Comment:	نظر:
How to your role is connected to the service your company offer to the customer	چگونه نقش شـــما در ســـازمان به خدماتی که شرکت ارایه می کند گره خورده؟
Comment:	نظر:
How much do you communicate with customers in your daily job?	تا چه حد با مشتریان خود در کار روزانه خود در ارتباط هستید؟
Comment:	نظر:
How do you communicate with the customers? What tools do you use to communicate with them?	چگونه با مشـتریان خود در ارتباط هسـتید؟ از چه ابزاری برای ارتباط با انها استفاده می کنید؟
Comment:	نظر:
Have you ever been in a situation when you could not deliver the products/or service successfully? Or an issue happened during or after delivering the serve/products?	تا حالا در موقعیتی بودین که نتوانســـتید خدمتی را به درســـتی انجام دهید؟ یا مشـــکلی در زمان تحویل کالا(خدمت) یا بعد از ان پیش امده باشد؟
Comment:	نظر:
From your experience as a ..., could you please tell me about what kind of issues can happen before, during and after the serve/product offering? What does usually cause them?	می توانید مشـــکلاتی از این قبیل را نام ببرید؟ چه چیزی باعث ان می شود؟
Comment:	نظر:

How often does your company experience such incidents?	هر چند وقت این مشکلات را تجربه می کنید؟
Comment:	نظر:
From your experience as a ..., could you please tell me what strategies your company have to avoid such issues? what resource you have to avoid such issues?	می توانید بگویید که سازمان شما چه سازوکارهایی را برای جلوگیری از این مشکلات به کار گرفته است؟ وشما از چه منابعی برای ان استفاده می کنید؟
Comment:	نظر:
How much do you communicate with your employees to avoid issues?	تا چه حد با کارکنان خود در ارتباط هستید تا از این مشکلات جلوگیری کنید؟
	نظر:
How can the customer help you to avoid such issues in your experience and opinion? does customer play any role in avoiding such issue?	به نظر شما تا چه حد وچگونه مشتریان می توانند برای جلوگیری از این مشکلات کمگ کنند؟ مشتری نقشی ایفا می کند؟
Comment:	نظر:
When an issue happens, what do you do usually? Can you please explain it? Which team/employee get involved in this situation? What resources do you use?	وقتی مشکلی پیش می اید شما چکار می کنید؟ می توانید توضیح دهید؟ چه تیم هایی درگیر می شوند؟ چه منابعی نیاز دارید؟
Comment:	نظر:
How do you communicate with the customer in the case of incident occurring? If you know it already will you inform the customer?	اگر اتفاق بیافتد چگونه با مشتری تماس میگیرید؟ ایا بدانید که مشکلی در راه است مشتریان را پیشاپیش در جریان می گذارید؟
Comment:	نظر:

What solution do you have? And what do you usually do to resolve the issue when it happens?	چه راه حل های برای حل این مشـــکلات دارید؟ وقتی که اتفاق می افتد شما برای حل ان چکار می کنید؟
Comment:	نظر:
How does the customer usually react?	معمولا مشتری چه عکس العملی نشان می دهد؟
Comment:	نظر:
How and to what extent the customer can help if a problem is already happened? Are they eager to help? If yes how and when?	چگونه وتا چه حد مشـــتریان می توانند در حل مشـــکل کمک کنند؟ ایا تمایل به کمک کردن دارن؟
Comment:	نظر:
What do you do after the issue is resolved? Do you keep a record?	وقتی که مشکل حل شد چکار می کنید؟ ایا ان را ثبت می کنید؟
Comment:	نظر:
Can you please tell be about the most recent incident happened that caused the issue? What did you do? What did customer?	می توانید در مورد یکی از اتفاقات اخیر توضیح دهید؟ شما چکار کردید؟ مشتری چکار کرد؟
Comment:	نظر:
In your opinion, is there any benefits if the customer get involved in this process?	از نظر شما مشارکت مشتری در این قرایند چه مزایایی دارد؟
Comment:	نظر:
Is there anything else you would like to add/explain?	چیز دیگری هست که بخواهید درموردش توضیح دهید؟
Comment:	نظر:

End the interview	اتمام مصاحبه
Thank the interviewee and ask if there is any further clarification required and if it is possible to have a follow-up interview, if more information is	از شرکت کننده تشکر کنید. از او بپرسید ایا سوالی دارد با اگر امکان دارد برای سوالات بیشتر دوباره تماس گرفته شود
Summarise the information and think about if more question is needed for the next interview.	اطلاعات به دست امده را خلاصه نویسی ـ کنید ودر مورد سوالات بیشتر فکر کنید
If possible as he/she can give us the name of their strategic customers already experienced some issues (for customer research)	

Customer Interview Guide

Interviewees Information (customers)	
Participant number:	Date of interview:
Position:	Department:
Before starting the questions	
Give a brief explanation about the research title, the purpose of the research, the outcome and benefits, confidentiality/anonymity and participation right	
Title: Joint recovery management in Business-to-Business markets: Antecedents, process and relational outcome	موضـــوع تز- مدیریت جبران خدمات در بازارهای ســـازمان های تجاری: پیشنیازها، فرایند ونتایج
Introduction of topic	معرفی موضوع تحقیق
You are being asked to take part in this research as an experienced person working closely with service providers when an issue happens during and after the service/product delivery. Conducting this research we intent to explore the antecedents and process and outcome of collaborative problem resolution. This research is part of fulfilment of the requirements for the Doctorate of Business Administration program at Tallinn University of Technology.	شما برای شرکت در این تحقیق انتخاب شده اید زیرا شما فردی با تجربه بالا ومطلع در راســتای ارتباط با تامین کنندگان وســاز وکارحل مشــکلاتی که در حــین وبــعــد از ارایــه سرویــس رخ می دهــد هســـــتــیــد. هدف از انجام این تحقیق بررسی پیشـنیازها، فرایند ونتایج مدیریت مشـترک جبران خدمات می باشـد. این تحقیق بخشی- ازپروژه دکتری در دانشـگاه فنی تالین در کشور استونی می باشد.

Confidentiality /Anonymity/interviewee right/consent	محرمانه بودن / ناشناس بودن / حق مصاحبه شونده
The participation in this research is voluntary. This interview will be recorded and transcript for the purposes of further analysis, but without any personal information about you except for the industry and the department that you work in/for. The researcher will give a code (known to researcher only) to your personal data (your name, company name, phone and email) which will be kept in private. You have the right to stop your participation and ask for withdraw your data without explanation in next two month (after the interview is done). You also have the right to refuse to respond to any questions you are not interested in. You have the right to ask the questions before and during the interview. Please inform the researcher if you agree and the interview can be started.	شرکت در این تحقیق اختیاری است. این مصاحبه ضبط شده ودر بعد از ان به نوشتار تبدیل می شود اما اطلاعات شخصی- شما -به غیر از نام صنعت وبخشی که در ان مشغول به کار هستید- از دسترس عموم محفوظ می باشد. فقط محقق به داده های شخصی شما (نام شما نام شرکت تلفن وایمیل) به صورت کدگذاری شده دسترسی خواهد داشت. شما حق دارید هر زمان که بخواهید از شرکت در این تحقیق انصراف یدهید یا درخواست توقف استفاده از داده را اعلام کنید (تا دو ماه بعد از انجام مصاحبه). همچنین می توانید در طول مصاحبه سوالات خود را مطرح کرده واگر مایل نیستید به سوالات پاسخ ندهید. لطفا رضایت خود را برای شروع مصاحبه اعلام کنید.

What to expect	پیش زمینه
In this interview, you will be asked a to provide detailed explanation about your experience when an issue happens before/during/after the service delivery so that this issue caused you one of or all of following: Your service provider did not able to keep its promises mentioned in the agreement, the the quality/timing of service does not meet the your expectations, your company's production line was interrupted because of this issue. So you were unsatisfied/ angry/annoyed. (explain what service failure and recovery management means)	در این مصاحبه، سوالاتی در مورد تجربه شما در هنگام بروز مشکلاتی که قبل/درحین/ بعد از خدمت رسانی پیش می اید پرسیده می شود. این مشکلات یکی یا همه مشکلاتی از قبیل: کاهش کیفیت محصول یا تاخیر در ارسال ان براورده نشدن انتظارات شما (که در قرارداد تعیین شده) متوقف شدن خط تولید شما یا ایجاد مشکلاتی در ان شده است وشما ناراحت وناراضی شده اید (تعریفی از شکت در خدمات وجبران ان ارایه دهید)
Questions	سوالات
Please briefly, tell me about your role in the organisation and the previous job experience.	لطفا به صورت کوتاه نقش خودتان وتجربه کاری خود را توضیح دهید
Comment:	نظر:
How to your role is connected to the communication and interaction with the respective service provider?	چگونه نقش شما در سازمان به ارتباط با تامین کنندگان گره خورده؟
Comment:	نظر:

How much do you communicate with the service provider in your daily job?	تا چه حد با تامین گنندگان در کار روزانه خود در ارتباط هستید؟
Comment:	نظر:
How do you communicate with the supplier? What tools do you use to communicate with them?	چگونه با تامین کنندگان خود در ارتباط هســـتید؟ از چه ابزاری برای ارتباط با انها استفاده می کنید؟
Comment:	نظر:
Have you ever been in a situation when you did not received what you expected or mentioned in your agreement with the service provider? Or an issue happened during or after delivering the serve/products?	تا حالا در موقعیتی بودین که نتوانستید خدمتی را که انتظار داشتید از تامین کننده دریافت نکنید؟ یا مشـــکلی در زمان تحویل کالا(خدمت) یا بعد از ان پیش امده باشد؟
Comment:	نظر:
How you do you usually react to such failure situations?	معمولا چه عکس العملی به این موقعیت نشان می دهید؟
Comment:	نظر:
From your experience as a ..., could you please tell me about what kind of issues can happen before, during and after the serve/product receiving? What does usually cause them?	می توانید مشکلاتی از این قبیل را نام ببرید؟ چه چیزی باعث ان می شود؟
Comment:	نظر:

How often does your company experience such incidents?	هر چند وقت این مشکلات را تجربه می کنید؟
Comment:	نظر:
From your experience as a ..., could you please tell us if you could avoid such issues? Can the you play any roles in avoiding the issue? If yes what resource you have to avoid such issues?	می توانید بگویید که ایا این مشکلات اجتناب پذیر بودند؟ شما می توانستید نقشی ایفا کنید؟ اگر بله شما از چه منابعی برای ان استفاده می کنید؟
Comment:	نظر:
How much do you communicate with your employees to avoid issues?	تا چه حد با کارکنان خود در ارتباط هستید تا از این مشکلات جلوگیری کنید؟
Comment:	نظر:
When an issue happens, what do you do usually? Can you please explain it? Which team/employee get involved in this situation? What resources do you use?	وقتی مشکلی پیش می اید شما چکار می کنید؟ می توانید توضیح دهید؟ چه تیم هایی درگیر می شوند؟ چه منابعی نیاز دارید؟
Comment:	نظر:
How do you find the issue? And what resource do you use to find these issues?	شما چگونه این مشکلات را شناسایی می کنید؟ از چه منابعی برای ان استفاده می کنید؟
Comment:	نظر:
How do you communicate with the service provider if you find the issue?	اگر اتفاق بیافتد چگونه باتامین کننده تماس میگیرید؟
Comment:	نظر:

What do you expect from your service provider in the case of such failure occurrence?	اگر مشکلی پیش بیاید شما چه انتظاری از تامین کننده دارید؟
Comment:	
From you experience can you help in resolution of the problem?	از نظر شماً شما می توانید به حل مشکل کمک کنید؟
Comment:	نظر:
If yes, how and to what extent the you can help? In what condition you help? If no why wont you help?	اگربلهِ چگونه وتا چه حد می توانید کمک کنید؟ تحت چه شرایطی؟ اگر نه چرا؟
Comment:	نظر:
What do you do after the issue is resolved? Until when do you continue the failure-related discussion with the respective service provider?	وقتی که مشـــکل حل شـــد چکار می کنید؟ تا چه زمانی با تامین کننده در موردش صحبت می کنید؟
Comment:	نظر:
Can you please tell be about the most recent incident happened that caused the issue? What did you do? What did the service provider?	می توانید در مورد یکی از اتفاقات اخیر توضـــیح دهید؟ شـــما چکار کردید؟ تامین کننده چکار کرد؟
Comment:	نظر:
In your opinion, is there any benefits if the you get involved in this process?	از نظر شما مشارکت در این فرایند چه مزایایی دارد؟
Comment:	نظر:

Is there anything else you would like to add/explain?	چیز دیگری هست که بخواهید درموردش توضیح دهید؟
Comment:	نظر:
End the interview	اتمام مصاحبه
Thank the interviewee and ask if there is any further clarification required and if it is possible to have a follow-up interview, if more information is needed.	از شرکت کننده تشکر کنید. از او بپرسید ایا سوالی دارد با اگر امکان دارد برای سوالات بیشتر دوباره تماس گرفته شود
Summarise the information and think about if more question is needed for the next interview.	اطلاعات به دست امده را خلاصه نویسی کنید ودر مورد سوالات بیشتر فکر کنید

Coding manual

Open	Axial	Selective
Continuous communication	Communication and interaction	External communication and information sharing
Instant interaction		
Keep the customer informed before the incident		
SP and customer information sharing to avoid issues in future		
Information flow from customer to SP	Customers share necessary information	
Customer experience with other SPs		
The customer gives the SP a clue		
Using Informal relationships to find information about competitor		
Information flow from SP to customer	SPs share necessary information	
Help the customer to predict enough safety stock		
Keep the customer informed before the incident		
Shared activities between SP and customer	Customer and SP both plays roles in recovery management	collaborative nature of recovery management
The importance of role the customer plays		
Customer encouragement to share feedback		
Collaboration is a must	Collaboration is inevitable	
Feedback from customer to SP	The importance of customer feedback	Role of feedback in joint recovery management
Help to narrow down the solutions		
The customer gives the SP a clue		
Information flow from SP to customer	The importance of SP feedback	
Giving alternatives to the customer by the SP	SP RI in finding a solution	Resolution of failure
SP solution offering		
Finding a solution		
Offering the similar products as solution		

Temporary solution offered by customer	Customer have some solutions prepared	Resolution of failure
Offering a solution from customer to SP		
Decrease the cost of the SP by offering a solution		
Collaboration for finding the best solution	SP and customer involvement in finding optimal solution	
Negotiations between SP and customer		
Discussion with the customer to find the best solution		
Close relationship between SP employees for resulting of the issue		
Customer correction of failure on their site	Customer RI in correction of failure	
SP initiative for resolving the issue	SP RI for failure resolution (Reactive)	
Visiting the problem on customer site		
Close relationship between SP employees for resulting of the issue	SP and customer relational bound for resolution of failure	
Giving alternatives to the customer by the SP	SP RI in finding a solution	SP role as value-process organizer
Finding a solution		
Offering the similar products as solution		
SP solution offering		
SP initiative for resolving the issue	SP RI for failure resolution (Reactive)	
Visiting the problem on customer site		
Collaboration for finding the root cause	SP and customer RI in finding of root cause	
The customer gives the SP a clue		
Visiting the problem on customer site		
Making profile for customer	SP resource investment in recording of customer information	
SP double-checking orders with customers		
How this customer issue was resolved before		

Informing the customer before accordance of the issue	SP resource investment in Proactivity	SP role as value-process organizer
Cautions of SP		
SP learn how to avoid a similar issues in future		
Keep the customer informed before the incident		
SP double-checking orders with customers		
Finding the reason	SP resource investment in finding the root cause	
Information fellow inside the SP for finding the root cause		
Visiting the problem on customer site		
Replacing and customizing the product by the SP	SP RI for implementing of solution	
Offering similar products by the SP as an alternative		
SP pre-testing and prototype	SP RI in preventing the failure	
SP internal communication to avoid any issue		
Frequency of checking by the SP to avoid issues		
SP initiative for preventing the problem		
SP batch inspection before shipping		
Identifying the issue before production by the SP	SP RI for proactive failure identification	
Keep the customer informed before the incident		
SP inspection before shipping		
SP initiative for resolving the issue	SP RI for failure resolution (Reactive)	
Visiting the problem on customer site		
SP analysis of their resources	SP internal resource audit	
SP internal process for controlling of failure	SP RI for controlling of failure	SP role as value-protector
SP double-checking orders with customers	SP and customer RI for preventing the failure	
SP and customer information sharing to avoid issues in future		

Identifying the issue before production by the SP	SP RI for proactive failure identification	SP role as value-protector
Keep the customer informed before the incident		
SP inspection before shipping		
Facilitate the quality issue detection by the SP	Better identification of failure	
Speed of identification		
Giving alternatives to the customer by the SP	SP RI in finding a solution	
SP solution offering		
Finding a solution		
Offering the similar products as solution		
SP initiative for resolving the issue	SP RI for failure resolution (Reactive)	
Visiting the problem on customer site		
Close relationship between SP employees for resulting of the issue	SP and customer relational bound for resolution of failure	SP role as value-supporter
SP initiative for resolving the issue	SP RI for failure resolution	
Visiting the problem on customer site		
Collaboration for finding the best solution	SP and customer involvement in finding optimal solution	
Negotiations between SP and customer		
Discussion with the customer to find the best solution		
Close relationship between SP employees for resulting of the issue		
Giving alternatives to the customer by the SP	SP RI in finding a solution	
SP solution offering		
Finding a solution		
Offering the similar products as solution		
Giving alternatives to the customer by the SP	SP RI in finding a solution	SP role as value-retriever
SP solution offering		
Finding a solution		
Offering the similar products as solution		

Replacing and customizing the product by the SP	SP RI for implementing of solution	SP role as value-retriever
Offering similar products by the SP as an alternative		
SP initiative for resolving the issue	SP RI for failure resolution (Reactive)	
Visiting the problem on customer site		
Giving alternatives to the customer by the SP	SP RI in finding a solution	SP role as value-option counsellor
SP solution offering		
Finding a solution		
Offering the similar products as solution		
Customer human resource	SP's human resource skill and experience	
Customer ability to express the expectations		
Willingness to share the information		
Customer's ability to create a mutual understanding		
Replacing and customizing the product by the SP	SP RI for implementing of solution	
Offering similar products by the SP as an alternative		
SP initiative for resolving the issue	SP RI for failure resolution	
Visiting the problem on customer site		
Physical presence of SP employee on customer's site	SP visiting of customer site for failure analysis	
Increase in customer trust with communication	Customer Trust	SP role as value-booster
Customer believe this SP in trustworthy		
Increase in customer satisfaction, with communication	Customer satisfaction	
Failure causes dissatisfaction of customer		
Customer happiness with collaboration		
Help to focus on more important issues	Save the SP and customer resources	
Help to save for important incidents		

Increase customer commitment	Customer commitment	SP role as value-booster
Customer continue with this SP		
Increase customer loyalty	Customer loyalty	
Customer will not switch to other SPs		
Increase in customer's financial status	Improve the customer's financial status	
Replacing and customizing the product by the SP	SP RI for implementing of solution	SP role as value-facilitator
Offering similar products by the SP as an alternative		
Customer assistance request	Customer ask for a response from the SP	
Visiting the problem on customer site		
Meeting between SP and customer employees	SP and customer meeting	
The customer gives the SP info during meetings		
Visiting the problem on customer site		
Customer employees visiting the SP employees		
Improve the SP's understanding of customer expectation	Better understanding of customers needs	
Customer experience with other SPs		
Visiting the problem on customer site	Visiting the problem on customer site for analysis of failure	
Customer requested for help	SP assist the customer induced error resolution	
Teach customers how to use the product	SP RI for teaching customer	
Customer learns from SP		
Informing the SP of a existing issue	Customer RI for notifying the SP	Customer as co-organizer of Resources
Reporting a failure to the SP		
Customer effort for avoiding the problem	Customer RI in preventing the failure	
Number of SPs that the customer has		

Customer efforts for analysing the reason for failure	Customer RI in analysing of failure	Customer as co-organizer of resources
Analysing the issue by different internal people		
Visiting the problem on customer site		
Temporary solution offered by customer	Customer have some solutions prepared	
Offering a solution from customer to SP		
Decrease the cost of the SP by offering a solution		
Finding the root cause of customer	Customer RI in finding a root cause	
Discussion with the customer to find the best solution		
Customer correction of failure on their site	Customer RI in correction of failure	
Customer effort in identifying the issue after delivery	Customer RI in identifying the post-delivery failure	
Visiting the problem on customer site		
Customer quality inspection		
Feedback from customer to SP	The importance of customer feedback and information	Customer as co-preventer of failure
Help to narrow down the solutions		
The customer gives the SP a clue		
Customer effort for avoiding the problem	Customer RI for preventing failure	
Number of SPs that the customer has		
Customer internal communication to avoid and find the issue	Customer internal communication	
SP double-checking orders with customers	SP and customer RI for preventing the failure	
SP and customer information sharing to avoid issues in future		
Customer effort in identifying the issue after delivery	Customer RI in identifying the post-delivery failure	Customer as co-diagnose of failure
Visiting the problem on customer site		
Customer quality inspection		

Finding the root cause of customer	Customer RI in finding a root cause	Customer as co-diagnose of failure
Discussion with the customer to find the best solution		
Customer human resource	Customer employees skill and experience	
Customer ability to express the expectations		
Willingness to share the information		
Customer's ability to create a mutual understanding		
Customer internal communication to avoid and find the issue	Customer internal communication	
Feedback from customer to SP	The importance of customer feedback	Customer as co-notifier of failure
Help to narrow down the solutions		
The customer gives the SP a clue		
Informing the SP of a existing issue	Customer RI for notifying the SP	
Reporting a failure to the SP		
Temporary solution offered by customer	Customer have some solutions prepared	Customer as co-evaluator of solution
Offering a solution from customer to SP		
Decrease the cost of the SP by offering a solution		
Collaboration for finding the best solution	SP and customer involvement in finding optimal solution	
Negotiations between SP and customer		
Discussion with the customer to find the best solution		
Close relationship between SP employees for resulting of the issue		
Temporary solution offered by customer	Customer have some solutions prepared	Customer as co-developer of solution
Offering a solution from customer to SP		
Decrease the cost of the SP by offering a solution		

Collaboration for finding the best solution	SP and customer involvement in finding optimal solution	Customer as co-developer of solution
Negotiations between SP and customer		
Discussion with the customer to find the best solution		
Close relationship between SP employees for resulting of the issue		
Customer correction of failure on their site	Customer RI in correction of failure	Customer as co-implementor of solution
Feedback from customer to SP	The importance of customer feedback	Customer as co-advertiser
Help to narrow down the solutions		
The customer gives the SP a clue		
Sharing the good experience with others	Customer positive WOM in business network	
Positive WOM		
Communication between SP teams	SP internal communication	SP Internal communication
Analysing the issue by different internal employees		
Information fellow inside the SP for finding the root cause		
SP analysis of their resources	SP internal resource audit	
Customer internal communication to avoid and find the issue	Customer internal communication	Customer internal communication
Feedback from customer to SP	The importance of customer feedback	External communication
Help to narrow down the solutions		
The customer gives the SP a clue		
Developing friendly relationship with customer	Informal and friendly relationship between SP and customer	
Developing personal relationship with customers		
Using the friendly relationship to alleviate the negative impact		
Different relationship with the customer		

Customer assistance request	Customer ask for a response from the SP	External communication
Visiting the problem on customer site		
Meeting between SP and customer employees	SP and customer meeting	
The customer gives the SP info during meetings		
Visiting the problem on customer site		
Customer employees visiting the SP employees		
Website	Communication Channels	
System for customer communication		
Emailing system		
Visiting the problem on customer site		
International fare		
Social media		
Phone communication		
Visiting the problem on customer site	Visiting the problem on customer site for analysis of failure	
Developing friendly relationships with customer is more important in B2B (than B2C)	Importance Informal relationship in B2B compare to B2C	
Increase in customer sale and performance	Increase in customer market performance	Monetary value
Increase in customer order	Increase in SP sales	
Increase In SP's sale		
Increase in SP market share	SP market share	
SP has bigger share in the market		
Help to focus on more important issues	Save the SP and customer resources	
Help to save for important incidents		
Increase in customer's financial situation	Improve the customer's financial status	
Developing the SP business	SP business development	

Increase in SP market share	Increase SP reputation in marketplace	Non-Monetary value
Increase in customer trust with communication	Customer Trust	
Customer believe this SP in trustworthy		
Increase in customer satisfaction, with communication	Customer satisfaction	
Failure causes dissatisfaction of customer		
Customer happiness with collaboration		
Increase service quality with communication	Improved service design and quality	
Improve the product design		
Improve the SP's understanding of customer expectation	Better understanding of customers needs	
Customer experience with other SPs		
Facilitate the quality issue detection by the SP	Better identification of failure	
Speed of identification		
Improve the SP failure recovery performance	Better SP failure recovery performance	
Decrease the time of finding the root cause		
Speed of resolution		
SP learn how to avoid a similar issues in future		
Stronger business relationship with constant communication	Improve the business relationship	
Stronger relationship after collaborative resolution		
Sign of Respect for the customer and care		
Increase customer commitment	Customer commitment	
Customer continue with this SP		
Increase customer loyalty	Customer loyalty	
Customer will not switch to other SPs		
SP DM using the information shared	Making informed Decision	
information help SP to decide on resolution		

Stronger business relationship with constant communication	Improve the business relationship	Non-Monetary value
Stronger relationship after collaborative resolution		
sign of Respect for the customer and care		
SP relational/social capabilities	SP RI (invisible)	SP operant resources
Asking for help from other SPs		
SP physical equipment (Car, Machinery)	SP RI (Physical)	SP operand resources
SP technological equipment		
SP's financial resources		
Relationship with other SPs in the B2B network (Relational)	Customer RI (invisible)	Customer operant resources
Customer knowledge		
Customer physical equipment	Customer RI (Physical)	Customer operand resources
Customer technology tools		
Customer effort for avoiding the problem	Customer RI for preventing failure	Preventing of failure
Number of SPs that the customer has		
SP pre-testing and prototype	SP RI in preventing the failure	
SP internal communication to avoid any issue		
Frequency of checking by the SP to avoid issues		
SP initiative for preventing the problem		
SP batch inspection before shipping		
SP double-checking orders with customers	SP and customer RI for preventing the failure	
SP and customer information sharing to avoid issues in future		
Customer effort in identifying the issue after delivery	Customer RI in identifying the post-delivery failure	Identification of failure
Visiting the problem on customer site		
Customer quality inspection		
Identifying the issue before production by the SP	SP RI for proactive failure identification	
Keep the customer informed before the incident		
SP inspection before shipping		

Facilitate the quality issue detection by the SP	Better identification of failure	Identification of failure
Speed of resolution		
Keep the customer informed before the incident	SP RI for Keeping the customer informed before the failure	Notification of failure
Informing the customer in person		
Informing the customer before accordance of the issue		
Informing the SP of a existing issue	Customer RI for notifying the SP	
Reporting a failure to the SP		
Finding the root cause of customer	Customer RI in finding a root cause	Reduction of failure
Discussion with the customer to find the best solution		
How big the issue is	Majority of the failure	
How important the issue is		
Increase service quality with communication	Improved service design and quality	
Improve the product design		
Follow up on the failure resulting by the SP	SP and customer RI in following up the failure	Controlling and following of failure
Importance of service quality in B2B	Improve the service design and quality (SP and customer)	
Improve the service design		
Improve customer service and reputation		
Follow up on the failure resulting by the SP	SP and customer RI in following up the failure	
Offering apology	Offering apology by SP	Post-failure outcome
Pay compensation by the SP	Compensation by SP	
Pay benefits by SP		
Offering explanation	Offering explanation by SP	
Customer internal communication to avoid and find the issue	Customer internal communication	Communication channels
Physical presence of SP employee on customer's site	SP visiting of customer site for failure analysis	
Visiting the problem on customer site		

Website	Communication Channels	Communication channels
System for customer communication		
Emailing system		
Phone communication		
International fare		
Social media		
Visiting the problem on customer site		
Physical presence of SP employee on customer's site	Visiting the problem on customer site for analysis of failure	
Visiting the problem on customer site		
Communication between SP teams	SP internal communication	
Analysing the issue by different internal employees		
Information fellow inside the SP for finding the root cause		
SP effort for analysing the issue	SP RI for analysing the failure	Analysis of failure
Analysing the issue by different internal people		
Visiting the problem on customer site		
Customer efforts for analysing the reason for failure	Customer RI in analysing of failure	
Analysing the issue by different internal people		
Visiting the problem on customer site		
Physical presence of SP employee on customer's site	SP visiting of customer site for failure analysis	
Visiting the problem on customer site		
Visiting the problem on customer site	Visiting the problem on customer site for analysis of failure	
SP effort for analysing the issue	SP RI for analysing the failure	Response to the failure
Analysing the issue by different internal people		
Visiting the problem on customer site		
Replacing and customizing the product by the SP	SP RI for implementing of solution	
Offering similar products by the SP as an alternative		

SP initiative for resolving the issue	SP RI for failure resolution (Reactive)	Response to the failure
Visiting the problem on customer site		
Close relationship between SP employees for resulting of the issue	Informal and friendly relationship between SP and customer	Friendly and informal relationship in B2B
Developing friendly relationship with customer		
Developing personal relationship with customers		
Using the friendly relationship to alleviate the negative impact		
Different relationship with the customer		
Developing friendly relationships with customer is more important in B2B (than B2C)	Importance Informal relationship in B2B compare to B2C	
SP guarantee for services	Service agreement and extended services	Extended services in B2B
SP and customer agreement		
Offering apology	Offering apology by SP	Reactive Recovery
Collaboration for finding the root cause	SP and customer RI in finding of root cause	
The customer gives the SP a clue		
Visiting the problem on customer site		
Impact of failure on customer production	Negative impact of failure on customer operations	
Offering discounts by SP	Discount after failure resolution	
SP effort for analysing the issue	SP RI for analysing the failure	
Analysing the issue by different internal people		
Visiting the problem on customer site		
How big the issue is	Majority of the failure	
How important the issue is		
Customer effort in identifying the issue after delivery	Customer RI in identifying the post-delivery failure	
Visiting the problem on customer site		
Customer quality inspection		

Customer assistance request	Customer ask for a response from the SP	Reactive Recovery
Visiting the problem on customer site		
Physical presence of SP employee on customer's site	SP visiting of customer site for failure analysis	
Visiting the problem on customer site		
Offering explanation	Offering explanation by SP	
Failure harm the business relationship	Negative impact of failure on business relationship	
Failure might terminate the business relationship		
Customer switched to another SP with frequency of failure		
Visiting the problem on customer site	Visiting the problem on customer site for analysis of failure	
Follow up on the failure resulting by the SP	SP and customer RI in following up the failure	
Informing the customer before accordance of the issue	SP resource investment in Proactivity	Proactive recovery
Cautions of SP		
SP learn how to avoid a similar issues in future		
Keep the customer informed before the incident		
SP double-checking orders with customers		
Customer effort for avoiding the problem	Customer RI for preventing failure	
Number of SPs that the customer has		
Customer initiative to find the probable issue		
Customer experience with other SPs		
SP pre-testing and prototype	SP RI in preventing the failure	
SP internal communication to avoid any issue		
Frequency of checking by the SP to avoid issues		
SP initiative for preventing the problem		
SP batch inspection before shipping		

Identifying the issue before production by the SP	SP RI for proactive failure identification	Proactive recovery
Keep the customer informed before the incident		
SP inspection before shipping		
Improve the SP's understanding of customer expectation	Better understanding of customers needs	
Customer experience with other SPs		
Keep the customer informed before the incident	SP RI for Keeping the customer informed before the failure	
Informing the customer in person		
Informing the customer before accordance of the issue		
SP double-checking orders with customers	SP and customer RI for preventing the failure	
SP and customer information sharing to avoid issues in future		
SP batch inspection before shipping	SP proactive inspection and tests	
Increase in customer trust with communication	Customer trust	Relationship quality
Customer believe this SP in trustworthy		
Increase in customer satisfaction, with communication	Customer satisfaction	
Failure causes dissatisfaction of customer		
Customer happiness with collaboration		
Increase customer commitment	Customer commitment	
Customer continue with this SP		
Increase customer loyalty	Customer loyalty	Positive outcome of collaboration
Customer will not switch to other SPs		
Difficult to find the root cause	Unknown root cause	Locus of failure
The main reason stay unknown		

Lack of raw material	SP induced error	Locus of failure
Responded service demand by the SP		
Transportation issue		
Lack of enough storage by the SP		
the inability of the SP in supplying the product		
A problem in the upstream process of the SP		
Delay in service delivery from the SP		
Low quality of product from SP		
SP packaging issue		
Accuracy of service from the SP		
A problem in the internal process of the SP		
SP failure in identifying the failure before delivery		
The issue in the production line of the SP		
Miscommunication between SP employees		
Issue in billing		
Incorrect number of batches (order)	Customer induced error	
Customer mistake in transferring the products		
Customer failure in clarifying their needs		
Customer failure in providing the correct information to the SP		
Customer disability in clarifying their expectation		
Failure because of customer maintenance approach		
Customers don't know how to use the product		
Customer sometimes makes mistakes		
Role of the pandemic in service failure	Environmental induced failures	
Unexpected events		

Customer collaboration is not always on a same level	Different level of joint recovery	Level of collaboration depends on locus of failure
The among of shared activities depends on the situation		
Relationship between importance and number of involved people	Severity of failure and level of collaboration	level of collaboration depends on severity of failure
Customers need to do most when they cause the issue	Level of collaboration changes if customer causes the failure	Locus of failure on customer side
Customer is main responsible for failure and its resulting		
SP helps the customer in the case of customer-induced error		
Customer requested for help	SP assist the customer induced error resolution	
Limited knowledge of SP upstream activity	Inadequacy of customer knowledge about SP internal process	Locus of failure on SP side
Limited knowledge of SP internal procedures		
SP guarantee for services	Service agreement and extended services	
SP and customer agreement		
Customers need to do most when they cause the issue	Level of collaboration changes if SP causes the failure	
Customer is main responsible for failure and its resulting		
SP helps the customer in the case of customer-induced error		
Collaboration for finding the root cause	SP and customer RI in finding of root cause	Unknown root cause
The customer gives the SP a clue		
Visiting the problem on customer site		
Follow up on the failure resulting by the SP	SP and customer RI in following up the failure	
Collaboration for finding the best solution	SP and customer involvement in finding optimal solution	
Negotiations between SP and customer		
Discussion with the customer to find the best solution		
Close relationship between SP employees for resulting of the issue		

No one responsibility if road blockage caused the delay	Level of collaboration changes with environmental/natural factors	Environmental factors
Both SP and customer should help with resolution		
Collaboration for finding the best solution	SP and customer involvement in finding optimal solution	
Negotiations between SP and customer		
Discussion with the customer to find the best solution		
Close relationship between SP employees for resulting of the issue		
Follow up on the failure resulting by the SP	SP and customer RI in following up the failure	
Customer compassionate for new SP	Customer's compassionate	
Number of SPs that the customer has	Availability of other SP in the business network	
Customer experience with other SPs		
Using Informal relationships to find information about competitor		
Using Informal relationships to find information about competitor	Information about (learn from) competitors in the market	Mutual understanding
Making profile for customer	SP resource investment in recording of customer information	
SP double-checking orders with customers		
How this customer issue was resolved before		
Using Informal relationships to find information about competitor	Information about (learn from) competitors in the market	SP and customer learning
Teach customers how to use the product	SP RI for teaching customer	
Customer learns from SP		
The negative impact of failure on customer service	Customer service/product negatively impacted by failure	Negative impact of failure on service/relationship
Negative impact on customer product		

Failure harm the business relationship	Negative impact of failure on business relationship	Negative impact of failure on service/relationship
Failure might terminate the business relationship		
Customer switched to another SP with frequency of failure		
Grading the customer by a SP	High value customers	Value of the customer
Importance of the customer for the SP		
Complications of relationship with the customer		
The longevity of relationship and collaboration	The longevity of business relationship	Longevity of business relationship between customer and SP

Curriculum vitae

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