emerald PUBLISHING

Journal of Service Manag

Implications of customer participation in outsourcing non-core services to third parties

Journal:	*Journal of Service Management*
Manuscript ID	JOSM-09-2019-0295.R1
Manuscript Type:	Research Paper
Keywords:	Health services, Outsourcing, Service operations, Services Management, Customer-oriented performance measures

Implications of customer participation in outsourcing non-core services to third parties

ABSTRACT

Purpose: Focal service providers increasingly involve customers in the decision-making about outsourcing parts of the service delivery process to third parties. The present study investigates how customers' outsourcing decisions affect the formation of the waiting experience with the focal service provider, by which the objective waiting time, environmental quality and interactional quality act as focal drivers.

Design/methodology/approach: To test our hypotheses in the context of cancer care, we gathered process data and experience data by means of a patient observation template (n=640) and a patient survey (n=487). The combined data (n=377) were analyzed using Bayesian models.

Findings: This study shows that opting for a service triad (i.e., outsourcing non-core services to a third party) deduces customers' attention away from the objective waiting time with the focal service provider but not from the environmental and interactional quality offered by the focal service provider. When the type of service triad coordination is considered, we observe similar effects for a focal service provider-coordinated service triad while in a customer-coordinated service triad the interactional quality is the sole experience driver of waiting experiences that remains significant.

Originality/value: By investigating the implications of customer participation in the decision-making about outsourcing parts of the service delivery process to third parties, this research contributes to the service design, service triad and service operations literature. Specifically, this study shows that customer outsourcing decisions impact waiting experience formation with the focal service provider.

Keywords: Service design, service triad, service operations, waiting experience, healthcare

Implications of customer participation in outsourcing non-core services to third parties

1. INTRODUCTION

Building upon the observation that customers increasingly care about the way in which service providers make use of their time (Chang and Huang, 2016), a recent consumer trend report calls for making services as accessible as possible in a short timeframe (Euromonitor, 2020). In a similar vein, recent research suggests that waiting times (here, objective waiting times) and the way in which these waiting times are perceived (here, waiting experiences) have an important impact on how customers experience the service delivery process (Lemke *et al.*, 2011; Weiss and Tucker, 2018). In this context, service providers increasingly engage in outsourcing non-core services in the service delivery process to third parties (Tax *et al.*, 2013; Wuyts *et al.*, 2015), thereby changing a dyadic service system into a service triad (Perdakiki *et al.*, 2015). Extant research confirms that this type of outsourcing allows the focal service provider – the service provider who decides to outsource part of his services – to not only achieve excellent operations (Kaplan and Anderson, 2003) but also contribute to the formation of better waiting experiences through reduced waiting times (Lee *et al.*, 2012; Wynstra *et al.*, 2015).

To ensure that outsourcing of non-core services to third parties generates the expected benefits for focal service providers and their customers, the service triad literature calls for contractual arrangements and monitoring activities between the focal service provider and the third party (Van der Valk and van Iwaarden, 2011). This line of research, however, merely considers customers as passive consumers, while involving customers as active participants in service design decisions is a key priority for many service providers (Tuunanen *et al.,* 2012). Indeed, a growing number of service providers gives customers some degree of choice over the way in which service delivery processes are arranged, including the involvement of a third party

for non-core services or not (Tax *et al.*, 2013). Several retailers, for instance, allow their online shoppers to decide whether they want to pick-up the items, such as clothes or groceries, in the store (service dyad without third party involvement) or have them delivered at home by a third party to save time (service triad with third party involvement). In a similar vein, chronic care patients can consider a hospital visit as very time-consuming and therefore opt for outpatient care wherever possible (service triad with third party involvement).

As the implications of customers' outsourcing decisions for the formation of their waiting experiences with focal service provider are not well-understood (Sengupta *et al.*, 2018), the first aim of this research is to provide insight into how a customer's decision to involve a third party or not affects the waiting experience formation. If customers opt for a third party and end up in a service triad, customers can adopt different roles in terms of coordination. Customers can choose to involve a third party proposed by the focal service provider (i.e., focal service provider-coordinated service triad) or select a third party of their own choice (i.e., customer-coordinated service triad) (Piccoli *et al.*, 2009). An architect, for instance, may allow customers to choose a contractor with whom the architect has an agreement or a contractor of their own choice. This type of customer participation is challenging for the design of service delivery processes of the focal service provider (Tax *et al.*, 2013). As a consequence, the second aim of this research is to generate a better understanding of the way in which the type of coordination in service triads (here, customer coordination versus coordination by focal service provider) impacts the formation of waiting experiences with the focal service provider.

Building on information overload theory and equity theory, this study investigates the impact for the focal service provider when customers are allowed to participate in making outsourcing decisions in a healthcare context. We use a combination of process data and experience data on two cancer daycare units. Specifically, patient observation data provide insight into the service delivery processes (n=640), while survey data generate a better

understanding of the customer experience with the focal service provider (n=487). Besides this unique set of multi-source data (n=377), this research has important academic and managerial implications for several research streams. First, this research contributes to the outsourcing literature by focusing on outsourcing decisions made by customers. As such, this research unites two key concerns for the design of service delivery systems: customer participation and outsourcing. Second, this research responds to calls for research on performance effects in the context of service delivery system design (e.g., Ponsignon *et al.*, 2011). Specifically, this research focuses on the impact of service dyads versus service triads on the formation of waiting experiences with the focal service provider, which is an important, yet underexposed facet of customer experiences (e.g., Weiss and Tucker, 2018; Carlson *et al.*, 2019). Additionally, this research also provides insight into the way in which waiting experience formation with focal service providers is shaped by the type of coordination in the service triad. As such, this research contributes to a better understanding of customizing and coordinating service triads, which is an under-researched area in the outsourcing literature (Sengupta *et al.*, 2018). From a managerial perspective, this research helps service providers to (re-)design service delivery processes for generating better waiting experiences, which is particularly important to compete and retain customers in case of competing but undifferentiated services (Beltagui *et al.*, 2016).

This paper proceeds as follows. The first section provides a conceptual framework for the waiting experience formation with focal service providers when customers participate in outsourcing decisions. In the next section, we detail the empirical study in the context of cancer care based upon a combination of patient observations and patient survey data, followed by the results of our analyses. We conclude with the discussion, the limitations and future research directions.

2. CONCEPTUAL FRAMEWORK AND HYPOTHESES

2.1. Outsourcing as a time management strategy for better waiting experiences

By outsourcing non-core services to third parties, service providers can optimize service processes in two ways. First, an outsourcing strategy allows service providers to spend more time on core services, thereby resulting in excellent operations (Adioti and Valverde, 2013). Second, an outsourcing strategy may also contribute to reduced waiting times (Lee *et al.*, 2012) and/or better waiting experiences for customers (Wynstra *et al.*, 2015). The aforementioned benefits, however, are not obtained if the third party does not perform well (Allen *et al.*, 2015). To avoid negative repercussion of bad third party performance for the customer experience with the focal service provider, the service triad literature calls for engaging in contractual arrangements and/or monitoring activities (Wynstra *et al.*, 2015; Akkermans *et al.*, 2019). Here, researchers often assume that the focal service provider engages in a principal-agent relationship with the third party, thereby relying on agency theory (Zhang *et al.*, 2015). Recent research, however, suggests that not only focal service providers but also customers can act as principal by deciding upon the involvement of a third party or not (Tax *et al.*, 2013; Bastl et *al.*, 2019).

By allowing customers to decide about the involvement of a third party or not, customers participate in the design of service delivery processes (Rouquet *et al.*, 2017; Bellos and Kavadias, 2019). In recent years, service providers increasingly encourage customers to make decisions about the way in which services are produced and delivered beyond sharing information and providing suggestions to better meet their needs (Tax *et al.,* 2013; Dong and Sivakumar, 2017). Mustak *et al.* (2016) point out that sharing information and providing suggestions is less advanced than participating in decision-making, as this type of customer participation – which often occurs in complex and professional services – is more demanding

in terms of customer input. Previous research suggests that customer input in the form of information, suggestions, and decisions is a source of various positive outcomes for customers and services providers (Bitner *et al.*, 1997; Mustak *et al.,* 2016; Dong and Sivakumar, 2017). A key question, however, is how customers' outsourcing decisions – such as involving a third party or not – affect the formation of waiting experiences with the focal service provider.

2.2. The waiting experience formation when customers participate in outsourcing decisions

With regard to the formation of waiting experiences, researchers discern an objective and a subjective facet (Carlson *et al.*, 2019). The objective facet refers to the actual time spent waiting for the delivery of core services measured by the objective clock time (Durrande-Moreau and Usunier, 1999). The subjective facet – which we conceptualize as the waiting experience – involves customers' perceptions of the objective waiting time, which encompasses not only the average perceived time but also customers' perceptions of the cognitive and affective evaluation of the objective waiting time (Pruyn and Smidts, 1998). In other words, customers' perceptions of the average perceived time along with their evaluations of the objective waiting time constitute the waiting experience. Over the past few years, researchers have repeatedly shown that shorter objective waiting times before the delivery of core services lead to better waiting experiences with the focal service providers, which have a positive impact on their overall experience with the focal service provider (e.g., Van Riel *et al.,* 2012).

The waiting experience of a customer, however, is not only being influenced by objective waiting time, but also by the physical environment (cf. physical elements) and quality of the interactions with frontline employees (cf. social elements). Indeed, the environmental and interactional quality associated with the focal service provider have a significant impact on the waiting experience by acting respectively as 'distractors' or 'fillers' (Maister, 1984). A number of empirical studies have shown that the environmental quality can improve customers'

appraisal of time by distracting customers' attention (e.g., Voorhees *et al.*, 2009). The interactional quality in the service environment, in turn, was found to affect customers' appraisal of wait, in that social interaction fills time (Lim *et al.*, 2015). As the objective waiting time, environmental quality and interactional quality are important drivers of the waiting experience, we argue that shorter objective time, better environmental and interactional quality positively impact the waiting experience, and hence, the overall experience with the focal service provider.

> **Hypothesis 1**: shorter objective waiting times, environmental quality and interactional quality have (a) a direct positive impact on the waiting experience with the focal service provider and (b) an indirect positive impact on the overall experience with the focal service provider.

In what follows, we elaborate on the waiting experience formation with the focal service provider (i.e., the process through which objective waiting time, environmental quality and interactional quality shape the waiting experience) if customers participate in outsourcing decisions. As customers can decide upon (1) the involvement of a third party or not and (2) the type of coordination in the service triad, the next paragraphs elaborate on the impact of these two outsourcing decisions on the waiting experience formation.

2.2.1. Waiting experience formation in service dyads versus triads

When customers decide to involve a third party, the dyadic interaction with the focal service provider turns into a service triad (Perdikaki *et al.*, 2015). A service triad typically involves three types of actors: (1) the focal service provider – also labeled as buyer – who outsources one or more of its services, (2) the third party – also labeled as supplier – who delivers the outsourced service directly to a customer, and (3) the customer who receives the outsourced service (Wynstra *et al.*, 2015). The present research centers on service triads in which the focal

service provider allows customers to outsource non-core services to third parties or not. The key question here is whether the choice of a customer between the involvement of a third party or not, has an impact on the waiting experience formation with the focal service provider. In other words, is the waiting experience formation with the focal service provider different for customers who opt for a service dyad versus customers who adopt a triadic service delivery system?

The main difference between a service dyad and a service triad relates to the number of actors involved in the service delivery system. In a service dyad, customers interact with the focal service provider, whereas in service triads customers interact with the focal service provider and the third party. Both focal service providers and third parties often have a multitude of touchpoints with the customer, which include multiple employees with whom customers can interact (e.g., front desk clerks and core service providers) and/or physical/digital touchpoints (e.g., stores and websites) (De Keyser, 2015). As a consequence, the shift from a service dyad to a service triad goes along with a large increase in the number of touchpoints with customers. Customers, however, are limited in their capacity for processing information (Miller, 1956), which implies that interacting with a large number of touchpoints of different providers may create information overload (Lemon and Verhoef, 2016). Information overload theory suggests that customers may become ignorant about what is happening, since they do not know where to focus on (Miller, 1956). In other words, information overload may impede the process of evaluating services offered by the focal service provider (Lemon and Verhoef, 2016). In this context, customers are less likely to attribute causes and effects to the right factors (Heider, 1958). As such, the impact of the waiting experience drivers (shorter objective waiting time, environmental quality and interactional quality) on the waiting experience will diminish. Based upon the aforementioned arguments, we hypothesize:

Hypothesis 2a: the positive impact of a shorter objective waiting time on the

waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is weakened if the customer opts for a service triad versus a service dyad.

Hypothesis 2b: the positive impact of environmental quality on the waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is weakened if the customer opts for a service triad versus a service dyad.

Hypothesis 2c: the positive impact of interactional quality on the waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is weakened if the customer opts for a service triad versus a service dyad.

2.2.2. Waiting experience formation in service triads with different types of coordination

Although customer participation generates several advantages for customers and firms, a number of studies also suggest that negative feelings and frustrations may emerge among customers (Chan *et al.*, 2010; Dong and Sivakumar, 2017). Stokburger-Sauer *et al.* (2016) explain these negative customer experiences by referring to the amount of work that comes along with customer participation in the service delivery system. Other studies confirm that higher levels of customer participation – such as customer participation in decision-making – are more demanding in terms of customer input (Bowen and Jones, 1986; Mustak *et al.,* 2016).

To reduce its demanding nature while keeping customers engaged in service delivery processes, focal service providers can – as suggested by Tax *et al.* (2013) – allow customers to choose third parties with whom they already have collaborative arrangements. As such, customers do not need to engage in coordinating the services provided by the third party with those of the focal service provider, as these providers are used to align their services (Piccoli *et*

al., 2009; Tax *et al.*, 2013). The opposite holds when customers want to involve third parties with whom the focal service provider does not have collaborative arrangements. In those situations, the coordination of services provided by the third party with those of the focal service provider is in hands of the customer (Piccoli *et al.*, 2009).

If customers adopt a coordinating role in the service triad by aligning services provided by the third party with those of the focal service provider, customers spend a considerable amount of time and effort to the delivery of their services (Bowen and Jones, 1986). In those situations, customers may experience role stress, which can have a negative impact on their experiences with the service providers (Blut *et al.*, 2019). In return for these investments and emotional costs, customers expect high-quality services (Childers *et al.*, 2001). If the focal service provider does not offer high-quality services, customers may conclude that there is an unequal distribution of investment. Indeed, equity theory suggests that customers base their outcome evaluations – such as those about the wait and the overall experience with the service provider – on the extent to which the inputs devoted by the service provider are equivalent to their own input in the service delivery process (Adams, 1963). If customers devote more input to the service delivery process by adopting a coordinating role, customers will pay more attention to the input of the service provider (here, shorter waiting times, environmental quality and interactional quality). The opposite holds for customers who engage in a non-coordinating role. In those situations, the input of the focal service provider is less decisive for the formation of waiting experiences and overall experiences with focal services providers. Based upon the aforementioned arguments, we hypothesize:

Hypothesis 3a: the positive impact of a shorter objective waiting on the waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is stronger if customers opt for a

customer-coordinated service triad versus one coordinated by the focal service provider.

Hypothesis 3b: the positive impact of environmental quality on the waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is strengthened if customers opt for a customer-coordinated service triad versus one coordinated by the focal service provider.

Hypothesis 3c: the positive impact of interactional quality on the waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is strengthened if customers opt for a customer-coordinated service triad versus one coordinated by the focal service provider.

3. METHODOLOGY

3.1. Research setting and data collection

The number of cancer patients continues to grow globally, thereby exerting a burden on not only individuals, families and communities but also the health system (WHO, 2020). In this context, highly specialized healthcare providers – such as cancer daycare units – increasingly outsource non-core services to achieve operational excellence while meeting patient expectations for service timeliness (Billi *et al.*, 2004). Meanwhile, a growing number of cancer patients expects to be involved in the decision-making about the way in cancer treatments are delivered (Gattellari *et al.*, 2001), as a result of which patients may also participate in outsourcing decisions. The present study centers on two cancer daycare units (CDUs) associated with one of the largest hospitals in Belgium who decided to allow their patients to participate in outsourcing decisions. More particularly, this study centers on patients undergoing cancer treatment in one of the two CDUs and explores how their outsourcing

decisions affect the formation of the waiting experience with the focal service provider (here, the CDU) during a cancer treatment session.

To gain more insight into the way in which patients in the CDUs can participate in outsourcing decisions, a document analysis focusing on formal process descriptions, planning tools, and documentation from a former (re-)design project in the CDU was performed. Next, six semi-structured interviews were carried. The document analysis and semi-structured interviews revealed that patients often have multiple treatment sessions after being diagnosed with cancer. Before the start of a series of cancer treatment sessions, the CDU invites the customer to decide upon the way in which the service is delivered. In each cancer treatment session, the core service (here, chemotherapy) is delivered by the CDU, but patients can decide whether non-core services (here, blood sampling, physician consult and test of the patient's condition) should be offered by the CDU or third parties (here, general practitioners, polyclinics and other healthcare professionals). Thus, patients are allowed to involve a third party (i.e., a service triad) or not (i.e., a service dyad). If third parties are involved, the delivery of non-core services always occurs before the CDU delivers its service. In addition, patients choosing to involve a third party can opt for a third party proposed by the CDU or a third party with whom the CDU does not have collaborative arrangements. In the former case, the CDU ensures alignment between the services offered by the third party and their own services (i.e., focal service provider-coordinated service triad). In the latter case, customers coordinate the alignment of services from the CDU and the third party (i.e., customer-coordinated service triad).

Data were gathered by means of a patient observation template combined with patient survey data. To ensure that the patient observation templates and surveys were filled out correctly, two researchers were present in each department during the data collection to provide information, answer any questions, and check the patient observation templates (see "Patient

observations" and "Patient survey" for more information). Approval from an ethical committee was obtained for the data collection procedure and all patients gave their informed consent before filling out the questionnaire. In total, 780 patient observation templates and patient surveys were distributed at the CDUs, whereof 640 usable patient observation templates (82.1% response rate) and 487 usable questionnaires were returned (62.4% response rate). After linking the questionnaires to the patient observations, we obtained a sample of 377 cancer patients.

3.2. Patient observations

Patient observations were used to capture customer choices in terms of third party involvement (i.e., service dyad versus service triad) and – if applicable – the type of service triad coordination (i.e., focal service provider-coordinated service triad versus customer-coordinated service triad). If customers decided to involve third parties, the number of non-core services delivered by the third party and the type of third party were also documented (see Table 1 for an overview of the way in which these data were coded and/or calculated). The templates were filled out by nurses at the CDU for each individual patient. The nurses registered all services related to the delivery of chemotherapy at the CDU along with those provided by other service providing entities if a third party was involved.

Based upon time stamps associated with the delivery of the different services provided by the CDU in the patient observation template (e.g., patient registration, blood sampling, chemotherapy), we were able to capture the objective waiting time for that specific treatment session from the moment the patient entered the CDU until he/she received his/her core service (i.e., the chemotherapy) in minutes. As the distribution of objective waiting time is skewed, a log transformation was performed. In line with Hypothesis 1, objective waiting time was reversed (1/objective waiting time) so that a higher score reflects a shorter objective waiting time.

Time stamps associated with the delivery of services also provided insight into the number of services delivered by the CDU. As more services can deduce the attention away from the objective waiting time at the CDU by acting as fillers for patient (Maister, 1984), the number of services was included as a control variable. Additionally, we controlled for the CDU in which the patient was treated. Next, the presence of fellow customers was taken into consideration, because fellow customers may have an impact on the patient experience that is not under control of the focal service provider (Verleye *et al.*, 2014). Finally, the treatment response – whether or not negative side effects occurred during treatment – was considered, in that this may affect the patient experience (Clucas, 2016).

Insert Table 1 about here

3.3. Patient survey

To capture the waiting experience (i.e. the subjective facet), the environmental quality, the interactional quality, and the overall experience in relation to the CDU for a specific treatment session, patients received a printed survey with instructions and an informed consent form from one of the researchers when they arrived at the CDU for a cancer treatment session. Specifically, respondents were asked to fill out the questionnaire when the core service was delivered (here, chemotherapy), because the chemotherapy is the end point of the treatment session at the CDU. After filling out the survey, patients handed in the informed consent form and the survey in a separate recipient. The waiting experience, the environmental quality, and the interactional quality were measured by previously validated scales scored on seven-point scales ranging from "strongly disagree" to "strongly agree". With regard to the waiting experience, we included three items from Hui and Tse (1996), which captured the cognitive facet of the wait (i.e., the perceived length and unacceptability of the wait) and the affective facet of the wait (i.e., the irritation associated with the wait based on the interpretation process). The scores on these items

were reversed to capture the waiting experience in which higher scores reflect better waiting experiences. The environmental quality was measured by a three-item scale of Dagger *et al.* (2007). To capture the interactional quality, we used – in line with Dagger *et al.* (2007) – a nine-item scale for interactional quality. The evaluation of the overall experience with the focal service provider (i.e., the CDU) is captured by the four-item overall experience scale (Verleye, 2015). Finally, we also controlled for age and employment situation in the patient survey, in that these variables influence the overall experience of cancer patients (Clucas, 2016).

After manually entering the survey data into digital database by one of the researchers, we conducted – as recommended by Netemeyer *et al*. (2003) – an exploratory factor analysis and an initial item and reliability analysis in SPSS to identify items with cross-loadings and items that were poorly correlated with the remaining items in each scale. No poorly correlating items were identified. A principal axis factoring (oblique rotation) extracted four factors with eigenvalues greater than one. Additionally, a Harmon's single-factor test using exploratory factor analysis was conducted to check whether a single factor emerged or one general factor accounted for the majority of the covariance among the measures. The first factor accounted for 30.4% of the variance and all factors together explained 74.6% of the variance. Consequently, none of these factors accounted thus for the majority of the covariance among the items, as a result of which common method bias was not a serious threat to our analyses.

Finally, the validity of the constructs was assessed using confirmatory factor analysis (CFA; LISREL 8.50). The measurement model for the sample performed well. Firstly, the ratios of chi-square to degrees of freedom, $\chi^2(553.07)/df(199)=2.78$ for the sample, are less than three (Bagozzi and Yi, 1988). Secondly, the comparative fit index (CFI), 0.96, and Tucker-Lewis index (TLI), 0.96, were all above common benchmarks of 0.90. Finally, the root mean square error of approximation (RMSEA) was 0.07, which represents an acceptable fit (Netemeyer *et al.*, 2003). Table 2 shows the individual items and item loadings. The sample showed

convergent validity, since almost all construct reliabilities (CR) were greater than 0.60, which is considered a desirable construct reliability (Bagozzi and Yi, 1988) and all average variances extracted (AVE) exceeded 0.50 (see Table 3). In the meanwhile, there is evidence for discriminant validity (see Table 2), since the square root of the AVE for all constructs exceeded the factor correlations. Since the measurement model performed well, we used mean scores for the environmental quality, the interactional quality, the waiting experience, and the overall experience in relation to the CDU for further analyses.

Insert Table 2 and 3 about here

3.4. Data analysis procedure

A Bayesian model (Mplus) is used in which all dependent variables are simultaneously modeled and correlated errors between dependent variables are accounted for (Keiningham *et al.*, 2018). To check for multicollinearity, we ran ordinary least square (OLS) regressions to generate variance inflation factors (VIF). All VIF values were below the suggested cutoff of 5 (Hair *et al.*, 2010). Next, we controlled for data selection bias analyzing customer heterogeneity by means of six variables: age, employment situation, CDU, services offered by the CDU, fellow customer, and treatment response. Two ad-hoc analyses revealed that the customer's third party choices can be explained by these six control variables. Specifically, a binary logistic regression model with a service dyad and a service triad as dependent variable and the six aforementioned control variables as independent variables revealed a 80.4% prediction accuracy (Nagelkerke R^2=59%). Consequently, the customer's third party choices can be considered to have random differences since case selection bias is not a confounding factor in our analysis (Ho *et al.*, 2017). To examine whether the results of model are affected by endogeneity problems, we additionally estimated a multilevel model in which all observations are nested within different processes. Thirty-seven processes occur in terms of the number and type of non-core services and the

proportion of non-core services provided by third parties. These processes were allowed to have specific intercepts that may deviate from the population-averaged findings (i.e., random intercepts), thereby accounting for unobserved heterogeneity and lowering potential endogeneity problems that are typically caused by omitted variables (Germann *et al.*, 2015). A comparison of the parameter estimates obtained from the multilevel model and the baseline model revealed that both the magnitude and the significance levels of the parameter estimates are similar.

4. RESULTS

The objective waiting time – displayed in minutes – varied a lot among cancer patients (mean=94.16; SD=68.17). The maximum objective waiting time is 375 minutes, but patient observations also revealed a situation without any objective waiting time (i.e., a patient who received his/her treatment upon arrival at the CDU). At the CDU, minimum two and maximum six services can be delivered while maximum three of these can be delivered by a third party. On average, the large majority of patients was engaged in three to four services at the CDU (84.4%) and few patients had a chance to engage with fellow customers at the CDU (17.2%). More than half of the patients were still employed (53.3%) and the distribution of cancer patients across different age groups corresponds with the distribution in the population (i.e., 18 cancer patients younger than 25, 169 between 25 and 65, and 189 older than 65) (WHO, 2020). Interestingly, one third of the patients chose a third party to deliver non-core services (33.4%). Of these patients, only one fourth opted for a customer-coordinated service triad (n=33–26.8%).

To assess the impact of objective waiting time, environmental quality and interactional quality on the waiting experience and its subsequent impact on the overall experience, we used a mediation approach with Bayesian estimation (Yuan and MacKinnon, 2009) for two reasons. First, the Bayesian approach does not impose restrictive normality assumptions on sampling distributions of estimates, thereby making statistical inferences straightforward and exact (Yuan

and MacKinnon, 2009). Second, Bayesian estimation is particularly valid in smaller samples (Hox *et al.*, 2010). In line with Gelman and Rubin (1992), we ran three independent MCMC chains with different starting points and 10,000 iterations each, by which the first half is considered as the "burn-in" phase and the remaining half is used to estimate the posterior distribution for the parameters. To assess the convergence of the MCMC algorithm, we inspected the Gelman-Rubin convergence statistic R, autocorrelation plots, and trace plots of the residual variance for the parameter estimates. As suggested by Yuan and MacKinnon (2009), the following two equations were jointly estimated using path modeling:

$$WX_{im}=X_i\,a_m+C_i\,j_m+e_{im} \quad (1)$$

$$OX_{im}=X_i\,g_m+C_i\,h_m+WX_i\,b_m+q_{im} \quad (2)$$

in which e_{im} and q_{im} are the error terms with intercorrelation r and WX_{im} *and* OX_{im} denote respectively the waiting experience and the overall experience for individual i. In total, three models (m) are run: the first model ($m=1$; Model 1 hereafter) represents a baseline model that disregards the choice of the involvement of a third party or not, whereas the remaining models provide insights into the parameter estimates for a service dyad ($m=2$, Model 2 hereafter) or a service triad ($m=3$, Model 3 hereafter). X_i is a vector of the key antecedent constructs and includes objective waiting time, environmental quality and interactional quality. C_i is a vector of the control variables. As mentioned before, in this study, we control for age, employment situation, treatment response, CDU, number of services delivered by the CDU, and presence of a fellow customer. a_m represent the parameter estimates for the impact of the three antecedent constructs (i.e., objective waiting time, environmental quality and interactional quality) on the waiting experience, b_m represents the parameter estimate for the impact of the waiting experience on the overall experience. The indirect effect of the antecedent constructs on overall experience through waiting experience is obtained by multiplying the a_m and b_m. Table 4 reports the standardized parameter estimates for Model 1, 2 and 3. To contrast the waiting experience

formation and its impact on the overall experience for a focal service provider-coordinated service triad versus a customer-coordinated service triad, we reran the aforementioned Bayesian mediation model for each type of service triad (Model 3a and 3b). Table 4 also reports the standardized parameter estimates for Model 3a and 3b. In what follows, we first discuss the parameter estimates in Model 1 and subsequently in Model 2 and 3. Thereafter, we elaborate on the results for Model 3a and 3b.

Insert Table 4 about here

4.1. Model 1: the waiting experience formation with the focal service provider

Model 1 serves as baseline model (see Figure 1), which provides insight into the waiting experience formation and its impact on the overall experience with the focal service provider without taking the choice of a third party into consideration. As shown in Table 4, a shorter objective waiting time was found to exert a positive impact on the waiting experience with the focal service provider (a=.16), which was on its turn found to enhance the overall experience (b=.22). The indirect effect of objective waiting time on the overall experience with the waiting experience acting as a mediator was qualified by a significant mediation effect (axb=.03). With regard to environmental and interactional quality, our results show that both drivers also have a significant direct effect on the waiting experience (a=.15 and a=.24 respectively) and an indirect effect on the overall experience with waiting experience as a mediator (axb=.03 and axb=.05). In sum, the baseline model (Model 1) shows that all drivers had a direct positive effect on the waiting experience and an indirect positive effect on the overall experience with the focal service provider, thereby providing support for Hypothesis 1. Interestingly, none of the control variables was found to exert a significant influence on either the waiting experience or the overall experience with the focal service provider (see Table 4).

Insert Figure 1 about here

4.2. Model 2 and 3: the waiting experience formation in a service dyad versus triad

To gain insight into the impact of the choice between a service dyad and a service triad on the waiting experience formation with the focal service provider and its subsequent impact on the overall experience with the focal service provider, we compare the parameter estimates for the service delivery process wherein only the focal service provider delivers service (i.e., a service dyad) (Model 2) with a service delivery process wherein a third party is involved (i.e., a service triad) (Model 3). Moreover, we performed additional significance tests to compare the magnitude of slopes of the obtained parameter estimates between both models (Clogg *et al.*, 1995). The same method was used for the choice between a focal service provider-coordinated service triad and a customer-coordinated service triad (see Model 3a and 3b in next paragraph).

In what follows, we discuss the impact of objective waiting time (Hypothesis 2a), environmental quality (Hypothesis 2b) and interactional quality (Hypotheses 2c) on the waiting experience formation with the focal service provider and its impact on the overall experience, thereby taking the customer's choice between a service dyad and triad into consideration.

With regard to objective waiting time, the results reported in Table 4 demonstrate that the objective waiting time has a significant direct impact on the waiting experience (a=.23) when the focal service provider is the only provider (Model 2), in addition its indirect impact on the overall experience with waiting experience as mediator is significant (axb=.04). In case a third party is chosen (Model 3), the direct effect of objective waiting time on the waiting experience (a=-.03, n.s.) and its indirect impact on the overall experience (axb=-.01, n.s.) are not significant. If the parameter estimates are compared, we conclude that the direct impact of objective waiting time on the waiting experience and its indirect effect on the overall experience are weakened if a service triad is chosen (see Figure 1). Hence, Hypothesis 2a is supported.

With respect to environmental quality, Table 4 and Figure 1 demonstrate that the impact of environmental quality on waiting experience is dependent on the choice between a service dyad and a service triad. When the focal service provider is chosen as single provider (Model 2), environmental quality does not have a significant direct impact on the waiting experience (a=.12, n.s.) and the same goes for its indirect impact on the overall experience (axb=.02, n.s.). When patients opt for a service triad (Model 3), environmental quality has a significant direct impact on the waiting experience (a=.22) and a significant indirect impact on the overall experience (axb=.09). As a result, the direct effect of environmental quality on the waiting experience and its indirect effect on the overall experience are stronger when a third party is involved (Model 3) than if not (Model 2). Hence, Hypothesis 2b is rejected (opposite effect).

Regarding interactional quality, Table 4 and Figure 1 show a significant direct effect on waiting experience (a=.20) when the service is delivered in a dyad (Model 2) and the same goes for the impact of interactional quality on the waiting experience (a=.29) when services are delivered in a service triad (Model 3). To assess whether the impact of interactional quality on the waiting experience is statistically different between Model 2 and Model 3, we calculate the Z-statistic to test if the coefficients of these two groups are significantly different from each other (Clogg *et al.*, 1995), resulting in a p-value of .18. Hence, we observe that the direct effect of interactional quality on waiting experiences is not significantly different in Model 2 and 3. Significant differences exist for the indirect effect of interactional quality on the overall experience through waiting experience, but these indirect effects are statistically different (p value of .02; Clogg *et al.*, 1995) and stronger instead of weaker when customers opt for a service triad (axb=.12 in Model 3) as opposed to a service dyad (axb=.03 in Model 2). As a consequence, Hypothesis 2c is rejected.

Important to note is that the impact of the waiting experience on overall experience is statistically different and – as also shown in Figure 1 – substantially stronger for service

processes in which a third party is involved (Model 3; b=.42) compared with a dyadic service wherein the service is delivered by only the focal service provider (Model 2; b=.16). When comparing these parameters, the resultant p-value (<.01) provides evidence that both parameter estimates are significantly different (Clogg *et al.*, 1995). Hence, the indirect effect of environmental and interactional quality on overall experience with waiting experience as a mediator is much stronger in Model 3 than in Model 2.

4.3. Model 3a and Model 3b: contrasting a focal service provider-coordinated service triad versus a customer-coordinated service triad

A comparison of focal service provider-coordinated service triads (Model 3a) and customer-coordinated service triads (Model 3b) reveals that the objective waiting time does not have a significant direct impact on the waiting experience in both models (respectively a=-.03,n.s. and a=-.05, n.s.). Obviously, the same goes for its indirect impact on the overall experience (respectively axb=-.01, n.s. and axb=-.01, n.s.). As a consequence, Hypothesis 3a is rejected.

With regard to environmental quality, the direct effect on the waiting experience (a=.26) and the indirect effect on the overall experience (axb=.12) are significant in case of a focal service provider-coordinated service triad (Model 3a). In case of a customer-coordinated service triad (Model 3b), the direct and indirect effect of environmental quality on respectively waiting experience (a=.07, n.s.) and overall experience (axb=.01, n.s.) are not significant. In other words, the direct and indirect experience implications of environmental quality are stronger in Model 3a than in Model 3b, thereby rejecting Hypothesis 3b (opposite effect).

In case of a focal service provider-coordinated service triad (Model 3a), interactional quality has a significant direct impact on the waiting experience (a=.26) and its indirect impact on the overall experience via improved waiting experiences is also significant (axb=.12). In case of a customer-coordinated service triad (Model 3b), however, there is still a significant direct impact on the waiting experience (a=.37) but the indirect impact on the overall experience

with waiting experience as a mediator is no longer significant (axb=.04, n.s.). When comparing the direct effects of interactional quality on the waiting experience in Model 3a and 3b (Clogg *et al.*, 1995), we find evidence that both parameters are not statistically different from each other (p-value of .26). Because of similar direct effects of interactional quality on the waiting experience in Model 3a and 3b and the absence of a significant indirect effect on the overall experience in Model 3b, we also reject Hypothesis 3c.

5. GENERAL DISCUSSION

The present research demonstrates that a customer's decision to include a third party or not impacts the formation of waiting experiences and subsequently overall experiences with the focal service provider. Specifically, the present research demonstrates that the direct impact of the objective waiting time on the waiting experience with the focal service provider completely disappears when a customer opts for a service triad instead of service dyad (i.e., Model 3 versus Model 2). Moreover, the same goes for the indirect impact of objective waiting times on the overall experience with focal service providers. As such, this evidence shows that third parties can deduce customers' attention away from the time spent on waiting for the focal provider to deliver its core service (i.e., the objective waiting time), thereby providing support for information overload theory (Miller, 1956).

Meanwhile, information overload theory does not explain how third party involvement affects the impact of interactional quality and environmental quality on the waiting experience. Indeed, this research shows that the positive impact of interactional quality on the waiting experience is not significantly different in service dyads and triads (i.e., Model 2 versus Model 3). This evidence suggests that interactional quality acts – in line with the psychology of waiting (Maister, 1984; Voorhees *et al.*, 2009; Lim *et al.*, 2015) – as a filler and/or distractor that improves the waiting experience, regardless of the involvement of third parties. This might be explained by the context of cancer care wherein customers often have to carry a heavy

emotional burden which increases the need for friendly and empathic interactions. Third party involvement, however, does affect the extent to which environmental quality acts as a filler and/or distractor for the waiting experience, as environmental quality has a stronger impact on the waiting experience in service triads than in service dyads (i.e., Model 3 versus Model 2). Here, it seems that multiple touchpoints increase the attention for environmental quality instead of reducing it, which is in contradiction with the theory of information overload (Miller, 1956). To better understand the effect of environmental quality, it is therefore important to take the role of the customer in a service triad into account.

Overall, the results suggest that the waiting experience is more important for the overall experience with the focal service provider in a service triad than in a service dyad. These results, however, need to be nuanced when taking the type of coordination into consideration. If customers opt for a focal service provider-coordinated service triad, the waiting experience plays a very important role in shaping the overall experience with the focal service provider while this is not the case for the customer-coordinated service triad. If customers act as coordinators, the impact of the waiting experience on the overall experience with the focal service provider disappears. One potential explanation is that customers who adopt a coordinating role have a higher share in the wait, which makes them less sensible for the waiting experience when reflecting upon their overall experience with a focal service provider. Indeed, due to experienced role stress associated with the coordination of the service triad (Blut *et al.*, 2019), customers want to have a return for their investments by receiving excellent services of the focal service provider for the experience drivers that are not under their control. In our study, this can be the direct effect of interactional and/or environmental quality on the overall experience.

Taken together, these results show that service triads are not only dynamic in who makes decisions and coordinates services but also in the formation of waiting experiences and overall

experiences with a focal service provider. Indeed, while customers' choice for a third party (i.e., a service triad) deduces their attention away from the objective waiting time while enhancing the impact of environmental and interactional quality as indirect overall experience drivers. If customers adopt a coordination role in the service triad, however, these experience drivers have less impact on their overall experience than when customers opt for service triads coordinated by the focal service provider.

5.1. Theoretical implications

This study contributes to the growing literature on service triads (Wynstra *et al.*, 2015), which often conceptualizes the focal service provider as the principal who coordinates the third party in the service triad (Van der Valk and van Iwaarden, 2011; Zhang *et al.*, 2015). In line with recent calls for more research about the role of the customer in service triads (Sengupta *et al.,* 2018; Bastl *et al.,* 2019), the present research explores the service triad in situations wherein customers are allowed to participate in decision-making about outsourcing of non-core services to third parties. This type of customer participation was found to have implications for the experience formation with the focal service provider. As such, our research extends the work on customer participation in service delivery processes, which merely focused on customers who participate in serving themselves rather than deciding about outsourcing services to third parties (Bleier *et al.,* 2018).

If customers opt for outsourcing non-core services to a third party, the service triad literature contends that they act as principals in the service triad. The present research builds upon this literature by arguing that the role of the principal can even be strengthened when allowing customers to participate in coordinating the services provided by third parties with those of the focal service provider (cf. Model 3b). In contrast, customers may shift from a principal to a passive consumer by opting for a focal service provider-coordinated service triad (cf. Model 3a). The aforementioned evidence suggests that customers' roles in service triads

may change over time, depending on their outsourcing decisions (here, third party or not and – if opting for a third party - customer-coordinated or not). As such, this research contributes to a better understanding of the dynamic role of customers in service triads (Bastl *et al.*, 2019) and its implications for the formation of waiting experiences and overall experiences with the focal service provider.

By focusing on the implications of customer participation in outsourcing decisions for the formation of waiting experiences and overall experiences with the focal service provider, this research also provides insight into the performance implications of service design decisions (e.g., Ponsignon *et al.*, 2011). Indeed, the allowance of customer participation in decision-making about outsourcing of non-core services – which is a service design decision – may have important implications for the formation of waiting experiences and overall experiences with the focal service provider. For instance, the allowance of customer participation in outsourcing decisions may – in line with information overload theory (Miller, 1956) – deduce customers' attention away from the objective waiting time. Additionally, the extent to which customers engage in the coordination of outsourced services also affects the formation of waiting experiences and overall experiences with the focal service provider by increasingly deducing the attention away from the waiting experience and most of its drivers.

5.2. Managerial implications

The present research calls for careful reflection on allowing customers to participate in the decision-making about outsourcing parts of the service delivery process to third parties, as customers' outsourcing decisions may affect the formation of waiting experiences and overall experiences with the focal service provider.

First, when a customer opts for outsourcing non-core services to a third party provider, they are less sensitive for the time spent on waiting for the services offered by the focal service provider. As such, actions directed towards reducing the length of a wait – such as queue

management based on principles of queuing theory and simulation (Weiss and Tucker, 2018) – are less effective when a lot of customers choose to outsource non-core services to a third party.

If more customers decided to involve a third party in the delivery of non-core services, there are also implications for investments in environmental quality (e.g., renovations and refurbishments). The research findings namely suggest that investments in better environmental quality may yield better returns on investment if more customers opt for involving a third party. Indeed, customers who involve a third party care more about the environmental quality during the formation of waiting and overall experiences with the focal service provider.

Investments in interactional quality – such as social skills training for frontline employees – always pay off, as customers' outsourcing decisions do not influence the positive impact of better interactional quality on the waiting experience with the focal service provider and the same goes for its indirect impact on the overall experience with the focal service provider (except for customer-coordinated service triads where the interactional quality does not affect the overall experience anymore).

Taken together, practitioners should either align their investments with the most prominent experience drivers with the outsourcing choices of their customers or restrict the number of outsourcing options provided to customers.

5.3. Limitations and future research directions

As this study focuses on customer participation in outsourcing decisions in a specific context, this research has some limitations. First, this research centers on outsourcing decisions among patients undergoing cancer treatment. As this type of services is characterized by a heavy emotional charge and customers who are potentially more vulnerable than those involved in other types of services (e.g., Bendapudi and Leone, 2003), future research might address other types of services to increase the generalizability of this research. Meanwhile, cancer care is not unique in its outsourcing decisions, as several service providers – such as retailers and tour

operators – allow customers to decide upon outsourcing non-core services to third parties (Tax *et al.,* 2013) and their motives correspond with those of highly specialized healthcare providers such as CDUs (Billi *et al.*, 2004).

Additionally, future research might benefit from further investigating customers' motives for participating in outsourcing decisions, as these motives may depend upon the individual and situational context. Likewise, the coordinating role of customers in relation to the focal service provider and/or third parties also deserves further investigation. Specifically, future research can investigate customers' motives to adopt this role and its impact on the formation of waiting experiences and overall experiences with the focal provider.

As the focal service provider in our study offered its (non-)core services after the delivery of non-core services by third parties, future research could investigate the formation of waiting experiences and overall experiences with the focal service provider when customers get third party services after the focal provider delivered its services.

Finally, this study focused on the implications of customer participation in outsourcing decisions for waiting experience and the overall experience with the focal service provider. Hence, future research can investigate how this type of customer participation affects customer well-being. From a third party perspective, future research can investigate how customers experience their services along with the conditions under which third parties can strengthen their relationship with customers.

REFERENCES

Adams, J.S. (1963), "Toward an understanding of inequity", *Journal of Abnormal and Social Psychology*, Vol. 67 No. 5, pp. 422-436.

Adioti, A.A. and Valverde, R. (2013), "Time-driven activity based costing for the improvement of IT service operations", *International Journal of Business and Management*, Vol. 9 No. 1, pp. 109-128.

Akkermans, H., Van Oppen, W., Wynstra, F. and Voss, C. (2019), "Contracting outsourced services with collaborative key performance indicators", *Journal of Operations Management*, Vol. 65 No. 1, pp. 22-47.

Allen, A.M., Brady, M.K., Robinson, S.G. and Voorhees, C.M. (2015), "One firm's loss is another's gain: capitalizing on other firms' service failures", *Journal of the Academy of Marketing Science*, Vol. 43 No. 5, pp. 648-662.

Bagozzi, P. and Yi, Y. (1988), "On the evaluation of structural equation models", *Journal of the Academy of Marketing Sience*, Vol. 16 No. 1, pp. 74-94.

Bastl, M., Johnson, M. and Finne, M. (2019), "A Mid-Range Theory of Control and Coordination in Service Triads", *Journal of Supply Chain Management*, Vol. 55 No. 1, pp. 21-47.

Bellos, I. and Kavadias, S. (2019), "When Should Customers Control Service Delivery? Implications for Service Design", *Production and Operations Management*, Vol. 28 No. 4, pp. 890-907.

Beltagui, A., Candi, M. and Riedel, J.C. (2016), "Setting the stage for service experience: design strategies for functional services", *Journal of Service Management*, Vol. 27 No. 5, pp. 751-772.

Bendapudi, N. and Leone, R.P. (2003), "Psychological implications of customer participation in co-production", *Journal of Marketing*, Vol. 67 No. 1, pp. 14-28.

Billi, J. E., Pai, C. W. and Spahlinger, D. A. (2004), "Strategic outsourcing of clinical services: a model for volume-stressed academic medical centers", *Health Care Management Review*, Vol. 29 No. 4, pp. 291-297.

Bitner, J.M., Faranda, W., Hubbert, A. and Zeithaml, V. (1997), "Customer contributions and roles in service delivery", *International Journal of Service Industry Management,* Vol. 8 No. 3, pp. 193-205.

Bleier, A., De Keyser, A. and Verleye, K. (2018), "Customer Engagement Through Personalization and Customization", in Palmatier R., Kumar, V. and Harmeling, C. (Eds), *Customer Engagement Marketing*, Palgrave Macmillan, New York, NY, pp. 75-94.

Blut, M., Heirati, N., and Schoefer, K. (2019), "The Dark Side of Customer Participation: When Customer Participation in Service Co-Development Leads to Role Stress", *Journal of Service Research*, forthcoming.

Bowen, D.E. and Jones, G.R. (1986), "Transaction cost analysis of service organization-customer exchange", *Academy of Management Review*, Vol. 11 No. 2, pp. 428-441.

Carlson, J.R., Ross, W.T., Coulter, R.A. and Marquardt, A.J., (2019), "About time in marketing: an assessment of the study of time and conceptual framework", *AMS Review*, Vol. 9 No. 3, pp.136-154.

Chan, K.W., Yim, C.K. and Lam, S.S. (2010), "Is customer participation in value creation a double-edged sword? Evidence from professional financial services across cultures", *Journal of Marketing*, Vol. 74 No. 3, pp. 48-64.

Chang, W.-L. and Huang, L.-Y. (2016), "Measuring service experience: a utility-based heuristic model", *Service Business*, Vol. 10 No.1, pp. 1-30.

Childers, T.L., Carr, C.L., Peck, J. and Carson, S. (2001), "Hedonic and utilitarian motivations for online retail shopping behavior", *Journal of Retailing*, Vol. 77 No. 4, pp. 511-535.

Clogg, C.C., Petkova, E. and Haritou, A. (1995), "Statistical Methods for Comparing Regression Coefficients Between Models," *American Journal of Sociology*, Vol. 100 No 5., pp 1261–1293.

Clucas, C. (2016), "Cancer patients' respect experiences in relation to perceived communication behaviours from hospital staff: analysis of the 2012–2013 National

Cancer Patient Experience Survey", *Supportive Care in Cancer*, Vol. 24 No. 4, pp. 1719-1728.

Dagger, T.S., Sweeney, J.C. and Johnson, L.W. (2007), "A hierarchical model of health service quality: scale development and investigation of an integrated model", *Journal of Service Research*, Vol. 10 No. 2, pp. 123-142.

De Keyser, A. (2015), *Understanding and managing the customer experience*, Doctoral dissertation, Ghent University.

Dong, B. and Sivakumar, K. (2017), "Customer participation in services: domain, scope, and boundaries", *Journal of the Academy of Marketing Science*, Vol. 45 No. 6, pp. 944-965.

Durrande-Moreau, A. and Usunier, J.C. (1999), "Time styles and the waiting experience: an exploratory study", *Journal of Service Research*, Vol. 2 No. 2, pp. 173-186.

Euromonitor (2020), "Top 10 Global Consumer Trends 2020", available at: https://blog.euromonitor.com/ (accessed 22 January 2020).

Gattellari, M., Butow, P. N. and Tattersall, M. H. (2001), "Sharing decisions in cancer care", *Social Science & Medicine*, Vol. 52 No.12, pp. 1865-1878.

Gelman, A. and Rubin, D.B. (1992), "Inference from iterative simulation using multiple sequences", *Statistical Science*, Vol.7 No. 4, pp. 457-472.

Germann, F., Ebbes, P. and Grewal, R. (2015), "The Chief Marketing Officer Matters!", *Journal of Marketing*, Vol. 79 No. 3, pp.1-22.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010), *Multivariate Data Analysis: A Global Perspective*, Pearson Education Inc, New Jersey.

Heider, F. (1958), *The psychology of interpersonal relations*, Wiley, New York, NY.

Ho, T.H., Lim, N., Reza, S. and Xia, X. (2017), "OM forum—Causal inference models in operations management", *Manufacturing & Service Operations Management*, Vol. 19 No. 4, pp. 509-525.

Hox, J.J., Moerbeek, M. and van de Schoot, R. (2010), *Multilevel analysis: Techniques and applications*, Routledge, New York, NY.

Hui, M.K. and Tse, D.K. (1996), "What to tell consumers in waits of different lengths: An integrative model of service evaluation", *Journal of Marketing*, Vol. 60 No. 2, pp. 81-90.

Keiningham, T.L., Rust, R.T., Lariviere, B., Aksoy, L. and Williams, L. (2018), "A roadmap for driving customer word-of-mouth", *Journal of Service Management*, Vol. 29 No. 1, pp. 2-38.

Kaplan, R.S. and Anderson, S.R. (2004), "Time-driven activity-based costing", *Harvard Business Review*, Vol. 82 No. 6, pp. 131-138.

Lee, H.H., Pinker, E.J. and Shumsky, R.A. (2012), "Outsourcing a two-level service process", *Management Science*, Vol. 58 No. 8, pp. 1569-1584.

Lemke, F., Clark M. and Wilson H. (2011), "Customer experience quality: an exploration in business and consumer contexts using repertory grid technique," *Journal of the Academy of Marketing Science*, Vol. 39 No. 6, pp. 846-869.

Lemon, K.N. and Verhoef, P.C. (2016), "Understanding customer experience throughout the customer journey", *Journal of Marketing*, Vol. 80 No. 6, pp. 69-96.

Lim, E.A.C., Kum, D. and Lee, Y.H. (2015), "Understanding how changes within service experiences impact prospective vs. retrospective time judgments", *Journal of the Academy of Marketing Science*, Vol. 43 No. 6, pp. 730-745.

Maister, D.H. (1984), *The Psychology of Waiting Lines*, Harvard Business School, Boston.

Miller, G.A. (1956), "The magical number seven, plus or minus two: Some limits on our capacity for processing information", *Psychological Review*, Vol. 63 No. 2, pp. 81-97.

Mustak, M., Jaakkola, E., Halinen, A. and Kaartemo, V. (2016), "Customer participation management: Developing a comprehensive framework and a research agenda", *Journal of Service Management,* Vol. 27 No. 3, pp. 250-275.

Netemeyer, R.G., Bearden, W.O. and Sharma, S. (2003), *Scaling procedures: Issues and applications*, Sage Publications, Thousand Oaks, CA.

Perdikaki, O., Peng, D.X. and Heim, G.R. (2015), "Impact of customer traffic and service process outsourcing levels on e-retailer operational performance", *Production and Operations Management*, Vol. 24 No. 11, pp. 1794-1811.

Piccoli, G., Brohman, M. K., Watson, R. T. and Parasuraman, A. (2009), "Process completeness: Strategies for aligning service systems with customers' service needs", *Business Horizons*, Vol. 52 No. 11, pp. 367-376.

Ponsignon, F., Smart, P.A. and Maull, R.S. (2011), "Service delivery system design: characteristics and contingencies", *International Journal of Operations & Production* Management, Vol. 31 No. 3, pp. 324-349.

Pruyn, A. and Smidts, A. (1998), "Effects of waiting on the satisfaction with the service: Beyond objective time measures", *International Journal of Research in Marketing*, Vol. 15 No. 4, pp. 321-334.

Rouquet, A., Goudarzi, K. and Henriquez, T. (2017), "The company-customer transfer of logistics activities", *International Journal of Operations & Production Management*, Vol. 37 No. 3, pp. 321-342.

Sengupta, S., Niranjan, T.T. and Krishnamoorthy, M. (2018), "Trends and directions in service triads research", *International Journal of Physical Distribution & Logistics Management*, Vol. 48 No. 3, pp. 333-360.

Stokburger-Sauer, N., Scholl-Grissemann, U., Teichmann, K. and Wetzels, M. (2016), "Value cocreation at its peak: the asymmetric relationship between coproduction and loyalty", *Journal of Service Management*, Vol. 27 No. 4, pp. 563-590.

Tax, S.S., McCutcheon, D. and Wilkinson, I.F. (2013), "The service delivery network (SDN) a customer-centric perspective of the customer journey", *Journal of Service Research*, Vol. 16 No. 4, pp. 454-470.

Tuunanen, T., Bask, A. and Merisalo-Rantanen, H. (2012), "Typology for modular service design: review of literature", *International Journal of Service Science, Management, Engineering, and Technology*, Vol. 3 No. 3, pp. 99-112.

Van der Valk, W. and van Iwaarden, J. (2011), "Monitoring in service triads consisting of buyers, subcontractors and end customers", *Journal of Purchasing and Supply Management*, Vol. 17 No. 3, pp. 198-206.

Van Riel, A.C., Semeijn, J., Ribbink, D. and Bomert-Peters, Y. (2012), "Waiting for service at the checkout: Negative emotional responses, store image and overall satisfaction", *Journal of Service Management*, Vol. 23 No. 2, pp. 144-169.

Verleye, K. (2015), "The co-creation experience from the customer perspective: its measurement and determinants", *Journal of Service Management*, Vol. 26 No. 2, pp. 321-342.

Verleye, K., Gemmel, P. and Rangarajan, D. (2014), "Managing engagement behaviors in a network of customers and stakeholders: Evidence from the nursing home sector", *Journal of Service Research*, Vol. 17 No. 1, pp. 68-84.

Voorhees, C.M., Baker, J., Bourdeau, B.L., Brocato, E.D. and Cronin Jr, J.J. (2009), "It depends: Moderating the relationships among perceived waiting time, anger, and regret", *Journal of Service Research*, Vol. 12 No. 2, pp. 138-155.

Weiss, E.N. and Tucker, C. (2018), "Queue management: Elimination, expectation, and enhancement", *Business Horizons*, Vol. 61 No. 5, pp. 671-678.

WHO (2020), "Cancer key facts", available at: https://www.who.int/news-room/fact-sheets/detail/cancer (accessed 15 February 2020).

Wuyts, S., Rindfleisch, A. and Citrin, A. (2015), "Outsourcing customer support: The role of provider customer focus", *Journal of Operations Management*, Vol. 35, pp. 40-55.

Wynstra, F., Spring, M. and Schoenherr, T. (2015), "Service triads: A research agenda for buyer–supplier–customer triads in business services", *Journal of Operations Management*, Vol. 35, pp. 1-20.

Yuan, Y. and MacKinnon, D.P. (2009), "Bayesian mediation analysis", *Psychological Methods*, Vol. 14 No. 4, pp. 301-322.

Zhang, J.J., Lawrence, B. and Anderson, C.K. (2015), "An agency perspective on service triads: Linking operational and financial performance", *Journal of Operations Management*, Vol. 35, pp. 56-66.

Table 1. Coding and calculation of the patient observation data.

Variables	Operationalization	Source
Third party involvement	Service dyad (0) or service triad (1)	Description of service providing entities in the patient observation template
Type of service triad coordination	Focal service provider-coordinated service triad (0) or customer-coordinated service triad (1)	Description of service providing third parties in the patient observation template and interview information about the third parties coordinated by the CDU
Objective waiting time	Calculation of the difference between the start of the service at the CDU (i.e., patient registration) and the start of the core service (i.e., chemotherapy)	Time stamps of the moment the services are delivered in the patient observation template
Number of services delivered at the CDU	Number of services delivered at the CDU before the delivery of the core service (i.e., the chemotherapy)	Description in the patient observation template of the time stamps of the services provided at the CDU
CDU	CDU coded as CDU1 (0) or CDU2 (1)	Name of the CDU reported in the patient observation template
Fellow customer	Room number coded as no fellow customer (0) or presence of fellow customer (1)	Patient room number reported in the patient observation template in combination with data about room occupancy rate at the CDU
Treatment response	Remarks coded as no side effects (0) or the occurrence of side effects (1)	Remarks related to cancellations or problems with the patient at the CDU in the patient observation template

Note. CDU = Cancer Daycare Unit. CDU1 – which treats on average 30 patients per day – focuses on oncology patients from a wide range of medical disciplines including gynecology, head and neck, neurology, skin diseases, ear nose throat, urology, etc. CDU 2 – which treats on average 42 patients per day – focuses on patients with hematological, pneumological, and gastrointestinal problems.

Table 2. Results confirmatory factor analysis.

Construct and Items	Factor Loadings
Waiting experience (adapted from Hui and Tse 1996)	
I experience the time before the start of the treatment as very unpleasant. (reversed)	.93
I experience the time before the start of the treatment as unacceptable. (reversed)	.65
I experience the time before the start of the treatment as long. (reversed)	.83
Environmental quality (adapted from Dagger et al. 2007)	
I believe the physical environment at the CDU is excellent.	.84
I am impressed with the quality of the CDU's physical environment.	.91
The physical environment at the CDU is of a high standard.	.82
Interactional quality (adapted from Dagger et al. 2007)	
The staff at the CDU always listen to what I have to say.	.70
The CDU's staff treat me as an individual and not just a number.	.52
I feel the staff at the CDU understand my needs.	.78
The staff at the CDU are concerned about my well-being.	.71
I always get personalized attention from the staff at the CDU.	.65
I find it easy to discuss things with the staff at the CDU.	.76
The staff at the CDU explain things in a way that I can understand.	.72
The staff at the CDU are willing to answer my questions.	.71
I believe the staff at the CDU care about me.	.75
Overall experience (adapted from Verleye 2015)	
Dissatisfactory – Satisfactory	.65
Negative – Positive	.79
Poor – Excellent	.84
Disappointing – Delightful	.65

Note. CDU = cancer daycare unit.

Table 3. Internal consistency, reliability, average variances extracted (AVE), and correlation matrix.

Constructs	M	SD	CR	Cronbach's Alpha	1	2	3	4
1. Waiting experience[1]	5.03	1.52	.70	.89	*.81*			
2. Environmental quality	4.92	1.27	.77	.94	.22*	*.86*		
3. Interactional quality	5.94	.73	.58	.92	.26*	.34*	*.71*	
4. Overall experience	6.02	.97	.62	.90	.36*	.33*	.37*	*.74*

Note. M = mean construct score (unweighted); SD = standard deviation; CR = composite reliability; the diagonal (in italics) shows the square root of the AVE for each construct; the off-diagonal numbers represent the correlations among constructs; * $p < .05$; [1] reversed.

Table 4. Standardized parameter estimates for Bayesian models.

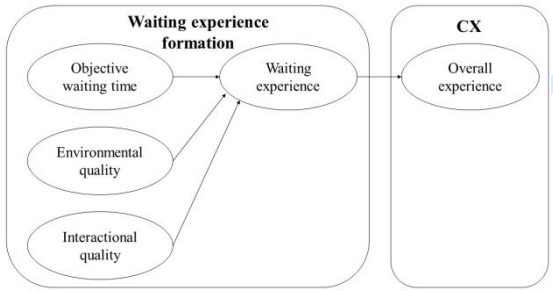
	Model 1 baseline model		Model 2 service dyad		Model 3 service triad		Model 3a focal service provider-coordinated service triad		Model 3b customer-coordinated service triad	
	WX	OX	WX	OX	WX	OX	WX	OX	WX	OX
Intercept	.81		.99		-.03		.43		-2.18	
Drivers										
Objective time (reversed)	.16*		.23*		-.03		-.03		-.05	
Environmental quality	.15*		.12		.22*		.26*		.07	
Interactional quality	.24*		.20*		.29*		.26*		.37*	
WX		.22*		.16*		.42*		.47*		.10
Interaction										
Objective time x WX		.03*		.04*		-.01		-.01		-.01
Environmental quality x WX		.03*		.02		.09*		.12*		.01
Interactional quality x WX		.05*		.03*		.12*		.12*		.04
Control variables										
Age	-.01		.13		-.17		-.23		-.01	
Employment situation	.04		.14		-.01		-.04		.05	
CDU	.05		.07		-.04		-.08		.09	
Number of services delivered at the CDU	-.02		.05		-.15		-.15		NA	
Fellow customer	.01		-.01		.11		.14		-.06	
Treatment response	-.04		-.03		-.01		-.04		.03	
R^2	.16*	.31*	.16*	.33*	.28*	.39*	.32*	.41*	.31*	.58*

Note. WX=waiting experience, OX=overall experience, CDU=Cancer Daycare Unit, *=p-value<.05 and 0 is not included in the Bayesian credibility interval.

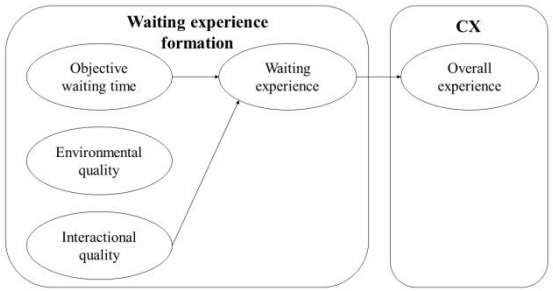
Figure 1. Visualization of the results.

Baseline model without moderator	Third party involvement as moderator	Type of service triad coordination as moderator*

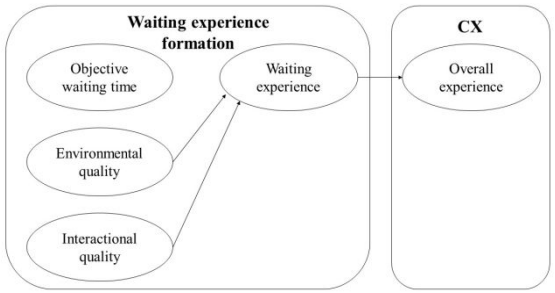
Model 1 – baseline model (n = 377)



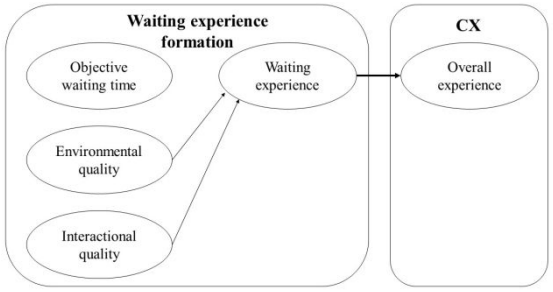
Model 2 – service dyad: no third party involved (n = 251)



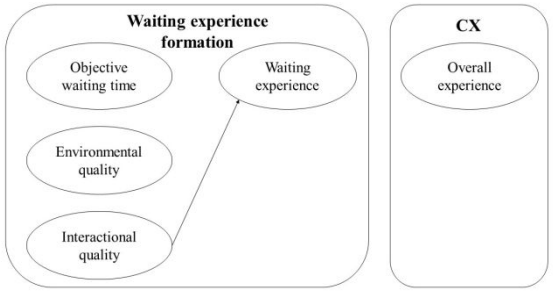
Model 3a – focal service provider-coordinated service triad (n = 90)



Model 3 – service triad: third party involved (n = 126)



Model 3b – customer-coordinated service triad (n = 33)



Note. CX = customer experience, arrows indicate significant positive relationship, thick arrows in Model 3 indicate that parameter estimate is significantly stronger than in respectively Model 3 and 2, * for 3 respondents the type of third party was not filled out.

Implications of customer participation in outsourcing non-core services to third parties

ABSTRACT

Purpose: Focal service providers increasingly involve customers in the decision-making about outsourcing parts of the service delivery process to third parties. The present study investigates how customers' outsourcing decisions affect the formation of the waiting experience with the focal service provider, by which the objective waiting time, environmental quality and interactional quality act as focal drivers.

Design/methodology/approach: To test our hypotheses in the context of cancer care, we gathered process data and experience data by means of a patient observation template (n=640) and a patient survey (n=487). The combined data (n=377) were analyzed using Bayesian models.

Findings: This study shows that opting for a service triad (i.e., outsourcing non-core services to a third party) deduces customers' attention away from the objective waiting time with the focal service provider but not from the environmental and interactional quality offered by the focal service provider. When the type of service triad coordination is considered, we observe similar effects for a focal service provider-coordinated service triad while in a customer-coordinated service triad the interactional quality is the sole experience driver of waiting experiences that remains significant.

Originality/value: By investigating the implications of customer participation in the decision-making about outsourcing parts of the service delivery process to third parties, this research contributes to the service design, service triad and service operations literature. Specifically, this study shows that customer outsourcing decisions impact waiting experience formation with the focal service provider.

Keywords: Service design, service triad, service operations, waiting experience, healthcare

Implications of customer participation in outsourcing non-core services to third parties

1. INTRODUCTION

Building upon the observation that customers increasingly care about the way in which service providers make use of their time (Chang and Huang, 2016), a recent consumer trend report calls for making services as accessible as possible in a short timeframe (Euromonitor, 2020). In a similar vein, recent research suggests that waiting times (here, objective waiting times) and the way in which these waiting times are perceived (here, waiting experiences) have an important impact on how customers experience the service delivery process (Lemke *et al.*, 2011; Weiss and Tucker, 2018). In this context, service providers increasingly engage in outsourcing non-core services in the service delivery process to third parties (Tax *et al.*, 2013; Wuyts *et al.*, 2015), thereby changing a dyadic service system into a service triad (Perdakiki *et al.*, 2015). Extant research confirms that this type of outsourcing allows the focal service provider – the service provider who decides to outsource part of his services – to not only achieve excellent operations (Kaplan and Anderson, 2003) but also contribute to the formation of better waiting experiences through reduced waiting times (Lee *et al.*, 2012; Wynstra *et al.*, 2015).

To ensure that outsourcing of non-core services to third parties generates the expected benefits for focal service providers and their customers, the service triad literature calls for contractual arrangements and monitoring activities between the focal service provider and the third party (Van der Valk and van Iwaarden, 2011). This line of research, however, merely considers customers as passive consumers, while involving customers as active participants in service design decisions is a key priority for many service providers (Tuunanen *et al.,* 2012). Indeed, a growing number of service providers gives customers some degree of choice over the way in which service delivery processes are arranged, including the involvement of a third party

for non-core services or not (Tax *et al.*, 2013). Several retailers, for instance, allow their online shoppers to decide whether they want to pick-up the items, such as clothes or groceries, in the store (service dyad without third party involvement) or have them delivered at home by a third party to save time (service triad with third party involvement). In a similar vein, chronic care patients can consider a hospital visit as very time-consuming and therefore opt for outpatient care wherever possible (service triad with third party involvement).

As the implications of customers' outsourcing decisions for the formation of their waiting experiences with focal service provider are not well-understood (Sengupta *et al.*, 2018), the first aim of this research is to provide insight into how a customer's decision to involve a third party or not affects the waiting experience formation. If customers opt for a third party and end up in a service triad, customers can adopt different roles in terms of coordination. Customers can choose to involve a third party proposed by the focal service provider (i.e., focal service provider-coordinated service triad) or select a third party of their own choice (i.e., customer-coordinated service triad) (Piccoli *et al.*, 2009). An architect, for instance, may allow customers to choose a contractor with whom the architect has an agreement or a contractor of their own choice. This type of customer participation is challenging for the design of service delivery processes of the focal service provider (Tax *et al.*, 2013). As a consequence, the second aim of this research is to generate a better understanding of the way in which the type of coordination in service triads (here, customer coordination versus coordination by focal service provider) impacts the formation of waiting experiences with the focal service provider.

Building on information overload theory and equity theory, this study investigates the impact for the focal service provider when customers are allowed to participate in making outsourcing decisions in a healthcare context. We use a combination of process data and experience data on two cancer daycare units. Specifically, patient observation data provide insight into the service delivery processes (n=640), while survey data generate a better

understanding of the customer experience with the focal service provider (n=487). Besides this unique set of multi-source data (n=377), this research has important academic and managerial implications for several research streams. First, this research contributes to the outsourcing literature by focusing on outsourcing decisions made by customers. As such, this research unites two key concerns for the design of service delivery systems: customer participation and outsourcing. Second, this research responds to calls for research on performance effects in the context of service delivery system design (e.g., Ponsignon *et al.*, 2011). Specifically, this research focuses on the impact of service dyads versus service triads on the formation of waiting experiences with the focal service provider, which is an important, yet underexposed facet of customer experiences (e.g., Weiss and Tucker, 2018; Carlson *et al.*, 2019). Additionally, this research also provides insight into the way in which waiting experience formation with focal service providers is shaped by the type of coordination in the service triad. As such, this research contributes to a better understanding of customizing and coordinating service triads, which is an under-researched area in the outsourcing literature (Sengupta *et al.*, 2018). From a managerial perspective, this research helps service providers to (re-)design service delivery processes for generating better waiting experiences, which is particularly important to compete and retain customers in case of competing but undifferentiated services (Beltagui *et al.*, 2016).

This paper proceeds as follows. The first section provides a conceptual framework for the waiting experience formation with focal service providers when customers participate in outsourcing decisions. In the next section, we detail the empirical study in the context of cancer care based upon a combination of patient observations and patient survey data, followed by the results of our analyses. We conclude with the discussion, the limitations and future research directions.

2. CONCEPTUAL FRAMEWORK AND HYPOTHESES

2.1. Outsourcing as a time management strategy for better waiting experiences

By outsourcing non-core services to third parties, service providers can optimize service processes in two ways. First, an outsourcing strategy allows service providers to spend more time on core services, thereby resulting in excellent operations (Adioti and Valverde, 2013). Second, an outsourcing strategy may also contribute to reduced waiting times (Lee *et al.*, 2012) and/or better waiting experiences for customers (Wynstra *et al.*, 2015). The aforementioned benefits, however, are not obtained if the third party does not perform well (Allen *et al.*, 2015). To avoid negative repercussion of bad third party performance for the customer experience with the focal service provider, the service triad literature calls for engaging in contractual arrangements and/or monitoring activities (Wynstra *et al.*, 2015; Akkermans *et al.*, 2019). Here, researchers often assume that the focal service provider engages in a principal-agent relationship with the third party, thereby relying on agency theory (Zhang *et al.*, 2015). Recent research, however, suggests that not only focal service providers but also customers can act as principal by deciding upon the involvement of a third party or not (Tax *et al.*, 2013; Bastl et *al.*, 2019).

By allowing customers to decide about the involvement of a third party or not, customers participate in the design of service delivery processes (Rouquet *et al.*, 2017; Bellos and Kavadias, 2019). In recent years, service providers increasingly encourage customers to make decisions about the way in which services are produced and delivered beyond sharing information and providing suggestions to better meet their needs (Tax *et al.,* 2013; Dong and Sivakumar, 2017). Mustak *et al.* (2016) point out that sharing information and providing suggestions is less advanced than participating in decision-making, as this type of customer participation – which often occurs in complex and professional services – is more demanding

in terms of customer input. Previous research suggests that customer input in the form of information, suggestions, and decisions is a source of various positive outcomes for customers and services providers (Bitner *et al.*, 1997; Mustak *et al.,* 2016; Dong and Sivakumar, 2017). A key question, however, is how customers' outsourcing decisions – such as involving a third party or not – affect the formation of waiting experiences with the focal service provider.

2.2. The waiting experience formation when customers participate in outsourcing decisions

With regard to the formation of waiting experiences, researchers discern an objective and a subjective facet (Carlson *et al.*, 2019). The objective facet refers to the actual time spent waiting for the delivery of core services measured by the objective clock time (Durrande-Moreau and Usunier, 1999). The subjective facet – which we conceptualize as the waiting experience – involves customers' perceptions of the objective waiting time, which encompasses not only the average perceived time but also customers' perceptions of the cognitive and affective evaluation of the objective waiting time (Pruyn and Smidts, 1998). In other words, customers' perceptions of the average perceived time along with their evaluations of the objective waiting time constitute the waiting experience. Over the past few years, researchers have repeatedly shown that shorter objective waiting times before the delivery of core services lead to better waiting experiences with the focal service providers, which have a positive impact on their overall experience with the focal service provider (e.g., Van Riel *et al.,* 2012).

The waiting experience of a customer, however, is not only being influenced by objective waiting time, but also by the physical environment (cf. physical elements) and quality of the interactions with frontline employees (cf. social elements). Indeed, the environmental and interactional quality associated with the focal service provider have a significant impact on the waiting experience by acting respectively as 'distractors' or 'fillers' (Maister, 1984). A number of empirical studies have shown that the environmental quality can improve customers'

appraisal of time by distracting customers' attention (e.g., Voorhees *et al.*, 2009). The interactional quality in the service environment, in turn, was found to affect customers' appraisal of wait, in that social interaction fills time (Lim *et al.*, 2015). As the objective waiting time, environmental quality and interactional quality are important drivers of the waiting experience, we argue that shorter objective time, better environmental and interactional quality positively impact the waiting experience, and hence, the overall experience with the focal service provider.

> **Hypothesis 1**: shorter objective waiting times, environmental quality and interactional quality have (a) a direct positive impact on the waiting experience with the focal service provider and (b) an indirect positive impact on the overall experience with the focal service provider.

In what follows, we elaborate on the waiting experience formation with the focal service provider (i.e., the process through which objective waiting time, environmental quality and interactional quality shape the waiting experience) if customers participate in outsourcing decisions. As customers can decide upon (1) the involvement of a third party or not and (2) the type of coordination in the service triad, the next paragraphs elaborate on the impact of these two outsourcing decisions on the waiting experience formation.

2.2.1. Waiting experience formation in service dyads versus triads

When customers decide to involve a third party, the dyadic interaction with the focal service provider turns into a service triad (Perdikaki *et al.*, 2015). A service triad typically involves three types of actors: (1) the focal service provider – also labeled as buyer – who outsources one or more of its services, (2) the third party – also labeled as supplier – who delivers the outsourced service directly to a customer, and (3) the customer who receives the outsourced service (Wynstra *et al.*, 2015). The present research centers on service triads in which the focal

service provider allows customers to outsource non-core services to third parties or not. The key question here is whether the choice of a customer between the involvement of a third party or not, has an impact on the waiting experience formation with the focal service provider. In other words, is the waiting experience formation with the focal service provider different for customers who opt for a service dyad versus customers who adopt a triadic service delivery system?

The main difference between a service dyad and a service triad relates to the number of actors involved in the service delivery system. In a service dyad, customers interact with the focal service provider, whereas in service triads customers interact with the focal service provider and the third party. Both focal service providers and third parties often have a multitude of touchpoints with the customer, which include multiple employees with whom customers can interact (e.g., front desk clerks and core service providers) and/or physical/digital touchpoints (e.g., stores and websites) (De Keyser, 2015). As a consequence, the shift from a service dyad to a service triad goes along with a large increase in the number of touchpoints with customers. Customers, however, are limited in their capacity for processing information (Miller, 1956), which implies that interacting with a large number of touchpoints of different providers may create information overload (Lemon and Verhoef, 2016). Information overload theory suggests that customers may become ignorant about what is happening, since they do not know where to focus on (Miller, 1956). In other words, information overload may impede the process of evaluating services offered by the focal service provider (Lemon and Verhoef, 2016). In this context, customers are less likely to attribute causes and effects to the right factors (Heider, 1958). As such, the impact of the waiting experience drivers (shorter objective waiting time, environmental quality and interactional quality) on the waiting experience will diminish. Based upon the aforementioned arguments, we hypothesize:

Hypothesis 2a: the positive impact of a shorter objective waiting time on the

waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is weakened if the customer opts for a service triad versus a service dyad.

Hypothesis 2b: the positive impact of environmental quality on the waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is weakened if the customer opts for a service triad versus a service dyad.

Hypothesis 2c: the positive impact of interactional quality on the waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is weakened if the customer opts for a service triad versus a service dyad.

2.2.2. Waiting experience formation in service triads with different types of coordination

Although customer participation generates several advantages for customers and firms, a number of studies also suggest that negative feelings and frustrations may emerge among customers (Chan *et al.*, 2010; Dong and Sivakumar, 2017). Stokburger-Sauer *et al.* (2016) explain these negative customer experiences by referring to the amount of work that comes along with customer participation in the service delivery system. Other studies confirm that higher levels of customer participation – such as customer participation in decision-making – are more demanding in terms of customer input (Bowen and Jones, 1986; Mustak *et al.*, 2016).

To reduce its demanding nature while keeping customers engaged in service delivery processes, focal service providers can – as suggested by Tax *et al.* (2013) – allow customers to choose third parties with whom they already have collaborative arrangements. As such, customers do not need to engage in coordinating the services provided by the third party with those of the focal service provider, as these providers are used to align their services (Piccoli *et*

al., 2009; Tax *et al.*, 2013). The opposite holds when customers want to involve third parties with whom the focal service provider does not have collaborative arrangements. In those situations, the coordination of services provided by the third party with those of the focal service provider is in hands of the customer (Piccoli *et al.*, 2009).

If customers adopt a coordinating role in the service triad by aligning services provided by the third party with those of the focal service provider, customers spend a considerable amount of time and effort to the delivery of their services (Bowen and Jones, 1986). In those situations, customers may experience role stress, which can have a negative impact on their experiences with the service providers (Blut *et al.*, 2019). In return for these investments and emotional costs, customers expect high-quality services (Childers *et al.*, 2001). If the focal service provider does not offer high-quality services, customers may conclude that there is an unequal distribution of investment. Indeed, equity theory suggests that customers base their outcome evaluations – such as those about the wait and the overall experience with the service provider – on the extent to which the inputs devoted by the service provider are equivalent to their own input in the service delivery process (Adams, 1963). If customers devote more input to the service delivery process by adopting a coordinating role, customers will pay more attention to the input of the service provider (here, shorter waiting times, environmental quality and interactional quality). The opposite holds for customers who engage in a non-coordinating role. In those situations, the input of the focal service provider is less decisive for the formation of waiting experiences and overall experiences with focal services providers. Based upon the aforementioned arguments, we hypothesize:

> **Hypothesis 3a:** the positive impact of a shorter objective waiting on the waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is stronger if customers opt for a

customer-coordinated service triad versus one coordinated by the focal service provider.

Hypothesis 3b: the positive impact of environmental quality on the waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is strengthened if customers opt for a customer-coordinated service triad versus one coordinated by the focal service provider.

Hypothesis 3c: the positive impact of interactional quality on the waiting experience with the focal service provider and its indirect impact on the overall experience with the focal service provider is strengthened if customers opt for a customer-coordinated service triad versus one coordinated by the focal service provider.

3. METHODOLOGY

3.1. Research setting and data collection

The number of cancer patients continues to grow globally, thereby exerting a burden on not only individuals, families and communities but also the health system (WHO, 2020). In this context, highly specialized healthcare providers – such as cancer daycare units – increasingly outsource non-core services to achieve operational excellence while meeting patient expectations for service timeliness (Billi *et al.*, 2004). Meanwhile, a growing number of cancer patients expects to be involved in the decision-making about the way in cancer treatments are delivered (Gattellari *et al.*, 2001), as a result of which patients may also participate in outsourcing decisions. The present study centers on two cancer daycare units (CDUs) associated with one of the largest hospitals in Belgium who decided to allow their patients to participate in outsourcing decisions. More particularly, this study centers on patients undergoing cancer treatment in one of the two CDUs and explores how their outsourcing

decisions affect the formation of the waiting experience with the focal service provider (here, the CDU) during a cancer treatment session.

To gain more insight into the way in which patients in the CDUs can participate in outsourcing decisions, a document analysis focusing on formal process descriptions, planning tools, and documentation from a former (re-)design project in the CDU was performed. Next, six semi-structured interviews were carried. The document analysis and semi-structured interviews revealed that patients often have multiple treatment sessions after being diagnosed with cancer. Before the start of a series of cancer treatment sessions, the CDU invites the customer to decide upon the way in which the service is delivered. In each cancer treatment session, the core service (here, chemotherapy) is delivered by the CDU, but patients can decide whether non-core services (here, blood sampling, physician consult and test of the patient's condition) should be offered by the CDU or third parties (here, general practitioners, polyclinics and other healthcare professionals). Thus, patients are allowed to involve a third party (i.e., a service triad) or not (i.e., a service dyad). If third parties are involved, the delivery of non-core services always occurs before the CDU delivers its service. In addition, patients choosing to involve a third party can opt for a third party proposed by the CDU or a third party with whom the CDU does not have collaborative arrangements. In the former case, the CDU ensures alignment between the services offered by the third party and their own services (i.e., focal service provider-coordinated service triad). In the latter case, customers coordinate the alignment of services from the CDU and the third party (i.e., customer-coordinated service triad).

Data were gathered by means of a patient observation template combined with patient survey data. To ensure that the patient observation templates and surveys were filled out correctly, two researchers were present in each department during the data collection to provide information, answer any questions, and check the patient observation templates (see "Patient

observations" and "Patient survey" for more information). Approval from an ethical committee was obtained for the data collection procedure and all patients gave their informed consent before filling out the questionnaire. In total, 780 patient observation templates and patient surveys were distributed at the CDUs, whereof 640 usable patient observation templates (82.1% response rate) and 487 usable questionnaires were returned (62.4% response rate). After linking the questionnaires to the patient observations, we obtained a sample of 377 cancer patients.

3.2. Patient observations

Patient observations were used to capture customer choices in terms of third party involvement (i.e., service dyad versus service triad) and – if applicable – the type of service triad coordination (i.e., focal service provider-coordinated service triad versus customer-coordinated service triad). If customers decided to involve third parties, the number of non-core services delivered by the third party and the type of third party were also documented (see Table 1 for an overview of the way in which these data were coded and/or calculated). The templates were filled out by nurses at the CDU for each individual patient. The nurses registered all services related to the delivery of chemotherapy at the CDU along with those provided by other service providing entities if a third party was involved.

Based upon time stamps associated with the delivery of the different services provided by the CDU in the patient observation template (e.g., patient registration, blood sampling, chemotherapy), we were able to capture the objective waiting time for that specific treatment session from the moment the patient entered the CDU until he/she received his/her core service (i.e., the chemotherapy) in minutes. As the distribution of objective waiting time is skewed, a log transformation was performed. In line with Hypothesis 1, objective waiting time was reversed (1/objective waiting time) so that a higher score reflects a shorter objective waiting time.

Time stamps associated with the delivery of services also provided insight into the number of services delivered by the CDU. As more services can deduce the attention away from the objective waiting time at the CDU by acting as fillers for patient (Maister, 1984), the number of services was included as a control variable. Additionally, we controlled for the CDU in which the patient was treated. Next, the presence of fellow customers was taken into consideration, because fellow customers may have an impact on the patient experience that is not under control of the focal service provider (Verleye *et al.*, 2014). Finally, the treatment response – whether or not negative side effects occurred during treatment – was considered, in that this may affect the patient experience (Clucas, 2016).

Insert Table 1 about here

3.3. Patient survey

To capture the waiting experience (i.e. the subjective facet), the environmental quality, the interactional quality, and the overall experience in relation to the CDU for a specific treatment session, patients received a printed survey with instructions and an informed consent form from one of the researchers when they arrived at the CDU for a cancer treatment session. Specifically, respondents were asked to fill out the questionnaire when the core service was delivered (here, chemotherapy), because the chemotherapy is the end point of the treatment session at the CDU. After filling out the survey, patients handed in the informed consent form and the survey in a separate recipient. The waiting experience, the environmental quality, and the interactional quality were measured by previously validated scales scored on seven-point scales ranging from "strongly disagree" to "strongly agree". With regard to the waiting experience, we included three items from Hui and Tse (1996), which captured the cognitive facet of the wait (i.e., the perceived length and unacceptability of the wait) and the affective facet of the wait (i.e., the irritation associated with the wait based on the interpretation process). The scores on these items

were reversed to capture the waiting experience in which higher scores reflect better waiting experiences. The environmental quality was measured by a three-item scale of Dagger *et al.* (2007). To capture the interactional quality, we used – in line with Dagger *et al.* (2007) – a nine-item scale for interactional quality. The evaluation of the overall experience with the focal service provider (i.e., the CDU) is captured by the four-item overall experience scale (Verleye, 2015). Finally, we also controlled for age and employment situation in the patient survey, in that these variables influence the overall experience of cancer patients (Clucas, 2016).

After manually entering the survey data into digital database by one of the researchers, we conducted – as recommended by Netemeyer *et al*. (2003) – an exploratory factor analysis and an initial item and reliability analysis in SPSS to identify items with cross-loadings and items that were poorly correlated with the remaining items in each scale. No poorly correlating items were identified. A principal axis factoring (oblique rotation) extracted four factors with eigenvalues greater than one. Additionally, a Harmon's single-factor test using exploratory factor analysis was conducted to check whether a single factor emerged or one general factor accounted for the majority of the covariance among the measures. The first factor accounted for 30.4% of the variance and all factors together explained 74.6% of the variance. Consequently, none of these factors accounted thus for the majority of the covariance among the items, as a result of which common method bias was not a serious threat to our analyses.

Finally, the validity of the constructs was assessed using confirmatory factor analysis (CFA; LISREL 8.50). The measurement model for the sample performed well. Firstly, the ratios of chi-square to degrees of freedom, $\chi^2(553.07)/df(199)=2.78$ for the sample, are less than three (Bagozzi and Yi, 1988). Secondly, the comparative fit index (CFI), 0.96, and Tucker-Lewis index (TLI), 0.96, were all above common benchmarks of 0.90. Finally, the root mean square error of approximation (RMSEA) was 0.07, which represents an acceptable fit (Netemeyer *et al.*, 2003). Table 2 shows the individual items and item loadings. The sample showed

convergent validity, since almost all construct reliabilities (CR) were greater than 0.60, which is considered a desirable construct reliability (Bagozzi and Yi, 1988) and all average variances extracted (AVE) exceeded 0.50 (see Table 3). In the meanwhile, there is evidence for discriminant validity (see Table 2), since the square root of the AVE for all constructs exceeded the factor correlations. Since the measurement model performed well, we used mean scores for the environmental quality, the interactional quality, the waiting experience, and the overall experience in relation to the CDU for further analyses.

Insert Table 2 and 3 about here

3.4. Data analysis procedure

A Bayesian model (Mplus) is used in which all dependent variables are simultaneously modeled and correlated errors between dependent variables are accounted for (Keiningham *et al.*, 2018). To check for multicollinearity, we ran ordinary least square (OLS) regressions to generate variance inflation factors (VIF). All VIF values were below the suggested cutoff of 5 (Hair *et al.*, 2010). Next, we controlled for data selection bias analyzing customer heterogeneity by means of six variables: age, employment situation, CDU, services offered by the CDU, fellow customer, and treatment response. Two ad-hoc analyses revealed that the customer's third party choices can be explained by these six control variables. Specifically, a binary logistic regression model with a service dyad and a service triad as dependent variable and the six aforementioned control variables as independent variables revealed a 80.4% prediction accuracy (Nagelkerke R^2=59%). Consequently, the customer's third party choices can be considered to have random differences since case selection bias is not a confounding factor in our analysis (Ho *et al.*, 2017). To examine whether the results of model are affected by endogeneity problems, we additionally estimated a multilevel model in which all observations are nested within different processes. Thirty-seven processes occur in terms of the number and type of non-core services and the

proportion of non-core services provided by third parties. These processes were allowed to have specific intercepts that may deviate from the population-averaged findings (i.e., random intercepts), thereby accounting for unobserved heterogeneity and lowering potential endogeneity problems that are typically caused by omitted variables (Germann *et al.*, 2015). A comparison of the parameter estimates obtained from the multilevel model and the baseline model revealed that both the magnitude and the significance levels of the parameter estimates are similar.

4. RESULTS

The objective waiting time – displayed in minutes – varied a lot among cancer patients (mean=94.16; SD=68.17). The maximum objective waiting time is 375 minutes, but patient observations also revealed a situation without any objective waiting time (i.e., a patient who received his/her treatment upon arrival at the CDU). At the CDU, minimum two and maximum six services can be delivered while maximum three of these can be delivered by a third party. On average, the large majority of patients was engaged in three to four services at the CDU (84.4%) and few patients had a chance to engage with fellow customers at the CDU (17.2%). More than half of the patients were still employed (53.3%) and the distribution of cancer patients across different age groups corresponds with the distribution in the population (i.e., 18 cancer patients younger than 25, 169 between 25 and 65, and 189 older than 65) (WHO, 2020). Interestingly, one third of the patients chose a third party to deliver non-core services (33.4%). Of these patients, only one fourth opted for a customer-coordinated service triad (n=33–26.8%).

To assess the impact of objective waiting time, environmental quality and interactional quality on the waiting experience and its subsequent impact on the overall experience, we used a mediation approach with Bayesian estimation (Yuan and MacKinnon, 2009) for two reasons. First, the Bayesian approach does not impose restrictive normality assumptions on sampling distributions of estimates, thereby making statistical inferences straightforward and exact (Yuan

and MacKinnon, 2009). Second, Bayesian estimation is particularly valid in smaller samples (Hox *et al.*, 2010). In line with Gelman and Rubin (1992), we ran three independent MCMC chains with different starting points and 10,000 iterations each, by which the first half is considered as the "burn-in" phase and the remaining half is used to estimate the posterior distribution for the parameters. To assess the convergence of the MCMC algorithm, we inspected the Gelman-Rubin convergence statistic R, autocorrelation plots, and trace plots of the residual variance for the parameter estimates. As suggested by Yuan and MacKinnon (2009), the following two equations were jointly estimated using path modeling:

$$WX_{im}=X_i\,a_m+C_i\,j_m+e_{im} \quad (1)$$

$$OX_{im}=X_i\,g_m+C_i\,h_m+WX_i\,b_m+q_{im} \quad (2)$$

in which e_{im} and q_{im} are the error terms with intercorrelation r and WX_{im} *and* OX_{im} denote respectively the waiting experience and the overall experience for individual i. In total, three models (m) are run: the first model ($m=1$; Model 1 hereafter) represents a baseline model that disregards the choice of the involvement of a third party or not, whereas the remaining models provide insights into the parameter estimates for a service dyad ($m=2$, Model 2 hereafter) or a service triad ($m=3$, Model 3 hereafter). X_i is a vector of the key antecedent constructs and includes objective waiting time, environmental quality and interactional quality. C_i is a vector of the control variables. As mentioned before, in this study, we control for age, employment situation, treatment response, CDU, number of services delivered by the CDU, and presence of a fellow customer. a_m represent the parameter estimates for the impact of the three antecedent constructs (i.e., objective waiting time, environmental quality and interactional quality) on the waiting experience, b_m represents the parameter estimate for the impact of the waiting experience on the overall experience. The indirect effect of the antecedent constructs on overall experience through waiting experience is obtained by multiplying the a_m and b_m. Table 4 reports the standardized parameter estimates for Model 1, 2 and 3. To contrast the waiting experience

formation and its impact on the overall experience for a focal service provider-coordinated service triad versus a customer-coordinated service triad, we reran the aforementioned Bayesian mediation model for each type of service triad (Model 3a and 3b). Table 4 also reports the standardized parameter estimates for Model 3a and 3b. In what follows, we first discuss the parameter estimates in Model 1 and subsequently in Model 2 and 3. Thereafter, we elaborate on the results for Model 3a and 3b.

Insert Table 4 about here

4.1. Model 1: the waiting experience formation with the focal service provider

Model 1 serves as baseline model (see Figure 1), which provides insight into the waiting experience formation and its impact on the overall experience with the focal service provider without taking the choice of a third party into consideration. As shown in Table 4, a shorter objective waiting time was found to exert a positive impact on the waiting experience with the focal service provider (a=.16), which was on its turn found to enhance the overall experience (b=.22). The indirect effect of objective waiting time on the overall experience with the waiting experience acting as a mediator was qualified by a significant mediation effect (axb=.03). With regard to environmental and interactional quality, our results show that both drivers also have a significant direct effect on the waiting experience (a=.15 and a=.24 respectively) and an indirect effect on the overall experience with waiting experience as a mediator (axb=.03 and axb=.05). In sum, the baseline model (Model 1) shows that all drivers had a direct positive effect on the waiting experience and an indirect positive effect on the overall experience with the focal service provider, thereby providing support for Hypothesis 1. Interestingly, none of the control variables was found to exert a significant influence on either the waiting experience or the overall experience with the focal service provider (see Table 4).

Insert Figure 1 about here

4.2. Model 2 and 3: the waiting experience formation in a service dyad versus triad

To gain insight into the impact of the choice between a service dyad and a service triad on the waiting experience formation with the focal service provider and its subsequent impact on the overall experience with the focal service provider, we compare the parameter estimates for the service delivery process wherein only the focal service provider delivers service (i.e., a service dyad) (Model 2) with a service delivery process wherein a third party is involved (i.e., a service triad) (Model 3). Moreover, we performed additional significance tests to compare the magnitude of slopes of the obtained parameter estimates between both models (Clogg *et al.*, 1995). The same method was used for the choice between a focal service provider-coordinated service triad and a customer-coordinated service triad (see Model 3a and 3b in next paragraph).

In what follows, we discuss the impact of objective waiting time (Hypothesis 2a), environmental quality (Hypothesis 2b) and interactional quality (Hypotheses 2c) on the waiting experience formation with the focal service provider and its impact on the overall experience, thereby taking the customer's choice between a service dyad and triad into consideration.

With regard to objective waiting time, the results reported in Table 4 demonstrate that the objective waiting time has a significant direct impact on the waiting experience (a=.23) when the focal service provider is the only provider (Model 2), in addition its indirect impact on the overall experience with waiting experience as mediator is significant (axb=.04). In case a third party is chosen (Model 3), the direct effect of objective waiting time on the waiting experience (a=-.03, n.s.) and its indirect impact on the overall experience (axb=-.01, n.s.) are not significant. If the parameter estimates are compared, we conclude that the direct impact of objective waiting time on the waiting experience and its indirect effect on the overall experience are weakened if a service triad is chosen (see Figure 1). Hence, Hypothesis 2a is supported.

With respect to environmental quality, Table 4 and Figure 1 demonstrate that the impact of environmental quality on waiting experience is dependent on the choice between a service dyad and a service triad. When the focal service provider is chosen as single provider (Model 2), environmental quality does not have a significant direct impact on the waiting experience (a=.12, n.s.) and the same goes for its indirect impact on the overall experience (axb=.02, n.s.). When patients opt for a service triad (Model 3), environmental quality has a significant direct impact on the waiting experience (a=.22) and a significant indirect impact on the overall experience (axb=.09). As a result, the direct effect of environmental quality on the waiting experience and its indirect effect on the overall experience are stronger when a third party is involved (Model 3) than if not (Model 2). Hence, Hypothesis 2b is rejected (opposite effect).

Regarding interactional quality, Table 4 and Figure 1 show a significant direct effect on waiting experience (a=.20) when the service is delivered in a dyad (Model 2) and the same goes for the impact of interactional quality on the waiting experience (a=.29) when services are delivered in a service triad (Model 3). To assess whether the impact of interactional quality on the waiting experience is statistically different between Model 2 and Model 3, we calculate the Z-statistic to test if the coefficients of these two groups are significantly different from each other (Clogg *et al.*, 1995), resulting in a p-value of .18. Hence, we observe that the direct effect of interactional quality on waiting experiences is not significantly different in Model 2 and 3. Significant differences exist for the indirect effect of interactional quality on the overall experience through waiting experience, but these indirect effects are statistically different (p value of .02; Clogg *et al.*, 1995) and stronger instead of weaker when customers opt for a service triad (axb=.12 in Model 3) as opposed to a service dyad (axb=.03 in Model 2). As a consequence, Hypothesis 2c is rejected.

Important to note is that the impact of the waiting experience on overall experience is statistically different and – as also shown in Figure 1 – substantially stronger for service

processes in which a third party is involved (Model 3; b=.42) compared with a dyadic service wherein the service is delivered by only the focal service provider (Model 2; b=.16). When comparing these parameters, the resultant p-value (<.01) provides evidence that both parameter estimates are significantly different (Clogg *et al.*, 1995). Hence, the indirect effect of environmental and interactional quality on overall experience with waiting experience as a mediator is much stronger in Model 3 than in Model 2.

4.3. Model 3a and Model 3b: contrasting a focal service provider-coordinated service triad versus a customer-coordinated service triad

A comparison of focal service provider-coordinated service triads (Model 3a) and customer-coordinated service triads (Model 3b) reveals that the objective waiting time does not have a significant direct impact on the waiting experience in both models (respectively a=-.03,n.s. and a=-.05, n.s.). Obviously, the same goes for its indirect impact on the overall experience (respectively axb=-.01, n.s. and axb=-.01, n.s.). As a consequence, Hypothesis 3a is rejected.

With regard to environmental quality, the direct effect on the waiting experience (a=.26) and the indirect effect on the overall experience (axb=.12) are significant in case of a focal service provider-coordinated service triad (Model 3a). In case of a customer-coordinated service triad (Model 3b), the direct and indirect effect of environmental quality on respectively waiting experience (a=.07, n.s.) and overall experience (axb=.01, n.s.) are not significant. In other words, the direct and indirect experience implications of environmental quality are stronger in Model 3a than in Model 3b, thereby rejecting Hypothesis 3b (opposite effect).

In case of a focal service provider-coordinated service triad (Model 3a), interactional quality has a significant direct impact on the waiting experience (a=.26) and its indirect impact on the overall experience via improved waiting experiences is also significant (axb=.12). In case of a customer-coordinated service triad (Model 3b), however, there is still a significant direct impact on the waiting experience (a=.37) but the indirect impact on the overall experience

with waiting experience as a mediator is no longer significant (axb=.04, n.s.). When comparing the direct effects of interactional quality on the waiting experience in Model 3a and 3b (Clogg *et al.*, 1995), we find evidence that both parameters are not statistically different from each other (p-value of .26). Because of similar direct effects of interactional quality on the waiting experience in Model 3a and 3b and the absence of a significant indirect effect on the overall experience in Model 3b, we also reject Hypothesis 3c.

5. GENERAL DISCUSSION

The present research demonstrates that a customer's decision to include a third party or not impacts the formation of waiting experiences and subsequently overall experiences with the focal service provider. Specifically, the present research demonstrates that the direct impact of the objective waiting time on the waiting experience with the focal service provider completely disappears when a customer opts for a service triad instead of service dyad (i.e., Model 3 versus Model 2). Moreover, the same goes for the indirect impact of objective waiting times on the overall experience with focal service providers. As such, this evidence shows that third parties can deduce customers' attention away from the time spent on waiting for the focal provider to deliver its core service (i.e., the objective waiting time), thereby providing support for information overload theory (Miller, 1956).

Meanwhile, information overload theory does not explain how third party involvement affects the impact of interactional quality and environmental quality on the waiting experience. Indeed, this research shows that the positive impact of interactional quality on the waiting experience is not significantly different in service dyads and triads (i.e., Model 2 versus Model 3). This evidence suggests that interactional quality acts – in line with the psychology of waiting (Maister, 1984; Voorhees *et al.*, 2009; Lim *et al.*, 2015) – as a filler and/or distractor that improves the waiting experience, regardless of the involvement of third parties. This might be explained by the context of cancer care wherein customers often have to carry a heavy

emotional burden which increases the need for friendly and empathic interactions. Third party involvement, however, does affect the extent to which environmental quality acts as a filler and/or distractor for the waiting experience, as environmental quality has a stronger impact on the waiting experience in service triads than in service dyads (i.e., Model 3 versus Model 2). Here, it seems that multiple touchpoints increase the attention for environmental quality instead of reducing it, which is in contradiction with the theory of information overload (Miller, 1956). To better understand the effect of environmental quality, it is therefore important to take the role of the customer in a service triad into account.

Overall, the results suggest that the waiting experience is more important for the overall experience with the focal service provider in a service triad than in a service dyad. These results, however, need to be nuanced when taking the type of coordination into consideration. If customers opt for a focal service provider-coordinated service triad, the waiting experience plays a very important role in shaping the overall experience with the focal service provider while this is not the case for the customer-coordinated service triad. If customers act as coordinators, the impact of the waiting experience on the overall experience with the focal service provider disappears. One potential explanation is that customers who adopt a coordinating role have a higher share in the wait, which makes them less sensible for the waiting experience when reflecting upon their overall experience with a focal service provider. Indeed, due to experienced role stress associated with the coordination of the service triad (Blut *et al.*, 2019), customers want to have a return for their investments by receiving excellent services of the focal service provider for the experience drivers that are not under their control. In our study, this can be the direct effect of interactional and/or environmental quality on the overall experience.

Taken together, these results show that service triads are not only dynamic in who makes decisions and coordinates services but also in the formation of waiting experiences and overall

experiences with a focal service provider. Indeed, while customers' choice for a third party (i.e., a service triad) deduces their attention away from the objective waiting time while enhancing the impact of environmental and interactional quality as indirect overall experience drivers. If customers adopt a coordination role in the service triad, however, these experience drivers have less impact on their overall experience than when customers opt for service triads coordinated by the focal service provider.

5.1. Theoretical implications

This study contributes to the growing literature on service triads (Wynstra *et al.*, 2015), which often conceptualizes the focal service provider as the principal who coordinates the third party in the service triad (Van der Valk and van Iwaarden, 2011; Zhang *et al.*, 2015). In line with recent calls for more research about the role of the customer in service triads (Sengupta *et al.,* 2018; Bastl *et al.,* 2019), the present research explores the service triad in situations wherein customers are allowed to participate in decision-making about outsourcing of non-core services to third parties. This type of customer participation was found to have implications for the experience formation with the focal service provider. As such, our research extends the work on customer participation in service delivery processes, which merely focused on customers who participate in serving themselves rather than deciding about outsourcing services to third parties (Bleier *et al.,* 2018).

If customers opt for outsourcing non-core services to a third party, the service triad literature contends that they act as principals in the service triad. The present research builds upon this literature by arguing that the role of the principal can even be strengthened when allowing customers to participate in coordinating the services provided by third parties with those of the focal service provider (cf. Model 3b). In contrast, customers may shift from a principal to a passive consumer by opting for a focal service provider-coordinated service triad (cf. Model 3a). The aforementioned evidence suggests that customers' roles in service triads

may change over time, depending on their outsourcing decisions (here, third party or not and – if opting for a third party - customer-coordinated or not). As such, this research contributes to a better understanding of the dynamic role of customers in service triads (Bastl *et al.*, 2019) and its implications for the formation of waiting experiences and overall experiences with the focal service provider.

By focusing on the implications of customer participation in outsourcing decisions for the formation of waiting experiences and overall experiences with the focal service provider, this research also provides insight into the performance implications of service design decisions (e.g., Ponsignon *et al.*, 2011). Indeed, the allowance of customer participation in decision-making about outsourcing of non-core services – which is a service design decision – may have important implications for the formation of waiting experiences and overall experiences with the focal service provider. For instance, the allowance of customer participation in outsourcing decisions may – in line with information overload theory (Miller, 1956) – deduce customers' attention away from the objective waiting time. Additionally, the extent to which customers engage in the coordination of outsourced services also affects the formation of waiting experiences and overall experiences with the focal service provider by increasingly deducing the attention away from the waiting experience and most of its drivers.

5.2. Managerial implications

The present research calls for careful reflection on allowing customers to participate in the decision-making about outsourcing parts of the service delivery process to third parties, as customers' outsourcing decisions may affect the formation of waiting experiences and overall experiences with the focal service provider.

First, when a customer opts for outsourcing non-core services to a third party provider, they are less sensitive for the time spent on waiting for the services offered by the focal service provider. As such, actions directed towards reducing the length of a wait – such as queue

management based on principles of queuing theory and simulation (Weiss and Tucker, 2018) – are less effective when a lot of customers choose to outsource non-core services to a third party.

If more customers decided to involve a third party in the delivery of non-core services, there are also implications for investments in environmental quality (e.g., renovations and refurbishments). The research findings namely suggest that investments in better environmental quality may yield better returns on investment if more customers opt for involving a third party. Indeed, customers who involve a third party care more about the environmental quality during the formation of waiting and overall experiences with the focal service provider.

Investments in interactional quality – such as social skills training for frontline employees – always pay off, as customers' outsourcing decisions do not influence the positive impact of better interactional quality on the waiting experience with the focal service provider and the same goes for its indirect impact on the overall experience with the focal service provider (except for customer-coordinated service triads where the interactional quality does not affect the overall experience anymore).

Taken together, practitioners should either align their investments with the most prominent experience drivers with the outsourcing choices of their customers or restrict the number of outsourcing options provided to customers.

5.3. Limitations and future research directions

As this study focuses on customer participation in outsourcing decisions in a specific context, this research has some limitations. First, this research centers on outsourcing decisions among patients undergoing cancer treatment. As this type of services is characterized by a heavy emotional charge and customers who are potentially more vulnerable than those involved in other types of services (e.g., Bendapudi and Leone, 2003), future research might address other types of services to increase the generalizability of this research. Meanwhile, cancer care is not unique in its outsourcing decisions, as several service providers – such as retailers and tour

operators – allow customers to decide upon outsourcing non-core services to third parties (Tax *et al.,* 2013) and their motives correspond with those of highly specialized healthcare providers such as CDUs (Billi *et al.*, 2004).

Additionally, future research might benefit from further investigating customers' motives for participating in outsourcing decisions, as these motives may depend upon the individual and situational context. Likewise, the coordinating role of customers in relation to the focal service provider and/or third parties also deserves further investigation. Specifically, future research can investigate customers' motives to adopt this role and its impact on the formation of waiting experiences and overall experiences with the focal provider.

As the focal service provider in our study offered its (non-)core services after the delivery of non-core services by third parties, future research could investigate the formation of waiting experiences and overall experiences with the focal service provider when customers get third party services after the focal provider delivered its services.

Finally, this study focused on the implications of customer participation in outsourcing decisions for waiting experience and the overall experience with the focal service provider. Hence, future research can investigate how this type of customer participation affects customer well-being. From a third party perspective, future research can investigate how customers experience their services along with the conditions under which third parties can strengthen their relationship with customers.

REFERENCES

Adams, J.S. (1963), "Toward an understanding of inequity", *Journal of Abnormal and Social Psychology*, Vol. 67 No. 5, pp. 422-436.

Adioti, A.A. and Valverde, R. (2013), "Time-driven activity based costing for the improvement of IT service operations", *International Journal of Business and Management*, Vol. 9 No. 1, pp. 109-128.

Akkermans, H., Van Oppen, W., Wynstra, F. and Voss, C. (2019), "Contracting outsourced services with collaborative key performance indicators", *Journal of Operations Management*, Vol. 65 No. 1, pp. 22-47.

Allen, A.M., Brady, M.K., Robinson, S.G. and Voorhees, C.M. (2015), "One firm's loss is another's gain: capitalizing on other firms' service failures", *Journal of the Academy of Marketing Science*, Vol. 43 No. 5, pp. 648-662.

Bagozzi, P. and Yi, Y. (1988), "On the evaluation of structural equation models", *Journal of the Academy of Marketing Sience*, Vol. 16 No. 1, pp. 74-94.

Bastl, M., Johnson, M. and Finne, M. (2019), "A Mid-Range Theory of Control and Coordination in Service Triads", *Journal of Supply Chain Management*, Vol. 55 No. 1, pp. 21-47.

Bellos, I. and Kavadias, S. (2019), "When Should Customers Control Service Delivery? Implications for Service Design", *Production and Operations Management*, Vol. 28 No. 4, pp. 890-907.

Beltagui, A., Candi, M. and Riedel, J.C. (2016), "Setting the stage for service experience: design strategies for functional services", *Journal of Service Management*, Vol. 27 No. 5, pp. 751-772.

Bendapudi, N. and Leone, R.P. (2003), "Psychological implications of customer participation in co-production", *Journal of Marketing*, Vol. 67 No. 1, pp. 14-28.

Billi, J. E., Pai, C. W. and Spahlinger, D. A. (2004), "Strategic outsourcing of clinical services: a model for volume-stressed academic medical centers", *Health Care Management Review*, Vol. 29 No. 4, pp. 291-297.

Bitner, J.M., Faranda, W., Hubbert, A. and Zeithaml, V. (1997), "Customer contributions and roles in service delivery", *International Journal of Service Industry Management,* Vol. 8 No. 3, pp. 193-205.

Bleier, A., De Keyser, A. and Verleye, K. (2018), "Customer Engagement Through Personalization and Customization", in Palmatier R., Kumar, V. and Harmeling, C. (Eds), *Customer Engagement Marketing*, Palgrave Macmillan, New York, NY, pp. 75-94.

Blut, M., Heirati, N., and Schoefer, K. (2019), "The Dark Side of Customer Participation: When Customer Participation in Service Co-Development Leads to Role Stress", *Journal of Service Research*, forthcoming.

Bowen, D.E. and Jones, G.R. (1986), "Transaction cost analysis of service organization-customer exchange", *Academy of Management Review*, Vol. 11 No. 2, pp. 428-441.

Carlson, J.R., Ross, W.T., Coulter, R.A. and Marquardt, A.J., (2019), "About time in marketing: an assessment of the study of time and conceptual framework", *AMS Review*, Vol. 9 No. 3, pp.136-154.

Chan, K.W., Yim, C.K. and Lam, S.S. (2010), "Is customer participation in value creation a double-edged sword? Evidence from professional financial services across cultures", *Journal of Marketing*, Vol. 74 No. 3, pp. 48-64.

Chang, W.-L. and Huang, L.-Y. (2016), "Measuring service experience: a utility-based heuristic model", *Service Business*, Vol. 10 No.1, pp. 1-30.

Childers, T.L., Carr, C.L., Peck, J. and Carson, S. (2001), "Hedonic and utilitarian motivations for online retail shopping behavior", *Journal of Retailing*, Vol. 77 No. 4, pp. 511-535.

Clogg, C.C., Petkova, E. and Haritou, A. (1995), "Statistical Methods for Comparing Regression Coefficients Between Models," *American Journal of Sociology*, Vol. 100 No 5., pp 1261–1293.

Clucas, C. (2016), "Cancer patients' respect experiences in relation to perceived communication behaviours from hospital staff: analysis of the 2012–2013 National

Cancer Patient Experience Survey", *Supportive Care in Cancer*, Vol. 24 No. 4, pp. 1719-1728.

Dagger, T.S., Sweeney, J.C. and Johnson, L.W. (2007), "A hierarchical model of health service quality: scale development and investigation of an integrated model", *Journal of Service Research*, Vol. 10 No. 2, pp. 123-142.

De Keyser, A. (2015), *Understanding and managing the customer experience*, Doctoral dissertation, Ghent University.

Dong, B. and Sivakumar, K. (2017), "Customer participation in services: domain, scope, and boundaries", *Journal of the Academy of Marketing Science*, Vol. 45 No. 6, pp. 944-965.

Durrande-Moreau, A. and Usunier, J.C. (1999), "Time styles and the waiting experience: an exploratory study", *Journal of Service Research*, Vol. 2 No. 2, pp. 173-186.

Euromonitor (2020), "Top 10 Global Consumer Trends 2020", available at: https://blog.euromonitor.com/ (accessed 22 January 2020).

Gattellari, M., Butow, P. N. and Tattersall, M. H. (2001), "Sharing decisions in cancer care", *Social Science & Medicine*, Vol. 52 No.12, pp. 1865-1878.

Gelman, A. and Rubin, D.B. (1992), "Inference from iterative simulation using multiple sequences", *Statistical Science*, Vol.7 No. 4, pp. 457-472.

Germann, F., Ebbes, P. and Grewal, R. (2015), "The Chief Marketing Officer Matters!", *Journal of Marketing*, Vol. 79 No. 3, pp.1-22.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010), *Multivariate Data Analysis: A Global Perspective*, Pearson Education Inc, New Jersey.

Heider, F. (1958), *The psychology of interpersonal relations*, Wiley, New York, NY.

Ho, T.H., Lim, N., Reza, S. and Xia, X. (2017), "OM forum—Causal inference models in operations management", *Manufacturing & Service Operations Management*, Vol. 19 No. 4, pp. 509-525.

Hox, J.J., Moerbeek, M. and van de Schoot, R. (2010), *Multilevel analysis: Techniques and applications*, Routledge, New York, NY.

Hui, M.K. and Tse, D.K. (1996), "What to tell consumers in waits of different lengths: An integrative model of service evaluation", *Journal of Marketing*, Vol. 60 No. 2, pp. 81-90.

Keiningham, T.L., Rust, R.T., Lariviere, B., Aksoy, L. and Williams, L. (2018), "A roadmap for driving customer word-of-mouth", *Journal of Service Management*, Vol. 29 No. 1, pp. 2-38.

Kaplan, R.S. and Anderson, S.R. (2004), "Time-driven activity-based costing", *Harvard Business Review*, Vol. 82 No. 6, pp. 131-138.

Lee, H.H., Pinker, E.J. and Shumsky, R.A. (2012), "Outsourcing a two-level service process", *Management Science*, Vol. 58 No. 8, pp. 1569-1584.

Lemke, F., Clark M. and Wilson H. (2011), "Customer experience quality: an exploration in business and consumer contexts using repertory grid technique," *Journal of the Academy of Marketing Science*, Vol. 39 No. 6, pp. 846-869.

Lemon, K.N. and Verhoef, P.C. (2016), "Understanding customer experience throughout the customer journey", *Journal of Marketing*, Vol. 80 No. 6, pp. 69-96.

Lim, E.A.C., Kum, D. and Lee, Y.H. (2015), "Understanding how changes within service experiences impact prospective vs. retrospective time judgments", *Journal of the Academy of Marketing Science*, Vol. 43 No. 6, pp. 730-745.

Maister, D.H. (1984), *The Psychology of Waiting Lines*, Harvard Business School, Boston.

Miller, G.A. (1956), "The magical number seven, plus or minus two: Some limits on our capacity for processing information", *Psychological Review*, Vol. 63 No. 2, pp. 81-97.

Mustak, M., Jaakkola, E., Halinen, A. and Kaartemo, V. (2016), "Customer participation management: Developing a comprehensive framework and a research agenda", *Journal of Service Management,* Vol. 27 No. 3, pp. 250-275.

Netemeyer, R.G., Bearden, W.O. and Sharma, S. (2003), *Scaling procedures: Issues and applications*, Sage Publications, Thousand Oaks, CA.

Perdikaki, O., Peng, D.X. and Heim, G.R. (2015), "Impact of customer traffic and service process outsourcing levels on e-retailer operational performance", *Production and Operations Management*, Vol. 24 No. 11, pp. 1794-1811.

Piccoli, G., Brohman, M. K., Watson, R. T. and Parasuraman, A. (2009), "Process completeness: Strategies for aligning service systems with customers' service needs", *Business Horizons*, Vol. 52 No. 11, pp. 367-376.

Ponsignon, F., Smart, P.A. and Maull, R.S. (2011), "Service delivery system design: characteristics and contingencies", *International Journal of Operations & Production* Management, Vol. 31 No. 3, pp. 324-349.

Pruyn, A. and Smidts, A. (1998), "Effects of waiting on the satisfaction with the service: Beyond objective time measures", *International Journal of Research in Marketing*, Vol. 15 No. 4, pp. 321-334.

Rouquet, A., Goudarzi, K. and Henriquez, T. (2017), "The company-customer transfer of logistics activities", *International Journal of Operations & Production Management*, Vol. 37 No. 3, pp. 321-342.

Sengupta, S., Niranjan, T.T. and Krishnamoorthy, M. (2018), "Trends and directions in service triads research", *International Journal of Physical Distribution & Logistics Management*, Vol. 48 No. 3, pp. 333-360.

Stokburger-Sauer, N., Scholl-Grissemann, U., Teichmann, K. and Wetzels, M. (2016), "Value cocreation at its peak: the asymmetric relationship between coproduction and loyalty", *Journal of Service Management*, Vol. 27 No. 4, pp. 563-590.

Tax, S.S., McCutcheon, D. and Wilkinson, I.F. (2013), "The service delivery network (SDN) a customer-centric perspective of the customer journey", *Journal of Service Research*, Vol. 16 No. 4, pp. 454-470.

Tuunanen, T., Bask, A. and Merisalo-Rantanen, H. (2012), "Typology for modular service design: review of literature", *International Journal of Service Science, Management, Engineering, and Technology*, Vol. 3 No. 3, pp. 99-112.

Van der Valk, W. and van Iwaarden, J. (2011), "Monitoring in service triads consisting of buyers, subcontractors and end customers", *Journal of Purchasing and Supply Management*, Vol. 17 No. 3, pp. 198-206.

Van Riel, A.C., Semeijn, J., Ribbink, D. and Bomert-Peters, Y. (2012), "Waiting for service at the checkout: Negative emotional responses, store image and overall satisfaction", *Journal of Service Management*, Vol. 23 No. 2, pp. 144-169.

Verleye, K. (2015), "The co-creation experience from the customer perspective: its measurement and determinants", *Journal of Service Management*, Vol. 26 No. 2, pp. 321-342.

Verleye, K., Gemmel, P. and Rangarajan, D. (2014), "Managing engagement behaviors in a network of customers and stakeholders: Evidence from the nursing home sector", *Journal of Service Research*, Vol. 17 No. 1, pp. 68-84.

Voorhees, C.M., Baker, J., Bourdeau, B.L., Brocato, E.D. and Cronin Jr, J.J. (2009), "It depends: Moderating the relationships among perceived waiting time, anger, and regret", *Journal of Service Research*, Vol. 12 No. 2, pp. 138-155.

Weiss, E.N. and Tucker, C. (2018), "Queue management: Elimination, expectation, and enhancement", *Business Horizons*, Vol. 61 No. 5, pp. 671-678.

WHO (2020), "Cancer key facts", available at: https://www.who.int/news-room/fact-sheets/detail/cancer (accessed 15 February 2020).

Wuyts, S., Rindfleisch, A. and Citrin, A. (2015), "Outsourcing customer support: The role of provider customer focus", *Journal of Operations Management*, Vol. 35, pp. 40-55.

Wynstra, F., Spring, M. and Schoenherr, T. (2015), "Service triads: A research agenda for buyer–supplier–customer triads in business services", *Journal of Operations Management*, Vol. 35, pp. 1-20.

Yuan, Y. and MacKinnon, D.P. (2009), "Bayesian mediation analysis", *Psychological Methods*, Vol. 14 No. 4, pp. 301-322.

Zhang, J.J., Lawrence, B. and Anderson, C.K. (2015), "An agency perspective on service triads: Linking operational and financial performance", *Journal of Operations Management*, Vol. 35, pp. 56-66.

Table 1. Coding and calculation of the patient observation data.

Variables	Operationalization	Source
Third party involvement	Service dyad (0) or service triad (1)	Description of service providing entities in the patient observation template
Type of service triad coordination	Focal service provider-coordinated service triad (0) or customer-coordinated service triad (1)	Description of service providing third parties in the patient observation template and interview information about the third parties coordinated by the CDU
Objective waiting time	Calculation of the difference between the start of the service at the CDU (i.e., patient registration) and the start of the core service (i.e., chemotherapy)	Time stamps of the moment the services are delivered in the patient observation template
Number of services delivered at the CDU	Number of services delivered at the CDU before the delivery of the core service (i.e., the chemotherapy)	Description in the patient observation template of the time stamps of the services provided at the CDU
CDU	CDU coded as CDU1 (0) or CDU2 (1)	Name of the CDU reported in the patient observation template
Fellow customer	Room number coded as no fellow customer (0) or presence of fellow customer (1)	Patient room number reported in the patient observation template in combination with data about room occupancy rate at the CDU
Treatment response	Remarks coded as no side effects (0) or the occurrence of side effects (1)	Remarks related to cancellations or problems with the patient at the CDU in the patient observation template

Note. CDU = Cancer Daycare Unit. CDU1 – which treats on average 30 patients per day – focuses on oncology patients from a wide range of medical disciplines including gynecology, head and neck, neurology, skin diseases, ear nose throat, urology, etc. CDU 2 – which treats on average 42 patients per day – focuses on patients with hematological, pneumological, and gastrointestinal problems.

Table 2. Results confirmatory factor analysis.

Construct and Items	Factor Loadings
Waiting experience (adapted from Hui and Tse 1996)	
I experience the time before the start of the treatment as very unpleasant. (reversed)	.93
I experience the time before the start of the treatment as unacceptable. (reversed)	.65
I experience the time before the start of the treatment as long. (reversed)	.83
Environmental quality (adapted from Dagger et al. 2007)	
I believe the physical environment at the CDU is excellent.	.84
I am impressed with the quality of the CDU's physical environment.	.91
The physical environment at the CDU is of a high standard.	.82
Interactional quality (adapted from Dagger et al. 2007)	
The staff at the CDU always listen to what I have to say.	.70
The CDU's staff treat me as an individual and not just a number.	.52
I feel the staff at the CDU understand my needs.	.78
The staff at the CDU are concerned about my well-being.	.71
I always get personalized attention from the staff at the CDU.	.65
I find it easy to discuss things with the staff at the CDU.	.76
The staff at the CDU explain things in a way that I can understand.	.72
The staff at the CDU are willing to answer my questions.	.71
I believe the staff at the CDU care about me.	.75
Overall experience (adapted from Verleye 2015)	
Dissatisfactory – Satisfactory	.65
Negative – Positive	.79
Poor – Excellent	.84
Disappointing – Delightful	.65

Note. CDU = cancer daycare unit.

Table 3. Internal consistency, reliability, average variances extracted (AVE), and correlation matrix.

Constructs	M	SD	CR	Cronbach's Alpha	1	2	3	4
1. Waiting experience[1]	5.03	1.52	.70	.89	*.81*			
2. Environmental quality	4.92	1.27	.77	.94	.22*	*.86*		
3. Interactional quality	5.94	.73	.58	.92	.26*	.34*	*.71*	
4. Overall experience	6.02	.97	.62	.90	.36*	.33*	.37*	*.74*

Note. M = mean construct score (unweighted); SD = standard deviation; CR = composite reliability; the diagonal (in italics) shows the square root of the AVE for each construct; the off-diagonal numbers represent the correlations among constructs; * $p < .05$; [1] reversed.

Table 4. Standardized parameter estimates for Bayesian models.

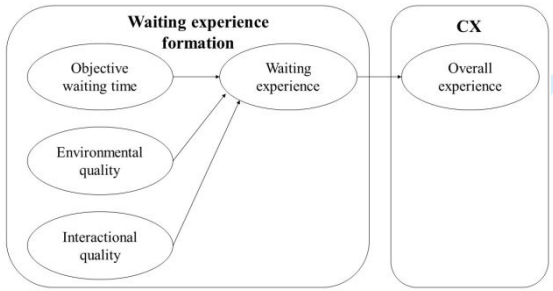
	Model 1 baseline model		Model 2 service dyad		Model 3 service triad		Model 3a focal service provider-coordinated service triad		Model 3b customer-coordinated service triad	
	WX	OX	WX	OX	WX	OX	WX	OX	WX	OX
Intercept	.81		.99		-.03		.43		-2.18	
Drivers										
Objective time (reversed)	.16*		.23*		-.03		-.03		-.05	
Environmental quality	.15*		.12		.22*		.26*		.07	
Interactional quality	.24*		.20*		.29*		.26*		.37*	
WX		.22*		.16*		.42*		.47*		.10
Interaction										
Objective time x WX		.03*		.04*		-.01		-.01		-.01
Environmental quality x WX		.03*		.02		.09*		.12*		.01
Interactional quality x WX		.05*		.03*		.12*		.12*		.04
Control variables										
Age	-.01		.13		-.17		-.23		-.01	
Employment situation	.04		.14		-.01		-.04		.05	
CDU	.05		.07		-.04		-.08		.09	
Number of services delivered at the CDU	-.02		.05		-.15		-.15		NA	
Fellow customer	.01		-.01		.11		.14		-.06	
Treatment response	-.04		-.03		-.01		-.04		.03	
R^2	.16*	.31*	.16*	.33*	.28*	.39*	.32*	.41*	.31*	.58*

Note. WX=waiting experience, OX=overall experience, CDU=Cancer Daycare Unit, *=p-value<.05 and 0 is not included in the Bayesian credibility interval.

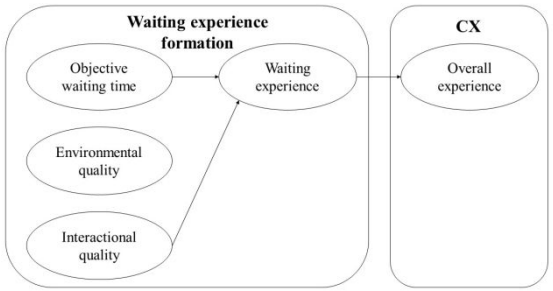
Figure 1. Visualization of the results.

Baseline model without moderator	Third party involvement as moderator	Type of service triad coordination as moderator*

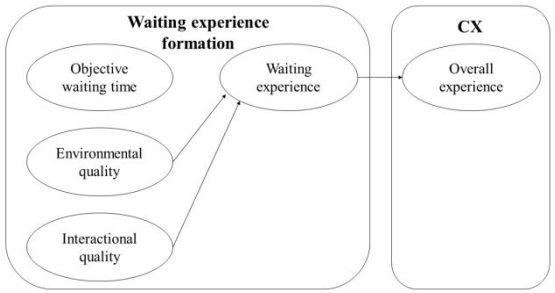
Model 1 – baseline model (n = 377)



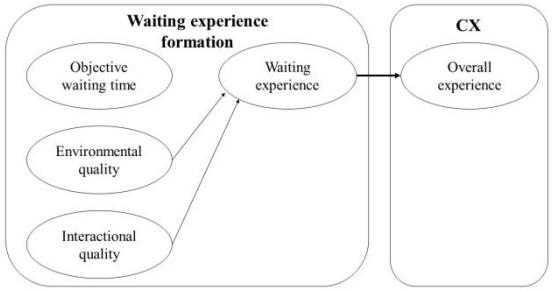
Model 2 – service dyad: no third party involved (n = 251)



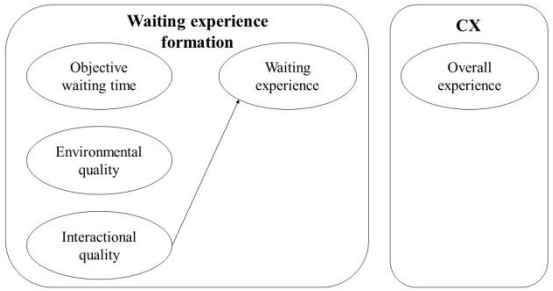
Model 3a – focal service provider-coordinated service triad (n = 90)



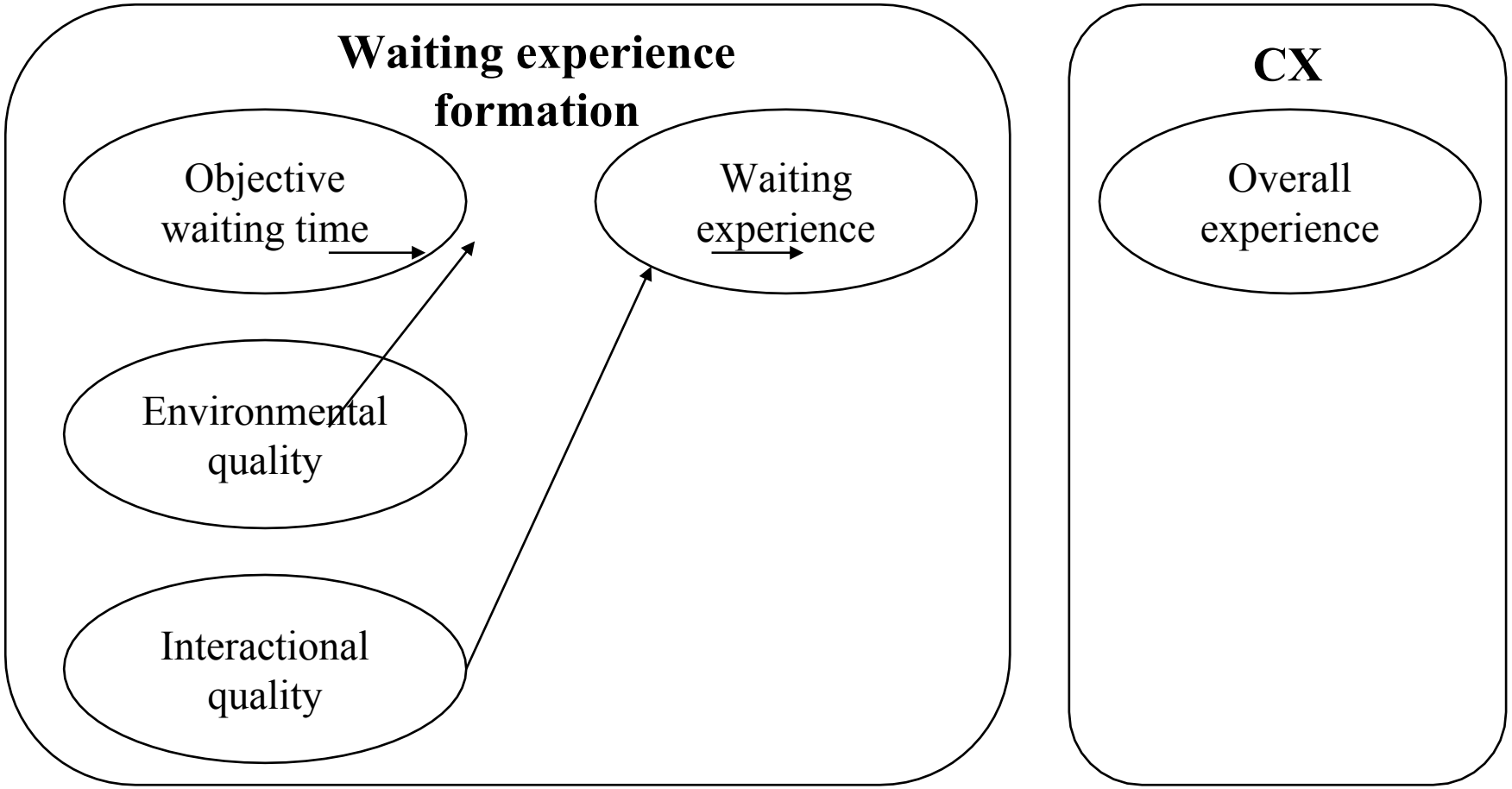
Model 3 – service triad: third party involved (n = 126)

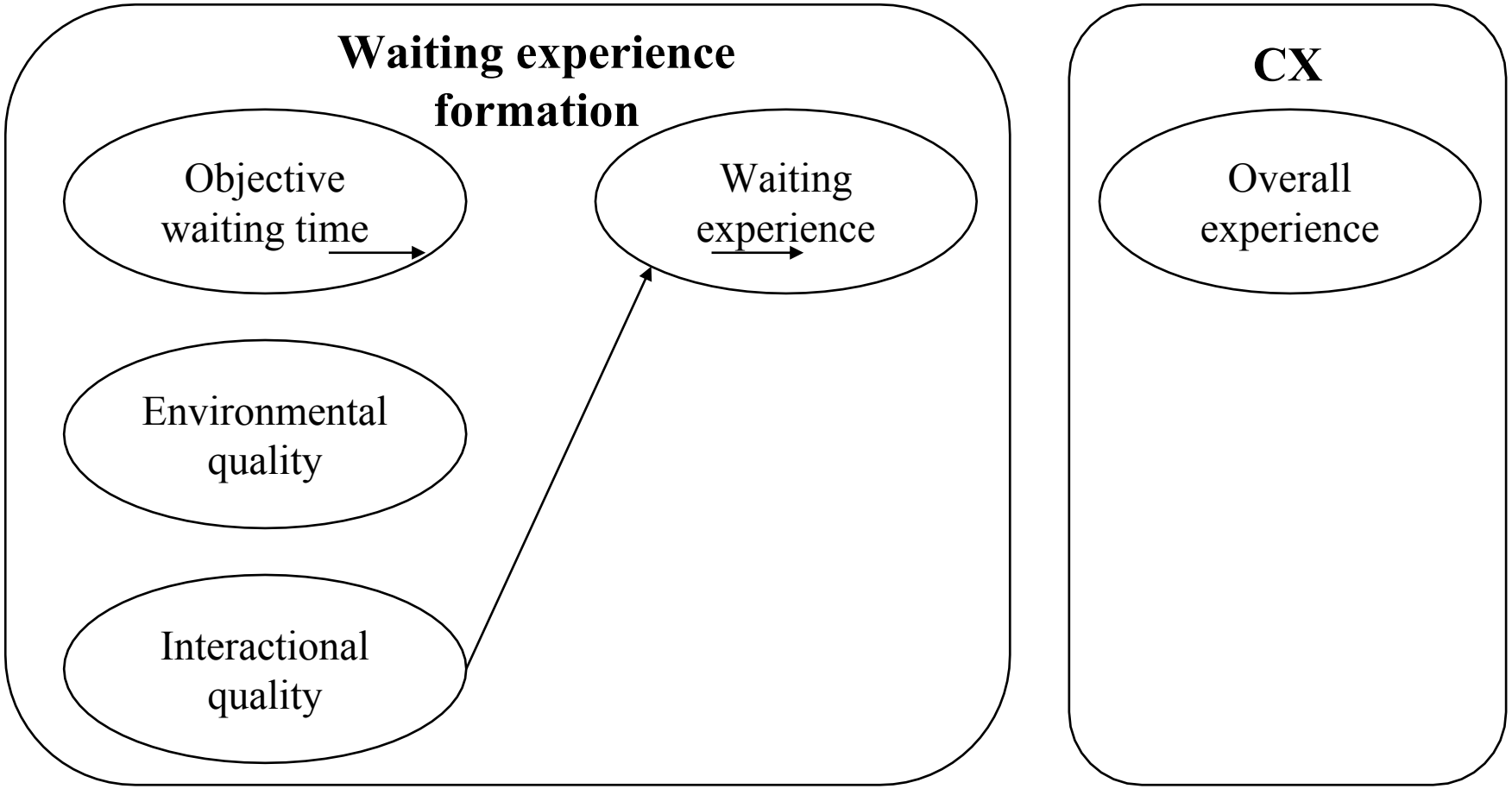


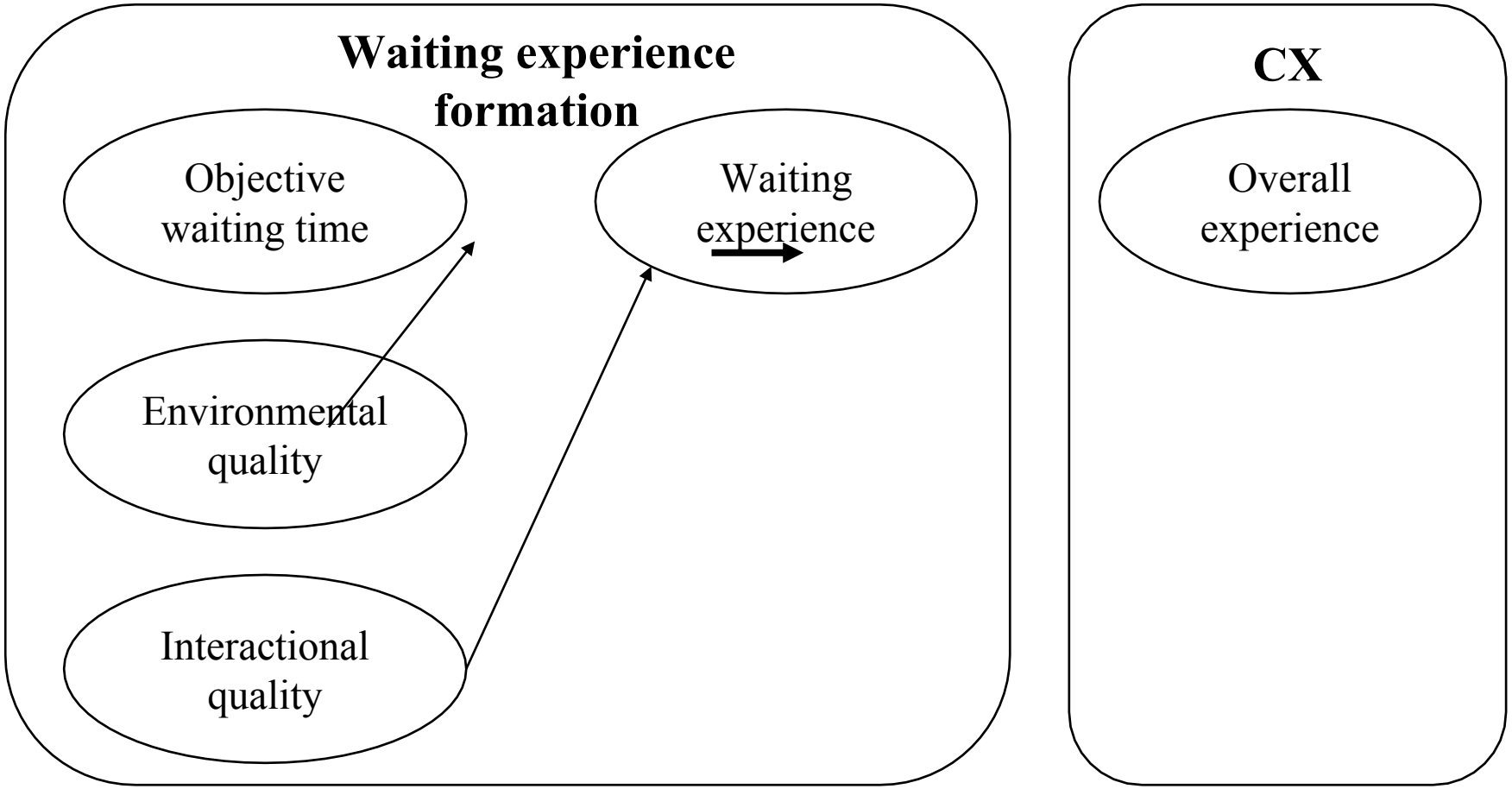
Model 3b – customer-coordinated service triad (n = 33)

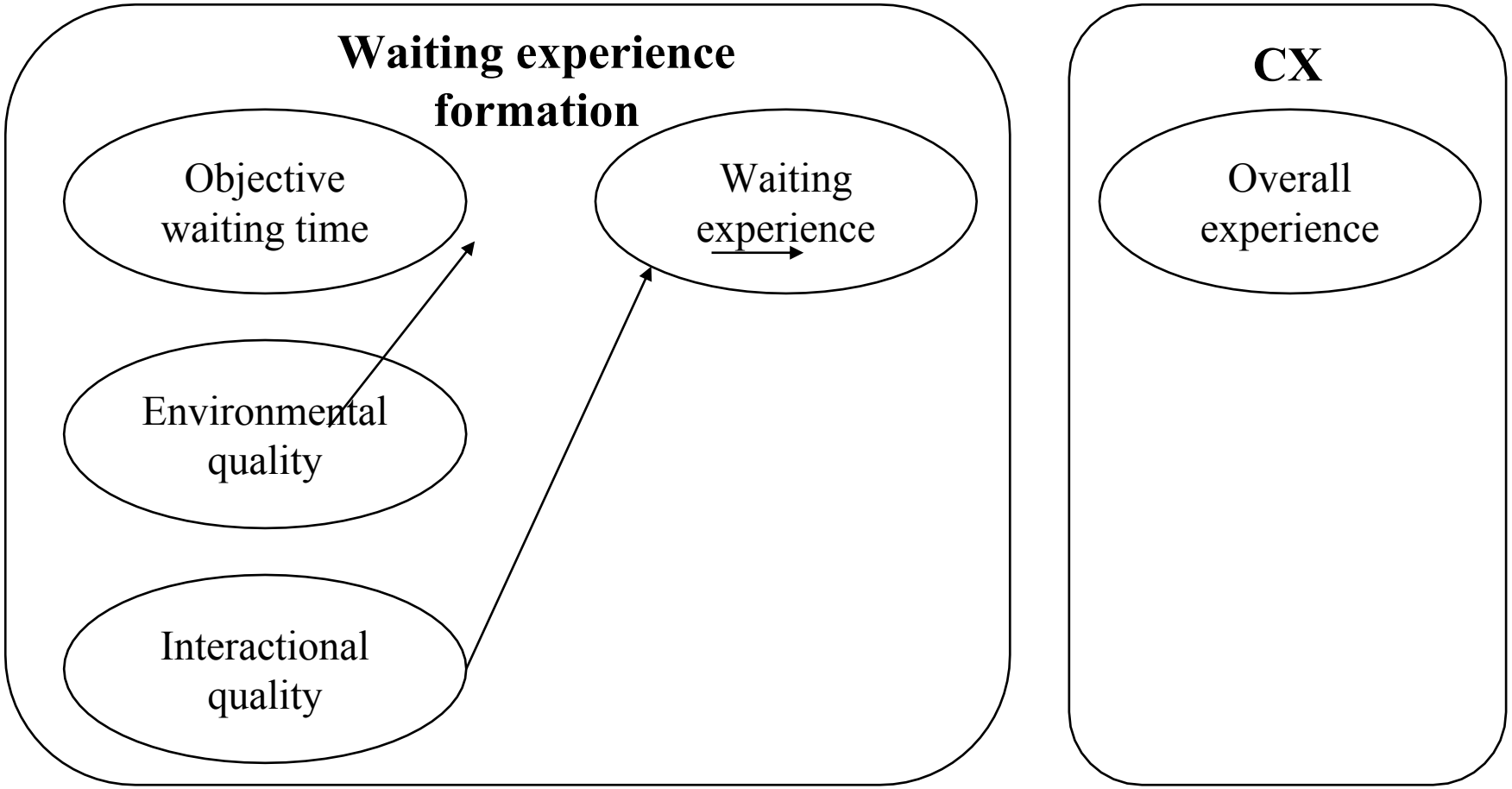


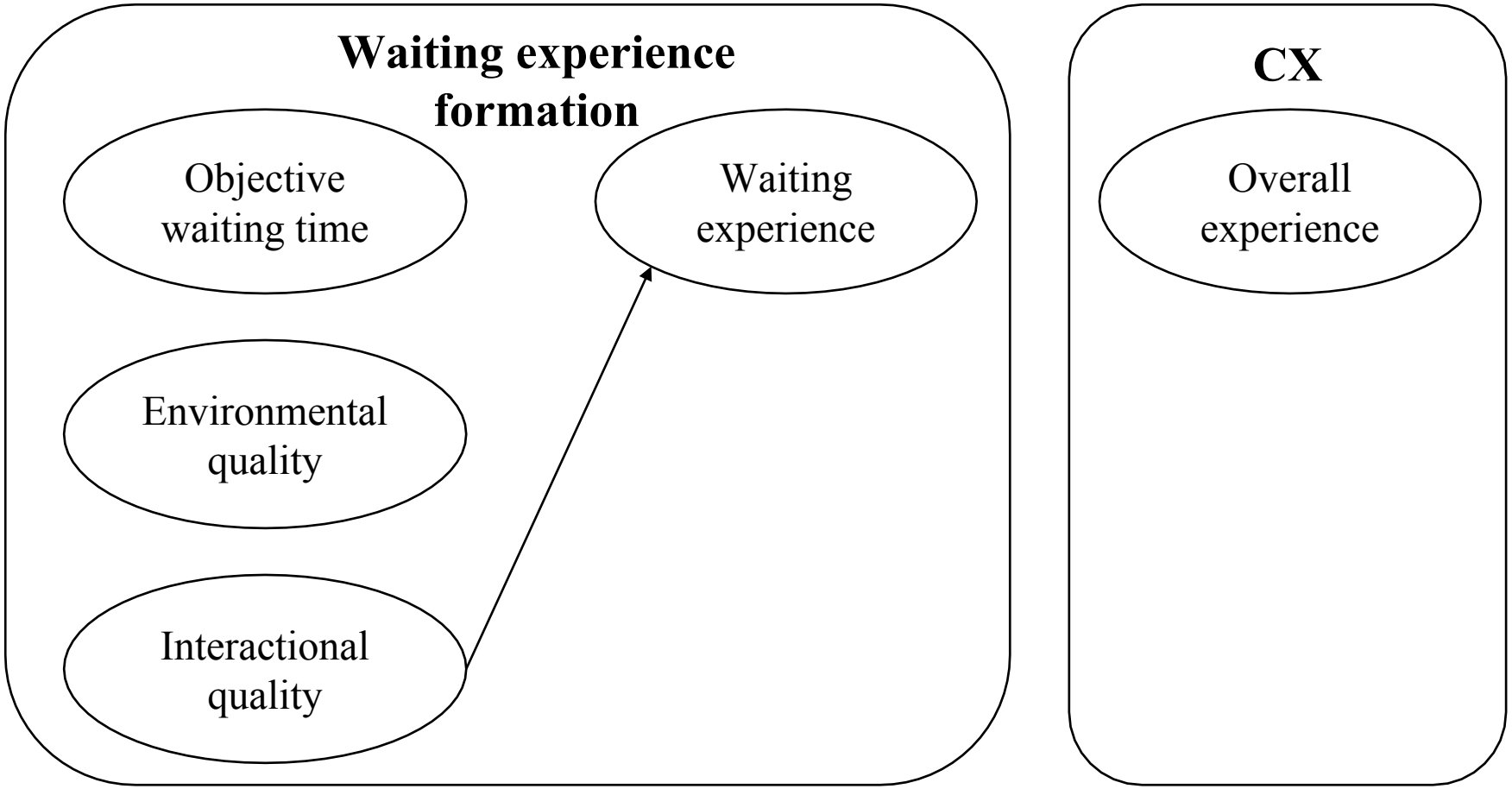
Note. CX = customer experience, arrows indicate significant positive relationship, thick arrows in Model 3 indicate that parameter estimate is significantly stronger than in respectively Model 3 and 2, * for 3 respondents the type of third party was not filled out.


Waiting experience formation
Objective waiting time
Environmental quality
Interactional quality
Waiting experience
CX
Overall experience


Waiting experience formation
Objective waiting time
Environmental quality
Interactional quality
Waiting experience
CX
Overall experience


Waiting experience formation
Objective waiting time
Environmental quality
Interactional quality
Waiting experience
CX
Overall experience


Waiting experience formation
Objective waiting time
Environmental quality
Interactional quality
Waiting experience
CX
Overall experience


Waiting experience formation
Objective waiting time
Environmental quality
Interactional quality
Waiting experience
CX
Overall experience