Effects of online reviews and waiting time on customers' repurchase intention: Beyond objective time measures

Master Thesis

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Abstract

With the development of online service, customers are willing to shop food online through apps or websites. To help service marketers increase the positive perception of online services, this study attempted to give a better understanding whether online reviews and waiting time would influence customers' repurchase intention. This study proposed a 2 (Sources of reviews: owner vs. consumer) x 2 (promised waiting time in the review: long vs. short) x 2 (Objective waiting time: long vs. short) between-subject experimental design. The sources of reviews, promised waiting time and objective waiting time are all independent variables, while the dependent variable is customers' repurchase intention. Based on the literature review, expected service quality, acceptable waiting time/waiting tolerance and satisfaction with the service were chosen to be mediators.

In total, 208 subjects from the University of Twente participated in this study. The findings showed that sources of reviews and promised waiting time do not result in the expected relationship with expected service quality. Nevertheless, it should be noted that the promised waiting time significantly affects service responsiveness (the perception of the service in a timely manner). The short promised waiting time has a stronger effect on service responsiveness than long promised waiting time. Also, the promised waiting time has a significant impact on the acceptable waiting time. Long promised waiting time results in longer acceptable waiting time/ higher waiting tolerance than the short promised waiting time. Furthermore, the acceptable waiting time, as a critical point of reference, surpassing objective waiting time provokes strong effects on satisfaction with the service. And the study revealed that the short objective waiting time significantly drives higher service satisfaction and repurchase intention than long objective waiting time. Therefore, this study not only helps service marketers to understand the effectiveness of online reviews and waiting time on customers' repurchase intention, but also guides future research to test the effectiveness of online reviews and waiting time in different situations and for more service categories.

Keywords: online reviews, waiting time, service quality, satisfaction, repurchase intention

1. Introduction

Waiting for service is a painful but ubiquitous experience (Hui & Tse, 1996) and is often the first interaction in the sequence of experiences that customers have (Dixon & Verma, 2009). Long waiting experiences generate customers' negative emotions like anxiety, boredom, anger, stress, demoralization, frustration and more (Norman, 2008). The more negative emotions customers experience, the more negative their perception of services is (Osuna, 1985). This perception appears to be a strong determinant of satisfaction with the service (Pruyn & Smidts, 1993; Taylor, 1994, 1995; Hui & Tse, 1996). Since repurchase intention is dependent on satisfaction (Chen et al., 2012), service marketers always try to shorten waiting time to counteract negative perception of services. Simultaneously, much of research findings are helpful in this respect. One line of research has guided service marketers to leverage perception to reduce the negative effect of waiting (Maister, 1985; Norman, 2008; Pruyn & Smidts, 1998), while another line of research has suggested service marketers to optimize objective waiting time through service improvement in productivity and efficiency (Lau & Leung,1997; Vansteenwegen & Van Oudheusden, 2007). These studies typically focus on a waiting phenomenon in specific physical situations, such as a bank (Chebat & Filiatrault, 1993), a supermarket (Bennett, 1998), and a train station (Van Hagen, 2011). On the contrary, a virtual environment, such as waiting for an online service, has not yet been fully explored.

The present study takes a close look at online food delivery service. Interestingly, in this context, it is quite difficult for customers to evaluate the quality of service before consumption. Some customers try to leave their comments and feelings about the service through writing online reviews (Bickart & Schinler, 2005). Others can appraise the service quality based on those reviews (Siahailatua, 2010). This would imply that online reviews have a strong impact on customers' perceived service quality before consumption. In this study, customers' perceived service quality can be considered as customers' expected service quality after reading reviews, which is an absolute measure of service value (Zeithaml, 1988). Maister (1985) suggests "The More Valuable the Service, the Longer the Customer Will Wait" (p. 7), which means that the extent of waiting tolerance depends upon the service value customers wait for. When customers value the service, they are willing to sacrifice their precious time and energy on such annoying waiting to make a purchase. In this circumstance, waiting tolerance acts as a subjective point of reference proven to be important in the evaluation of satisfaction with the service (Zeithaml et al., 1996). Therefore, an alternative approach to reduce the negative perception on services is to make customers enlarge

their waiting tolerance/acceptable waiting time by increasing the expected service quality. One may help service marketers counteract negative perception of the service when objective waiting time cannot be reduced.

Thereby the primary objective of this study is to investigate effects of online reviews and waiting time on customers' repurchase intention of the online food delivery service. In order to achieve this, there are four sub-objectives: 1). investigating the impact of online reviews on customers' expected service quality; 2). testing the effect of customers' expected service quality for customers' acceptable waiting time; 3). assessing to what extent the satisfaction with the service is affected by the acceptable waiting time; 4). evaluating the repurchase intention of the online food delivery service.

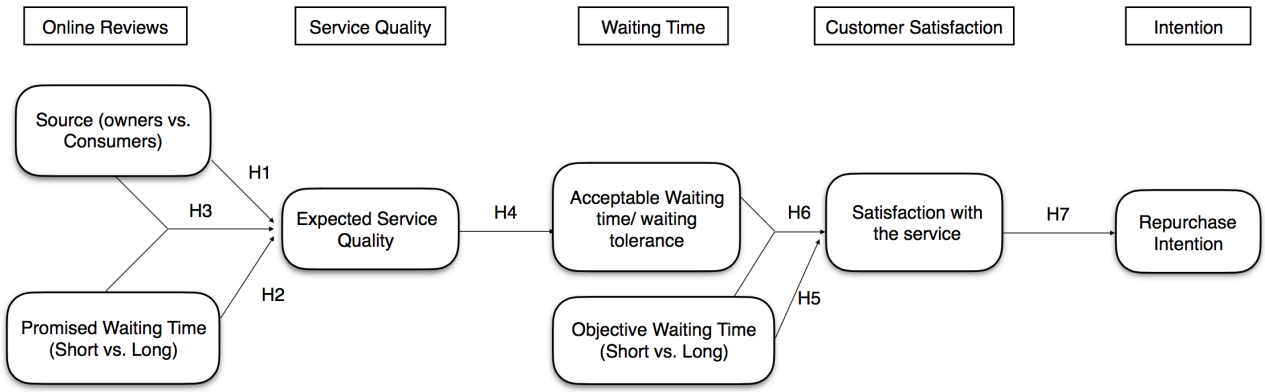
As follows, the conceptual background is described first. Second, the used methodology is explained. Subsequently, main results of this research are presented. Next, in the discussion session, the findings are discussed, and theoretical and practical implications are given. The paper ends with limitations and directions for future research.

2. Conceptual background

2.1. Theoretical framework

To better understand the big picture of this research, the proposed conceptual model is shown in Figure 1. This study proposes that expected service quality plays a mediating role in the relationships between sources of online reviews, promised waiting time and customers' acceptable waiting time in the online food delivery services setting. In this study, it is also crucial to examine to what extent the satisfaction with the service is affected by the acceptable waiting time.

Figure 1: *A proposed conceptual framework.*



2.2. Online reviews

Online reviews are considered as the most convenient and popular communication tools (Chatterjee, 2001). More than 30% of online users leave reviews or rate services or products (Lenhart, 2006), and almost 70% of consumers use those online reviews and ratings as a reference (Forrester, 2006).

Undoubtedly, this type of informal communication is quite important for both consumers and marketers. For marketers, online reviews not only explain a product or service performance (Liu, 2006), but also enhance the product or service awareness (Vermeulen & Seegers, 2009). It influences the sales and popularity of a product or service significantly (Dellarocas et al., 2007). For customers, online reviews serve not only as a source of recommendations but also as insights into other customers' product or service experiences (Park et al., 2007). Because it is difficult for customers to evaluate quality before the purchase, it is crucial for products or services sold online to have reviews. Customer are therefore willing to trust those comments (Lewis & Chambers, 2000) to reduce perceived risks and uncertainties (Klein, 1998). It is assumed that online reviews would actively draw buyers toward or away from the service or product, as Hawkins et al.(2004) suggest.

The above is in line with the Theory of Planned Behaviour (TPB), which states that attitude, subjective norms and perceived behavioural control shape an individual intention. This attitude is affected by other people, who are considered to be important, suggesting whether or not to perform particular behaviours (Fishbein & Ajzen, 2011). In a similar vein, this study hypothesizes that customers' attitude towards the service quality is influenced by online reviews. Additionally, as timely manner is one of the dominant factors of service quality (Parasuraman et al., 1988), the proposed conceptual framework asserts that promised waiting time for a service will serve as a standard with which customers' perceived waiting time is compared, resulting in a high or low expected service quality.

Furthermore, empirical studies demonstrate that the receiver's perception of the sender influences message effectiveness (Alpert & Anderson, 1973; Reingen & Kernan, 1994). DeShields, Kara & Kaynak (1996) define this phenomenon as "source effect". The findings and conclusions from Smith, Menon & Sivakumar (2005) report that sources from different senders could influence customers to perceive the product or service information differently. The study from Zhang, Ye, Law, & Li (2010) shows that customers, who were exposed to an online user-created review or an online editor-created review, have different buying behaviour. Generally speaking, an online user-created review is interpreted as a peer or customer review, while an online editor-created review is interpreted as an expert or a professional third-party recommendation (Mudambi & Schuff, 2010; Xia & Bechwati, 2008). Some restaurants invite editors or a professional third-party to review their services or products (Zhang, Ye, Law, & Li, 2010). In this case, an online editor-created review is supported by the advertiser and thus merely positive, whereas an online user-created review is either positive or negative. This study is decided to directly compare the effect of customer-created positive reviews or owner-created positive reviews on expected service quality. Referring again to the time factor of the expected service quality concept, it posits that a promised waiting time span in minutes in combination with a long/short judgment will eventually result in different levels of expected service quality. We also expect that interaction effects between sources of online reviews and promised waiting time will particularly influence expected service quality differently. Hence,

H1: The **customer-created positive online review** will have a more positive effect on expected service quality than the **owner-created positive online review**.

H2: The **short promised waiting time** shown in reviews will have a more positive effect on expected service quality than the **long promised waiting time.**

H3: The **promised waiting time** will have a stronger effect on expected service quality from the **customer-created online review** than from the **owner-created online review**.

Keep in mind that the topic of sources of reviews is controversial. An online customer-created review is subjective, which is mainly based on personal experience, while an online owner-created review is considered authoritative, in-depth and logical (Smith, 1993). On the contrary, an online owner-created review might not be considered as independent due to its promotion purpose (Zhang, Ye, Law, & Li, 2010).

2.3. Service quality

As noted by Master (1985) "The More Valuable the Service, the Longer the Customer Will Wait" (p. 7), in other words, the extent of waiting tolerance depends upon the service value. The concept of service value has been investigated for years to understand customers' behaviours (Ostrom & Iacobucci, 1995; Jensen, 1996; Woodruff, 1997). This would imply that the service value would influence customers' behaviour in the waiting area.

To understand service value, the most commonly used definition is from Zeithaml: "the customer's overall assessment of the utility of a product based on perceptions of what is received and what is given"(1988, p.14). In Figure 1, expected service quality was proposed as an important factor that will affect waiting tolerance/acceptable waiting time. Zeithaml (1998) points out that the service quality is an absolute measure of the service value. Further studies (Howat & Assaker, 2013; Yu et al., 2014) have concluded that service value is prompted by the service quality. This would imply that the better service quality customers receive, the higher service value the customers perceive. Referring to the previous paragraph, it is obvious that service quality would also influence customers' behaviour in the waiting area somehow. We expect that customers are willing to wait longer for a service with high quality, and vice versa. Further, service quality is interpreted as disparities between customers' expected service quality and the actual service quality received by customers. The actual service quality can be measured and verified on some predetermined ideal criterion or criteria. Expected service quality, on the other hand, is defined as "the consumer's judgment about a service's overall excellence or superiority" (Zeithaml, 1988, p.16). In this study, customers evaluate the service quality that they expect. Hence we hypothesize,

H4: The greater the expected service quality customers perceive, the longer customers are willing to wait.

2.4. Waiting time

Waiting is an inescapable and one of the least enjoyable parts of people's lives. It creates frustration and stress, reduces productivity, and causes inconvenience. A theoretical separation of waiting in objective waiting time and subjective waiting time has been suggested in the literature (Hornik, 1984). Objective waiting time is the actual, measurable time that has passed, while the subjective waiting time is the estimation of the waiting time by the person waiting. Furthermore, Pruyn and Smidts (1998) added the concept of acceptable waiting time (or the level of tolerance for waiting). It is defined as the maximum amount of time tolerated in a specific waiting situation. By surpassing the acceptable level, waits will be experienced not only as long but also as intolerably long. As waiting is a term with multiple dimensions, it is important to clarify the aspects of waiting to this research proposal: the acceptable waiting time and the objective waiting time.

The focus of this study is on how online reviews can influence the perception of a service quality and how this perception might influence the acceptable/tolerable waiting time. It is based on the phenomenon of waiting time increasing the pleasure of an upcoming positive outcome (Loewenstein, 1987). In Germany, "Vorfreude ist die schönste Freude" is a very common proverb, which is roughly translated as "anticipation is the highest form of joy". Loewenstein (1987) shows that people intentionally wait for products or services on some occasions because the anticipation of future purchase can lead to a positive anticipatory utility. This anticipatory utility might be one of the reasons why people endure longer waits for the products or services than they usually do. Thus, the zone between the anticipated level and the tolerable level is defined as the region of tolerance. This region can certainly vary depending on the individual and the situation (Nie, 2000). In the present study, the anticipated level can be seen as promised waiting time in reviews, while the tolerable level is customers' acceptable waiting time.

As one of the independent variables, objective waiting time is considered as the interval between placing food orders through apps or websites and the time at which orders have been actually delivered to customers' addresses. With regard to objective waiting time and customer satisfaction, objective waiting time is a pivotal factor in customers' evaluation of service satisfaction. Several previous studies provide the evidences of a negative relationship between objective waiting time

and satisfaction evaluation (Katz, Larson, and Larson, 1991; Taylor, 1994; Tom and Lucey, 1995). We therefore hypothesize,

H5: The shorter customers wait, the more satisfied with the service customers are.

2.5. Satisfaction with the service

Due to the rise of consumerism, customer satisfaction has become one of the most studied areas in marketing since 1970s. Nowadays, customer satisfaction is still a 'hot' area as ever (Peterson & Wilson, 1992). Tse and Wilton (1988) define customer satisfaction as "the consumer's response to the evaluation of the perceived discrepancy between prior expectations and the actual performance of the product or service as perceived after its consumption" (p. 204). Satisfaction is thus considered as an overall post-purchase customer evaluation (Fornell, 1992). Some studies suggested that "customer satisfaction is identified by a response (cognitive or affective) that pertains to a particular focus and occurs at a certain time" (Giese & Cote, 2000, p. 15). A recent study on customer satisfaction reports that "when a customer is contented with either the product or services it is termed satisfaction. Satisfaction can also be a person's feelings of pleasure or disappointment that results from comparing a product's perceived performance or outcome with their expectations" (Kotler & Keller, 2009, p.789).

Although a variety of alternative definitions exist, the most widely accepted definition of customer satisfaction is that it is a comparison of perceived performance and expectation regarding the actual service encounter, which refers to the expectancy disconfirmation model. Simply stated, if customers' perceived performance and expectation are equal, then the expectation is confirmed and he or she is satisfied. However, if customers' perceived performance fails to meet the expectation, then the expectation is disconfirmed. Disconfirmation seems like a negative experience, but it is not necessarily so. There are two types of disconfirmations: positive versus negative. A positive disconfirmation exists when perceptions exceed expectations, which results in customers' satisfaction. In contrast, when the performance falls short of the customers' expectations, the result is a negative disconfirmation, thereby leading to customers' dissatisfaction (Hoffman & Bateson, 2010). Furthermore, this expectancy disconfirmation model also indicates that repurchase decision is dependent on satisfaction (Chen et al., 2012).

In the present study, the model asserts that the acceptable waiting time will serve as a standard (the maximum number of minutes tolerated to wait) with which the objective waiting time is compared, resulting in a (positive or negative) appraisal of service satisfaction. A significant disconfirmation of customers' acceptable waiting time will thus influence the appraisal of service satisfaction. We propose that when objective waiting time surpasses customers' acceptable waiting time, customers will be dissatisfied with the service, and vice versa. Therefore we expect that,

H6: The more positive disconfirmation of the acceptable waiting time (longer than objective waiting time) is, the more satisfied with the service customers are.

2.6. Repurchase intention

Repurchase intention can be defined as the probability or willingness of customers to continue to buy a designated service from the same website or company, taking into account the present situation and likely circumstances (Lacey, Suh & Morgan, 2007). The reason why customers decide to select the same service provider and purchase the same service is determined by the obtained value within their past transactions (Kaynak, 2003). In this study, repurchase intention is the dependent variable. As previously suggested by Oliver (1999), repurchase intentions have a significant relationship with customer satisfaction. The customers' repurchase intention is based on the satisfaction gained from prior experiences and the expectation of future benefits; the expectancy disconfirmation model indicates that repurchase intention is dependent on satisfaction (Chen et al., 2012). Hence,

H7: The more satisfied with the service customers are, the greater their repurchase intention will be.

3. Methodology

3.1. Research design

The primary goal of the study is to empirically demonstrate that long or short promised waiting time mentioned in the review, together with different sources of reviews, can influence the expected service quality and how this perception influences the acceptable waiting time. Subsequently, the study assesses to what extent the satisfaction with the service is affected by the acceptable waiting time and objective waiting time, and whether the repurchase intention is influenced consequently.

The study utilised a 2 (sources of reviews: owner vs. customer) x 2 (promised waiting time: long vs. short) x 2 (objective waiting time: long vs. short) between-subject experimental design. The combinations of the variables within the eight scenarios are displayed in Table 1. Before the final research was conducted, a pre-test was used to identify promised waiting times that are considered either long or short for the majority of participants regarding online food delivery service.

Table 1: *Research design*

	Objective waiting time > Promised waiting time		**Objective waiting time < Promised waiting time**	
	Long Promised waiting time	*Short Promised waiting time*	*Long Promised waiting time*	*Short Promised waiting time*
Customer	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Owner	Scenario 5	Scenario 6	Scenario 7	Scenario 8

3.2. Pilot study

To determine the lengths of promised waiting times that are considered either long or short in this study, a pilot study was conducted. Participants in the pilot study were asked to describe the average waiting time for a pizza delivery service to the city centre, Enschede. Most subjects expressed 30 mins as average waiting time in this case. They rarely objected when the wait was 5 mins more or less. As Hui and Tse (1996) suggest, waiting 5 mins more is considered as short delay. We therefore decided to use 5 mins more or less than 30 mins as a long (35 mins) and short (25mins) promised waiting time in this study. In addition, according to the study from Osuna (1985), customers consider to wait 15 mins longer as a long delay, thus we decided to select 15 mins more or less than promised waiting time as a long or short objective waiting time, see Table 1-1.

Table 1-1: *Research design with times*

	Long promised waiting time (35 mins)		**Short promised waiting time (25mins)**	
	Long objective waiting time (50 mins)	*Short objective waiting time (20 mins)*	*Long objective waiting time (40 mins)*	*Short objective waiting time (10 mins)*
Customer	Scenario 1	Scenario 3	Scenario 2	Scenario 4
Owner	Scenario 5	Scenario 7	Scenario 6	Scenario 8

3.3. Participants

Ideally, the sample chosen in the study should be limited to a representative fraction of the population. A research shows that the citizens around 18-31 years in the Netherlands spend more time online and are most likely to engage in online shopping compared to older individuals (CBS, 2016a, 2016b). Considering the feasibility to conduct the study as a student of the University of Twente, the representative fraction was narrowed to students (18-31 years) of the University of Twente through convenience sampling.

Table 2: *Complete demographic information of the survey respondents*.

Demographic characteristics		Frequency	Percentage %
Gender	Male	83	39.9
	Female	125	60.1
Age	18-21 years old	53	25.5
	22-24 years old	88	42.3
	25-28 years old	54	26.0
	29-31 years old	13	6.3
Study faculty	Behavioural, Management and Social sciences (BMS)	107	51.4
	Engineering Technology (CTW)	26	12.5
	Electrical Engineering, Mathematics and Computer Science (EEMCS / EWI)	43	20.7
	Science and Technology (TNW)	18	8.7
	Geo-Information Science and Earth Observation (ITC)	14	6.7
Study level	A bachelor student	72	34.6
	A master student	136	65.4
Total		208	100

Eventually, participants were 85 men and 129 women filling out the survey. However, 6 non-finished surveys were eliminated, thus the number of valid questionnaires from 208 respondents were used for analysis. Of the 208 respondents included in this study, 39.9% were males (n = 83) and 60.1% were females (n = 125). Most of the respondents' age (42.3%) ranged from 22 to 24 years old, then 26% of respondents were between 18 and 21 years old, only 6.0% were varied between 29 and 31 years old, see Table 2.

The results also show that 107 participants (51.4%) were from the Faculty of Behavioral, Management and Social Sciences (BMS). Following this, participants from other faculties were approached to complete the survey: 12.5% from Engineering Technology (CTW), 20.7% from Electrical Engineering, Mathematics and Computer Science (EEMCS / EWI), 8.7% from Science and Technology (TNW), 6.7% from Geo-Information Science and Earth Observation (ITC).

3.4. Procedure

The research was conducted on ten consecutive working days. Participants were randomly assigned to one of eight groups. Each group had its own scenario, which was implemented and administrated by Qualtrics software. To begin, the participants were provided an online review written by a fictional character named Jesse de Vries including the title of writer, either whether it is the owner of restaurant or the customer, and either a long promised waiting time or a short promised waiting time. After reading the review, the participants answered the questions used to measure expected service quality, following which acceptable waiting time was assessed by asking them to give an estimation (in minutes) of the time they tolerate to wait. Next, either a long objective waiting time or a short objective waiting time was alerted. In the end, participants evaluated satisfaction with the service and repurchase intention respectively.

An example scenario for the "owner x long promised waiting time x long objective waiting time" is given in Appendix 2. In this scenario, participants were asked to imagine that they were busy in the library on their final exams' preparation. When they went home (Enschede City Centre), they used the online website www.thuisbezorgd.nl to order a pizza delivered to home directly. They read a recommended review written by Jesse de Vries, the owner of restaurant, and were informed that it would take 35 mins (long promised waiting time) to deliver the food at the city centre. Referring to this, participants assessed their expected service quality and acceptable waiting time. Actually, the service took much longer than promised in the review, they spent 50 mins getting the food (long

objective waiting time > long promised waiting time) in this scenario. Next, participants were asked to rate the satisfaction with the service on a a 10-point scale ranging from 'very dissatisfied' (1) to 'very satisfied' (10) and described their repurchase intention by 7-point Likert scale.

3.5. Research instruments

3.5.1. Online reviews

The data of online reviews used to validate our hypotheses were retrieved from thuisbezorgd.nl, which is one of leading intermediary online portals between customers and restaurants. Customers can order food on thuisbezorgd.nl, where restaurants have updated their menus, to have it home delivered by the restaurants of their choice. We purposely choose thuisbezorgd.nl based on two specific considerations. First, the organisation is the market leader in the Netherlands (market share of 90%) and Belgium (70%). The website handles over 800,000 orders per month for 10,000 restaurants (Groen, 2012). Second, thuisbezorgd.nl is specialised in online food delivery services (thuisbezorgd.nl/en/, 2017). By collecting user reviews from thuisbezorgd.nl, the user review pool was formed.

3.5.2. Expected service quality

Measuring expected service quality is crucial in this study. SERVQUAL model (Parasuraman et al., 1988) and SERVPERF model (Cronin & Taylor, 1992) are the most well-known measurement instruments of service quality. As customers' expected service quality is similar to customers' perceived service quality in this study, we decided to measure customers' expected service quality as was done in the study of Gounaris et al.(2003). Certainly, the study of Gounaris et al.(2003) also refers to SERVQUAL model (Parasuraman et al., 1988) and SERVPERF model (Cronin & Taylor, 1992), which has measured the five service factors, namely: reliability, responsiveness, tangibles, empathy and assurance. In order to fit the purpose of this research, some items have slightly been changed. The 6 modified items were measured by a 7-point Likert scale from 'strongly disagree (1)' to 'strongly agree (7)', see Table 3. Additionally, considering that expected service quality depends on the five service factors, this study mainly focuses on the time related aspect of expected service quality. Therefore, the item about service responsiveness will be discussed in the *Results* — 'the online food delivery service supplier provides the service in a timely manner'.

Table 3: *Modified items measuring perceived service quality*

Measurement items for expected service quality (7-point Likert scale: 1= strongly disagree; 7 = strongly agree)
The online food delivery service supplier provides the service reliable and consistently.
The online food delivery service supplier provides the service in a timely manner.
The online food delivery service supplier has approachable and easy to contact employees.
The online food delivery service supplier has courteous, polite and respectful employees.
The online food delivery service supplier has employees who listen to me and we understood each other.
The online food delivery service supplier has employees who are neat and clean.

3.5.3. Acceptable waiting time

After completing the questionnaire about expected service quality, the acceptable waiting time is assessed by asking the participants to give an estimation (in minutes) of the time they tolerate to wait - 'What is the maximum number of minutes you tolerate to wait for this online food delivery service?'. The question was formulated based on the definition of acceptable waiting time from the study of Pruyn and Smidts (1998) — the maximum amount of time tolerated in a specific waiting situation.

3.5.4. Satisfaction with the service

Measures of satisfaction with the service are generally derived via direct and indirect measures. Indirect measures of satisfaction with the service generally include monitoring and tracking sales records, revenues, and customer feedbacks. Companies that depend on indirect measures are taking a passive approach to deciding whether customer perceptions are meeting or exceeding their expectations. Direct measures of satisfaction with the service are obtained via satisfaction questionnaires. For example, the scales used to collect the data vary (e.g., 5-point to 100-point scales), questions asked of respondents vary (e.g., from general to specific questions), and data collection methods vary (e.g., personal interviews to self-administered questionnaires) (Peterson & Wilson, 1992). In this study, the appraisal of satisfaction with the service is directly measured by the questions from Net Promoter Score NPS (General), which is a common and widely used test of customer satisfaction (Smith, 2012). Three questions were used for this study: 'Overall, how satisfied are you with this online food delivery service?'; 'Based on your experience, how likely would you be to recommend this online food delivery service to a friend?', 'Based on your experience, how likely would you be to recommend this restaurant to a friend?', see Appendix 1.

3.5.5. Repurchase intention

This construct measured the likelihood that the participant is going to repurchase this online food delivery service. Referring to previous studies (Chiu, Chang, Cheng, & Fang 2009; Yi & La, 2004), we thus modified 3 items: 'You intend to continuously purchase this online food delivery service from the same restaurant', 'You will pay close attentions to this online food delivery service offered from the same restaurant' and 'You intend to purchase other alternative online food delivery services from other restaurants'. These items were measured by a 7-point Likert scale from 'strongly disagree (1)' to 'strongly agree (7).

3.6. Validity and Reliability of the constructs

To measure the construct validity of the research, a factor analysis was conducted. Factor analysis is useful for investigating constructs by collapsing a large number of variables into a few interpretable underlying factors (Rahn, 2016). Before Factor Analysis was performed, two statistical measures are generated by SPSS to help assess the factorability of the data: Bartlett's test of sphericity (Bartlett, 1954), and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (Kaiser, 1970, 1974). The Bartlett's test of sphericity should be significant ($p< 0.05$) for the factor analysis to be considered appropriate. The KMO index ranges from 0 to 1, with 0.6 suggested as the minimum value for a good factor analysis (Tabachnick & Fidell, 2001), with KMO index .840 and $p < 0.001$ from Bartlett's test of sphericity, thus factor analysis is appropriate to conduct, see appendix 3.

A factor analysis with Varimax rotation was used to test validity of the constructs. Referring to 'Rotated component matrix', two situations would happen to measure one construct: 1). More than one component was extracted; 2). Only one component was extracted, the solution cannot be rotated. The results, in Table 4, show that no items should be omitted. Following this, Cronbach's alpha was used to measure the internal consistency of the latent variable, and its acceptable value is usually above .70 (Nunnally, 1978). Expected service quality and repurchase intention was measured with a 7-point Likert scale, while the construct satisfaction with the service was rated on a 10-point scale. In Table 5, expected service quality got a mean score of 4.95 with 6 items and an alpha of .84 (SD = .88); satisfaction with the service got a mean score of 6.76 with 3 items and an alpha of .91 (SD = 1.71). These two constructs are reliable. However, repurchase intention got an alpha of .58 with 3 items (M = 4.17, SD = .97). This outcome suggests that the item "You intend to purchase other alternative online food delivery services from other restaurants" should be deleted. Cronbach's alpha if this item deleted is .718, see Appendix 3.

Table 4: *Rotated component Matrix*[a]

	Expected service quality	Satisfaction with the service	Repurchase intention
	One component	One component	One component
Expected service quality			
The online food delivery service supplier provides the service reliable and consistently.	.735		
The online food delivery service supplier provides the service in a timely manner.	.654		
The online food delivery service supplier has approachable and easy to contact employees.	.737		
The online food delivery service supplier has courteous, polite and respectful employees.	.827		
The online food delivery service supplier has employees listen to me and we understood each other.	.837		
The online food delivery service supplier has employees who are neat and clean.	.699		
Satisfaction with the service			
Overall, how satisfied are you with this online food delivery service?	.	.882	
Based on your experience, how likely would you be to recommend this online food delivery service to a friend?		.950	
Based on your experience, how likely would you be to recommend this restaurant to a friend?		.925	
Repurchase intention			
You intend to continuously purchase this online food delivery service from the same restaurant.			.878
You will pay close attentions to this online food delivery service offered from the same restaurant.			.818
RECODE: You intend to purchase other alternative online food delivery services from other restaurants.			.468

Extraction Method: Principal Component Analysis.
a. Only one component was extracted. The solution cannot be rotated.

Table 5: *Overview of the constructs, number of items, mean, standard deviation and Cronbach's alpha*

Construct	N of items	Mean	SD	Cronbach's alpha
Expected service quality	6	4.95	0.88	0.84
Satisfaction with the service	3	6.76	1.71	0.91
Repurchase intention	3	4.17	0.97	0.58

4. Results

4.1. Main findings

A multivariate analysis of variance (MANOVA) was conducted to investigate the differences between sources of reviews (owner vs. customer) and promised waiting time (long vs. short) for the expected service quality and the acceptable waiting time. Considering that expected service quality depends on more factors than only time related aspects, in terms of time, the item about service responsiveness 'the online food delivery service supplier provides the service in a timely manner' is selected for investigation. F-value of main and interaction effects can be seen in Table 6.

Table 6: *2*2 MANOVA Results study 1*

		Multivariate Tests[a]	
Effect		**F**	**Sig.**
Sources of reviews		.672[b]	.570
Promised waiting time		7.162[b]	.000*
Sources of reviews * Promised waiting time		1.599[b]	.191
		Tests of Between-Subjects Effects	
Source	**Dependent Scale**	**F**	**Sig.**
Promised waiting time	Service responsiveness item[c]	9.489	.002*
	Expected service quality	.294	.588
	Acceptable waiting time	7.324	.007*

a. The results are the same based on Pillai's Trace, Wilks's Lambda, Hotelling's Trace, and Roy's Largest Root.
b. Exact statistic
c. The online food delivery service supplier provides the service in a timely manner.
* = Significant at the level of .05

In Table 6, the *multivariate tests* show that a main effect of sources of reviews could not be found [$F_{1, 206}$ = .672, p = .570]. Also, an interaction effect between sources of reviews and promised waiting time could not found [$F_{1, 206}$ = 1.599, p = .191]. Therefore further tests are not performed. Regarding promised waiting time, as can be seen from the *multivariate tests,* there is a 'Sig.' value of .000, which means p < .001 [$F_{1, 206}$ = 7.162]. We thus continue with further tests. According to the results from *Tests of Between - Subjects Effects,* the expected service quality does not significantly differ between long and short promised waiting time [$F_{1, 206}$ = .294, P = .588]. An explanation for the absence of this effect might be that expected service quality is simply not decided by time only. By using the service responsiveness item 'The online food delivery service supplier provides the service in a timely manner', a statistically significant difference between the groups (long promised waiting time vs. short promised waiting time) could be found [$F_{1, 206}$ = 9.489, p = .002]. As can been

seen in Table 7, 106 participants are exposed to the short promised waiting time condition, their service responsiveness is 5.34 (SD = 1.03); the service responsiveness is 4.82 (SD = 1.37) for the rest of participants who are exposed to the long promised waiting time condition. Furthermore, in Figure 2, it also shows that the participants, who are exposed to the short promised waiting time condition, have a higher service responsiveness than the rest of participants who are exposed to the long promised waiting time condition. Thus these findings would lead to the conclusion that the short promised waiting time has a stronger effect on service responsiveness than the long promised waiting time.

Figure 2: *Effect of promised waiting time on service responsiveness*

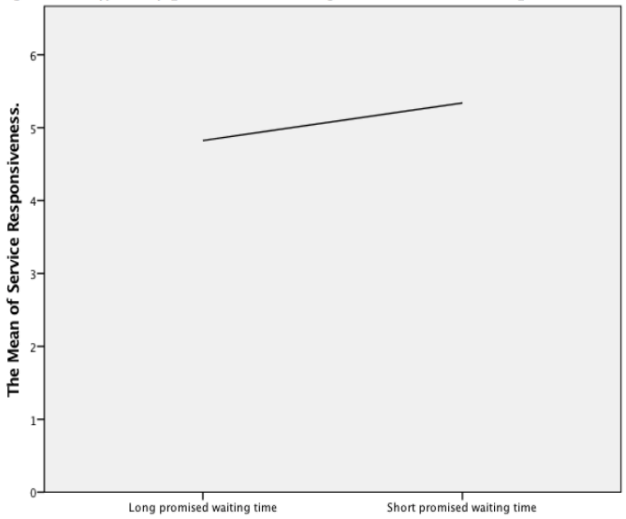


Table 7: *Summary statistics of the expected service quality, acceptable waiting time, satisfaction with the service and repurchase intention (time is presented in minutes)*

	N	Expected service quality		Acceptable waiting time		Satisfaction with the service		Repurchase intention	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Customer review	101	5.01	.82	39.65	12.38	6.81	1.82	4.66	1.25
Customer review & Long promised waiting time	50	4.97	.99	40.20	13.81	6.57	1.82	4.49	1.29
Customer review & Long promised waiting time & Long objective waiting time	25	4.85	1.13	38.60	13.88	5.33	1.68	3.82	1.39
Customer review & Long promised waiting time & Short objective waiting time	25	5.09	.84	41.80	13.84	7.80	.90	5.16	.72
Customer review& Short promised waiting time	51	5.06	.63	39.12	10.90	7.05	1.81	4.83	1.20
Customer review & Short promised waiting time & Long objective waiting time	25	5.05	.63	41.60	13.13	6.36	1.55	4.44	1.36
Customer review & Short promised waiting time & Short objective waiting time	26	5.07	.64	36.73	7.74	7.71	1.81	5.21	.91
Owner review	107	4.88	.93	41.36	17.52	6.72	1.60	4.64	1.16
Owner review & Long promised waiting time	52	4.87	.89	46.54	20.35	6.47	1.61	4.49	1.19
Owner review & Long promised waiting time & Long objective waiting time	27	5.05	1.07	48.15	20.53	6.01	1.77	4.33	1.34
Owner review & Long promised waiting time & Short objective waiting time	25	4.67	.62	44.80	20.44	6.97	1.27	4.66	1.01
Owner review & Short promised waiting time	55	4.90	.98	36.45	12.68	6.95	1.58	4.78	1.13
Owner review & Short promised waiting time & Long objective waiting time	26	4.87	1.09	38.46	7.32	6.42	1.27	4.69	1.13
Owner review & Short promised waiting time & Short objective waiting time	29	4.94	.88	34.66	15.98	7.41	1.70	4.86	1.14
Total	208	4.95	.88	40.53	15.23	6.76	1.71	4.65	1.20

Additionally, in Table 7, 106 participants are exposed to the short promised waiting time condition, their acceptable waiting time is 37.74 minutes (SD = 11.88); the acceptable waiting time is 43.43 minutes (SD = 17.66) for the rest of participants who are exposed to the long promised waiting time condition. This descriptive statistics reveal that this main effect has strong substantial variations. Moreover, as can be seen in the Table 6, the short promised waiting time is identified to be significantly different from long promised waiting time on a .05 significance level regarding the acceptable waiting time [$F_{1, 206} = 7.324$, $p = .007$]. Thus we would conclude that the long promised

waiting time shown in reviews results in higher waiting tolerance/ longer acceptable waiting time than the short promised waiting time.

Next, based on the proposed conceptual framework in Figure 1, objective waiting time is manipulated after measuring expected service quality and acceptable waiting time, and mainly influences service satisfaction and repurchase intention. Therefore, a multivariate analysis of variance (MANOVA) was conducted to investigate the differences among sources of reviews (owner vs. customer), promised waiting time (long vs. short) and objective waiting time (long vs. short) for satisfaction with the service and repurchase intention. F-value of main and interaction effects can be seen in Table 8.

Table 8: *2*2*2 MANOVA Results study 2*

	Multivariate Tests[a]	
Effect	**F**	**Sig.**
Sources of reviews	.111[b]	.895
Promised waiting time	2.551[b]	.081
Objective waiting time	22.889[b]	.000*
Sources of reviews * Promised waiting time	.015[b]	.985
Sources of reviews * Objective waiting time	3.553[b]	.030*
Promised waiting time * Objective waiting time	.928[b]	.397
Sources of reviews * Promised waiting time * Objective waiting time	.934[b]	.395

		Tests of Between-Subjects Effects	
Source	**Dependent Scale**	**F**	**Sig.**
Objective waiting time	Satisfaction with the service	46.005	.000*
	Repurchase intention	16.776	.000*
Sources of reviews * Objective waiting time	Satisfaction with the service	4.792	.030*
	Repurchase intention	6.434	.012*

a. The results are the same based on Pillai's Trace, Wilks's Lambda, Hotelling's Trace, and Roy's Largest Root.
b. Exact statistic
* = Significant at the level of .05

In Table 8, the *multivariate tests* show that a main effect of objective waiting time could be found [$F_{1, 206} = 22.889$, $p < .001$]. Also, an interaction effect between sources of reviews and objective waiting time could be found [$F_{1, 206} = 3.553$, $p = .030$]. Further, based on the results from *Tests of Between - Subjects Effects,* a main effect of objective waiting time could be identified on the scale of satisfaction with the service [$F_{1, 206} = 46.005$, $p < .001$] and repurchase intention [$F_{1, 206} = 16.776$, $p < .001$]. As can be seen in Table 7, 105 participants, who are exposed to the short objective waiting time condition, appear to have 7.47 satisfaction with the service (SD = 1.49) and 4.97 repurchase intention (SD = .98) on average, whereas the average satisfaction with the service and

repurchase intention are 6.04 (SD = 1.61) and 4.33 (SD = 1.33) respectively for the rest of participants who are exposed to the long objective waiting time condition. These results are the clear evidence that the short objective waiting time drives higher service satisfaction and stronger repurchase intention than the long objective waiting time.

Regarding the interaction effect between sources of reviews and objective waiting time, there is a statistically significant interaction effect on satisfaction with the service [$F_{1, 206} = 4.792$, $p = .030$] and repurchase intention [$F_{1, 206} = 6.434$, $p = .012$]. In Figure 3 and Figure 4, we would easily find the interaction effect between sources of reviews and objective waiting time for satisfaction with the service and repurchase intention. Furthermore, the descriptive statistics, in Table 7, show that 1). 50 participants who are exposed to **the customer review and the long objective waiting time**, their average satisfaction with service and repurchase intention are 5.85 (SD = 1.68) and 4.13 (SD = 1.40) respectively; 2). 51 participants who are exposed to **the customer review and the short objective waiting time**, their average satisfaction with service and repurchase intention are 7.75 (SD = 1.43) and 5.19 (SD = .81) respectively; 3). 53 participants who are exposed to **the owner review and the long objective waiting time**, their average satisfaction with service and repurchase intention are 6.21 (SD = 1.54) and 4.51 (SD = 1.24) respectively; 4). 54 participants who are exposed to **the owner review and the short objective waiting time**, their average satisfaction with service and repurchase intention are 7.21 (SD = 1.52) and 4.77 (SD = 1.08) respectively. These results indicate that when the participants, who are exposed to the customer review and the short

Figure 3: *Interaction effect between sources of reviews vs. objective waiting time on satisfaction with the service*

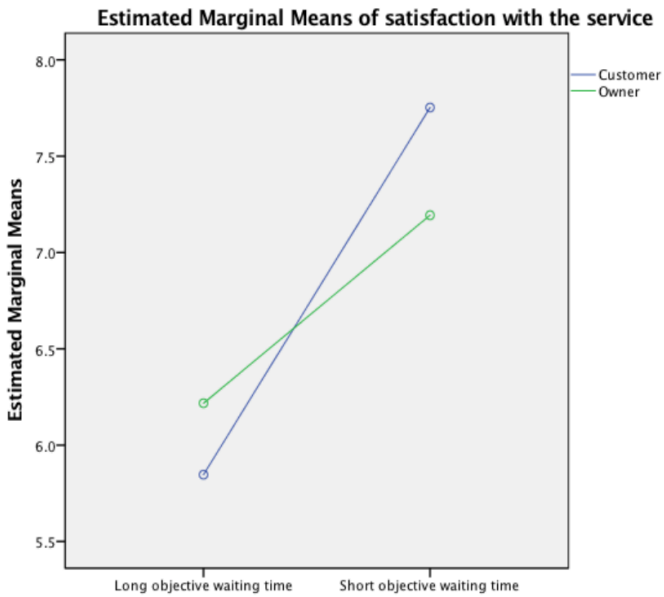
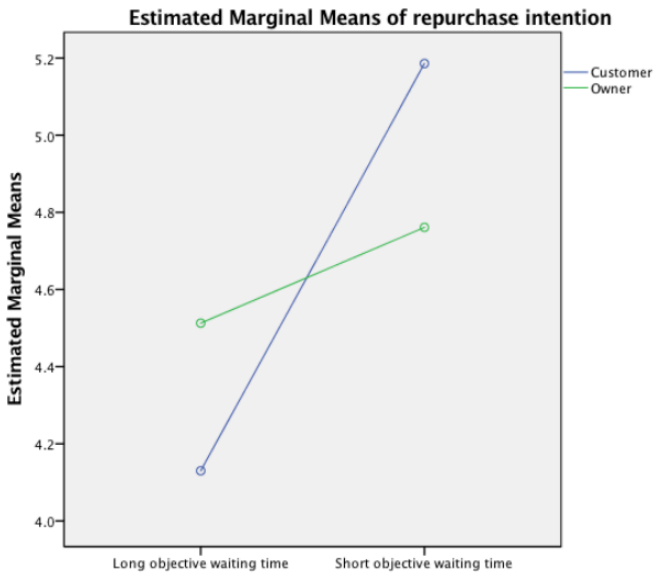


Figure 4: *Interaction effect between sources of reviews vs. objective waiting time on repurchase intention*



objective waiting time, appear to have the highest service satisfaction and strongest repurchase intention; whereas the participants, who are exposed to the customer review and the long objective waiting time, appear to have the lowest service satisfaction and weakest repurchase intention. Moreover, the participants, who are exposed to the owner review and the short objective waiting time, appear to have the higher service satisfaction and stronger repurchase intention than the participants who are exposed to the owner review and the long objective waiting time.

4.2. Test of the model

Hypothesis H1 concerns the main effect of sources of reviews. As can be seen in Table 6, the *multivariate tests* show that the main effect of sources of reviews could not be found [$F_{1, 206} = .672$, $p = .570$]. Thus, Hypothesis H1 is not supported.

Promised waiting time has no significant effect on the expected service quality [$F_{1, 206} = .294$, $p = .588$]. Thus, Hypothesis H2 is not supported. Nevertheless, it should be noted that a statistically significant effect of promised waiting time could be found on the service responsiveness item [$F_{1, 206} = 9.489$, $p = .002$]. In Figure 2, it shows that the participants, who are exposed to the short promised waiting time condition, have a higher service responsiveness on average than the rest of participants who are exposed to the long promised waiting time condition. These findings indicate that the short promised waiting time has a stronger effect on service responsiveness than the long promised waiting time.

In Hypothesis H3, an interaction effect between sources of reviews and promised waiting time on the expected service quality was proposed. As can be seen in Table 6, no significant interaction effect could be found [$F_{1, 206} = 1.599$, $p = .191$]. Thus, Hypothesis H3 is not supported.

In Hypothesis H4, it is assumed that customers who expect more service quality are willing to wait longer. As correlation between expected service quality and acceptable waiting time is not significant [$r = .004$, $p = .952$], no support is obtained for this hypothesis, see Table 9.

In Table 9, it can be seen that objective waiting time has a negative correlation with satisfaction with the service [$r = -.440$, $p < .001$] and repurchase intention [$r = -.294$, $p < .001$]. To test the mediating role of satisfaction with the service, mediation analysis was conducted based on Baron and Kenny (1986). The results show that the role of satisfaction with the service is an mediator, see appendix 4. Furthermore, there is a proposed linear relationship, thus linear analysis is used to

estimate a linear relationship between objective waiting time and satisfaction with the service. As can be seen in Table 10, it seems that the objective waiting time is a predictor of satisfaction with the service [β = -.440, t = -7.032, F = 49.450, p < .001]. A chi-square difference test on the equality of the parameters confirm this [X^2 = 113.012, p < .001]. These findings support Hypothesis H5.

Table 9: *Pearson correlations tests*

	Acceptable waiting time	
	r	**Sig.**
Expected service quality	.004	.952
	Satisfaction with the service	
	r	**Sig.**
Objective waiting time	-.440**	.000
Positive disconfirmation of acceptable waiting time[a]	.254**	.003
	Repurchase intention	
	r	**Sig.**
Objective waiting time	-.294**	.000
Positive disconfirmation of acceptable waiting time[a]	220*	.010
Satisfaction with the service	.653**	.000

** = Correlation is significant at the 0.01 level (2-tailed).
a. Acceptable waiting time > Objective waiting time

For the test of Hypothesis H6, it is proposed that a positive relationship between the positive disconfirmation of acceptable waiting time (longer than objective waiting time) and satisfaction. The variable 'the positive disconfirmation of acceptable waiting time' was calculated by subtracting the objective waiting time from the acceptable waiting time. In Table 9, it can be seen that the positive disconfirmation of acceptable waiting time has a positive correlation with satisfaction with the service [r = .254, p = .003]. Furthermore, an effect of the positive disconfirmation of acceptable waiting time on satisfaction with the service would be found [β = .254, t = 3.047, F = 9.284, p = .003]. Testing the equality of the parameters confirms that a relationship is between the positive disconfirmation of acceptable waiting time and satisfaction with the service (X^2 = 262.657, p = .026), see Table 10. These results support Hypothesis H6.

Table 10: *Relationship tests*

	Satisfaction with the service		
	β (t-value)	**F (Sig.)**	**X^2 (Sig.)**
Objective waiting time	-.440 (-7.032)	49.450 (.000)	113.012 (.000)
Positive disconfirmation of acceptable waiting time[a]	.254 (3.047)	9.284 (.003)	262.657 (.026)
	Repurchase intention		
	β (t-value)	**F (Sig.)**	**X^2 (Sig.)**
Satisfaction with the service	.653 (12.390)	153.500 (.000)	414.529 (.000)

a. Acceptable waiting time > Objective waiting time

In Hypothesis H7, an effect of satisfaction with the service on repurchase intention was proposed. As the correlation between the two variables is significant [$r = .653$, $p < .001$], see Table 9. By using liner analysis, it can be seen a linear relationship between the two variables [$\beta = .653$, $t = 12.390$, $F = 153.500$, $p < .001$]. A chi-square difference test on the equality of the parameters confirm this [$X^2 = 414.529$, $p < .001$], see Table 10. Thus, Hypothesis H7 is supported.

4.3. Overview of tested hypotheses

According to the results of this study, no significant main effect of sources of reviews, and promised waiting time on expected service quality could be identified. Also, no interaction effect between the two variables on expected service quality could be found. Therefore Hypothesis H1, H2 and H3 are not supported. For the test of Hypothesis H4, we proposed that an effect of expected service quality on acceptable waiting time, however, there is no significant correlation between the two variables. In Hypothesis H5, as a negative correlation between objective waiting time and satisfaction with the service, by using regression analysis, the results show a negative linear relationship between the two variables. In Hypothesis H6, we introduced the variable 'the positive disconfirmation of acceptable waiting time' which represents the difference (in minutes) between the acceptable waiting time and the objective waiting time. This variable is correlated with the service satisfaction. The relationship is taken into account by specifying a path from 'the positive disconfirmation of acceptable waiting time' to satisfaction with the service. The last hypothesis (H7) is also supported: the results demonstrate that satisfaction with the service has an effect on repurchase intention, see Table 11.

Table 11: *Overview of tested hypotheses*

Hypotheses		Result
H1	The customer-created positive online review will have a more positive effect on expected service quality than the owner-created positive online review	Not supported
H2	Short promised waiting time shown in reviews will have a more positive effect on expected service quality than long promised waiting time.	Not supported
H3	The differences in promised waiting time will have a more positive effect on expected service quality from the customer-created online review than from the owner-created online review.	Not supported
H4	The greater the expected service quality customers perceive, the longer customers are willing to wait.	Not supported
H5	The shorter customers wait, the more satisfied with the service customers are.	Supported
H6	The more positive disconfirmation of the acceptable waiting time (longer than objective waiting time) is, the more satisfied with the service customers are.	Supported
H7	The more satisfied with the service customers are, the greater their repurchase intention will be.	Supported

5. Discussion

5.1. Discussion of results

The research aimed to investigate effects of online reviews and waiting time on customers' repurchase intention of the online food delivery service. In particular, this study heeds the value of expected service quality, even though the expected service quality is not proven to be a determinant of acceptable waiting time, as it was suggested by Maister (1985). Additionally, the study reveals the relationship between acceptable waiting time and objective waiting time, and how this relationship would affect satisfaction with the service. Through understanding the way customers' repurchase intention would be influenced because satisfaction with the service appears to have a strong effect on repurchase intention. Specific discussion is stated below.

This study shows that customers' expected service quality does not significantly differ between long and short promised waiting time beacuse the expected service quality depends on more factors than only time related aspects. By using the item about service responsiveness, there is a significant difference between the long and short promised waiting time. The short promised waiting time has a stronger effect on service responsiveness than the long promised waiting time. Additionally, different promised waiting times affect customers' acceptable waiting times differently. This study indicates that the long promised waiting time results in higher waiting tolerance/ longer acceptable waiting time than the short promised waiting time. This would imply that customers are willing to wait longer, when they are informed that the service takes much longer. Besides, a main effect of objective waiting time could be found for satisfaction with the service and repurchase intention. The short objective waiting time drives higher service satisfaction and stronger repurchase intention than long objective waiting time. Also, there is a statistically significant difference between objective waiting time and sources of reviews for satisfaction with the service and repurchase intention, the results show that the participants, who are exposed to the customer review and the short objective waiting time, appear to have the highest service satisfaction and strongest repurchase intention; whereas the participants, who are exposed to the customer review and the long objective waiting time, appear to have the lowest service satisfaction and weakest repurchase intention. Further, the participants, who are exposed to the owner review and the short objective waiting time, appear to have the higher service satisfaction and stronger repurchase intention than the participants who are exposed to the owner review and the long objective waiting time. Next, hypotheses are discussed.

Firstly, based on the literature review, sources of online reviews (customer vs.owner) were expected to affect customers' expected service quality differently, nevertheless, the significantly different effects between these two reviews on expected service quality have not been found. But, this is still in line with theories. According to Smith (1993), some customers believe that an owner-created review highlights the selling points of a product or service, which is useful to make purchase decisions. Other customers, on the contrary, concern the credibility of the owner-created review, as it was suggested by Zhang, Ye, Law, & Li (2010), an owner-created review is an advertiser-supported media. On the other hand, the customer-created reviews are mainly based on personal experience, which are quite subjective because of individual differences in taste preferences. With respect to promised waiting time, the results show that it is not so much the number of minutes that a customer has been promised to wait which affects the expected service quality as it is the subjective transformation of minutes into a long/short judgement. An explanation could be that people might not build a link between long and short promised time without a comparison. Therefore, it is not difficult to understand that there is no interaction effect between sources of reviews and promised waiting time on the expected service quality.

Secondly, we proposed that customers who expected a higher service quality are willing to wait longer, as suggested by Maister (1985). However, again, no statistically significant effect of expected service quality on the acceptable waiting time was identified in this study. Probably, customers do not consider the pizza delivery service as a high-value service to them, therefore the effect is missed out on the acceptable waiting time. It might also be, that the unknown restaurant does not create the perception of exclusivity like in other instances where customers accept even extreme long waiting times for the service. It is assumed, that up to a certain threshold of time, customers are still willing to wait longer for the service because of the brand exclusivity (Chavelier & Mezzavalo, 2008).

Thirdly, objective waiting time is one of independent variables. The results show that objective waiting time has a negative impact on customers' evaluation of services, as several studies (Katz, Larson, & Larson, 1991; Taylor, 1994; Tom & Lucey, 1995) suggest. Furthermore, in this study, objective waiting time is used as a critical point of reference: if, for example, acceptable waiting time is greater than objective waiting time, customers are more satisfied with the service. The findings of this study demonstrate that the discrepancy between acceptable waiting time and objective waiting time is certainly one of the main effects on the satisfaction with the service. This

outcome is in line with theories. According to Tse and Wilton (1988), customer satisfaction is defined as the consumer's response to the evaluation of the perceived discrepancy between expectations and the actual performance of the service. In terms of time, acceptable waiting time is what customers expect the maximum number of minutes they would like to wait, whereas objective waiting time is what customers actually wait for the service, by evaluation of the discrepancy between the two variables, the level of satisfaction with the service is influenced.

Finally, as the only dependent variable in this study, repurchase intention is influenced by satisfaction with the service. The findings show that a strong effect of satisfaction with the service on customers' repurchase intention. This is consistent with the expectancy disconfirmation model, which indicates that customers' repurchase decision is dependent on their satisfaction (Chen et al., 2012).

5.2. Theoretical and practical implications

Regarding theoretical implications, this study offers some important findings on the effectiveness of online reviews on the expected service quality, although the results do not fully support our hypothesized relations. For sources of reviews (customer vs. owner), it might be that customers hold two different opinions on the customer-created review and the owner-created review, as mentioned above. It is therefore suggested to further investigate this concept in future studies. Also, concerning the promised waiting time, there might be a significant difference between subjects for expected service quality, if participants have the cue on long and short promised waiting time. There is more in-depth research needed to investigate it. On the other hand, the study reveals that the short promised waiting time has a stronger effect on service responsiveness than the long promised waiting time. And, the long promised waiting time results in higher waiting tolerance/ longer acceptable waiting time than the short promised waiting time.

Additionally, we introduced the variable 'the positive disconfirmation of acceptable waiting time' which represents the difference (in minutes) between the acceptable waiting time and the objective waiting time. And we found that the more 'the positive disconfirmation of acceptable waiting time' is, the more satisfied with the service customers are. Moreover, the study reveals that the short objective waiting time drives higher service satisfaction and stronger repurchase intention than long objective waiting time. These findings are possibly useful for some future studies on the objective waiting time and the acceptable waiting time.

Of course, the relationship between expected service quality and acceptable waiting time is still a point for discussion, as it has not been proven in this research. Presumably, people do not treat a pizza delivery service as a valuable service, meanwhile, the restaurant chosen for this study does not communicate its brand exclusivity. This would imply that, if a brand becomes more desirable, the longer a customer would like to wait for the service. Taking that into account, it might be wiser to include brand exclusivity in future studies.

Regarding practical implications, this study provides some insights into the promised waiting time and sources of reviews as valuable tool for online food delivery services, however, the results are not shown as expected. Undoubtedly, this study remains very basic and needs to be build on. On the other hand, this study reveals that customers are willing to wait longer, when they are informed that the service takes much longer. Moreover, customers' repurchase intention is not solely evaluated on the basis of objective waiting time as is the case in operations management. Customers' acceptable waiting time, different sources of reviews, even promised waiting time could influence customers' repurchase intention. Service marketers, especially who are working in the digital communication industry, could definitely use some findings of this study.

5.3. Limitations and future research

This study has several limitations. First, probably some respondents fill in most social desirable answer. However, it is not easy to tackle due to anonymous survey. Future work would do some follow up interviews to validate the vague constructs such as long and short promised waiting time after collecting survey. Second, this research only considered the students from the University of Twente, who mostly are in a similar situation of life. Furthermore, the online survey was distributed with the use of the convenient sampling. Although there were diversities in study level, faculties and gender, most of the participants were female, master students, from behavioural, management and social sciences (BMS). There is no guarantee about the representativeness of samples. It is not possible to determine the actual pattern of distribution of the population. Future studies would improve by collecting participants distributed equally, recruiting random samples outside of the University of Twente. One beneficial option is to have a bigger sample size. Also, a scenario-based method with a screenshot of the website of thuisbezorgd.nl was applied. It is appropriate to first give insights into the effectiveness of sources of reviews and promised waiting time manipulation techniques on expected service quality. Nevertheless, the generalisation of this method is concerned because it is not a real case. This would imply that, while participants face a real online food

delivery service, it is not clear whether they would react similarly in the experimental setting as in real life situation. It would be interesting to investigate it for further studies.

Another topic for further research is required to enhance our model and findings. In this study, the main effect of sources of reviews was not found. It should be noted, however, that people have different opinions on sources of reviews. It is suggested to test the main effect in a different setting and for other service categories. As promised waiting time did not appear to be an influential factor in customer's expected service quality, perhaps, promised waiting time perform differently in other environments where customers just want to order something to eat in a lazy day (our scenario is to order a pizza after an exhausting studying day). That is to say, customers might be so strongly internally focused (hungry and exhausted) that they ignore promised waiting time in our study. It would be interesting for further research to check the effect of promised waiting time in different settings.

To conclude, it is one of the first studies that measured that the effectiveness of sources of reviews and promised waiting time on customers' repurchase intention in the context of online food delivery services. Although some hypothesized relations have not been fully supported by the results of this study, it provides valuable starting points for further research. And insights gained in adequate management of time and online reviews usage have become increasingly important for companies' survival.

6. Acknowledgements

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Appendix 1: Coding Scheme

Coding Scheme in repurchase intention survey			
Respondent ID		None	Nominal
Introduction Test	Thank you for agreeing to participate in this survey measuring the impact of waiting time and online reviews sources on …		
1st Intervention	**One Scenario shown**		
Expected Service Quality			
ESQ_Q1_1	The online food delivery service supplier provides the service reliable and consistently.	{1, Strongly...	Scale
ESQ_Q1_2	The online food delivery service supplier provides the service in a timely manner.	{1, Strongly...	Scale
ESQ_Q1_3	The online food delivery service supplier has approachable and easy to contact employees.	{1, Strongly...	Scale
ESQ_Q1_4	The online food delivery service supplier has courteous, polite and respectful employees.	{1, Strongly...	Scale
ESQ_Q1_5	The online food delivery service supplier has employees listen to me and we understood each other.	{1, Strongly...	Scale
ESQ_Q1_6	The online food delivery service supplier has employees who are neat and clean.	{1, Strongly...	Scale
Waiting Tolerance			
WT_Q2	What is the maximum number of minutes you tolerate to wait for this online food delivery service?	None	Nominal
2nd Intervention	**Long or Short Objective waiting time shown**		
Service Satisfaction			
SS_Q3	Overall, how satisfied are you with this service?	{0, Very dissa...	Scale
SS_Q4	Based on your experience, how likely would you be to recommend this online food delivery service to a friend?	{0, Not at all l...	Scale
SS_Q5	Based on your experience, how likely would you be to recommend this restaurant to a friend?	{0, Not at all l....	Scale
Repurchase Intention			
RI_Q6_1	You intend to continuously purchase this online food delivery service from the same restaurant.	{1, Strongly...	Scale
RI_Q6_2	You will pay close attentions to this online food delivery service offered from the same restaurant.	{1, Strongly...	Scale
RI_Q6_3	You intend to purchase other alternative online food delivery services from other restaurants. ***(Deleted)***	{1, Strongly...	Scale
Demographics			
D_Q7	What is your gender?	{1, Male}...	Scale
D_Q8	What is your age?	{1, 18-21}...	Scale
D_Q9	Are you a Bachelor or Master student at the University of Twente?	{1, A Bachelor ...	Scale
D_Q10	Please select your study faculty	{1, Behavioural...	Scale

Appendix 2: An example scenario — *Owner x Long promised waiting time x Long objective waiting time*

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.
Welcome to our survey about customers' repurchase intention.

Thank you for agreeing to participate in this survey measuring **the impact of waiting time and online reviews sources on the repurchase intention of online food delivery service.**

Waiting is an inescapable part of people's lives, but that does not mean we enjoy it because waiting reduces productivity and causes inconvenience.

The sources of online reviews are mainly either written by service owners or customers.

Today you are asked to provide thoughts and insights in order to gain more knowledge about repurchase intention of online food delivery service. **Be assured that all answers you provide will be kept in the strictest confidentiality.**

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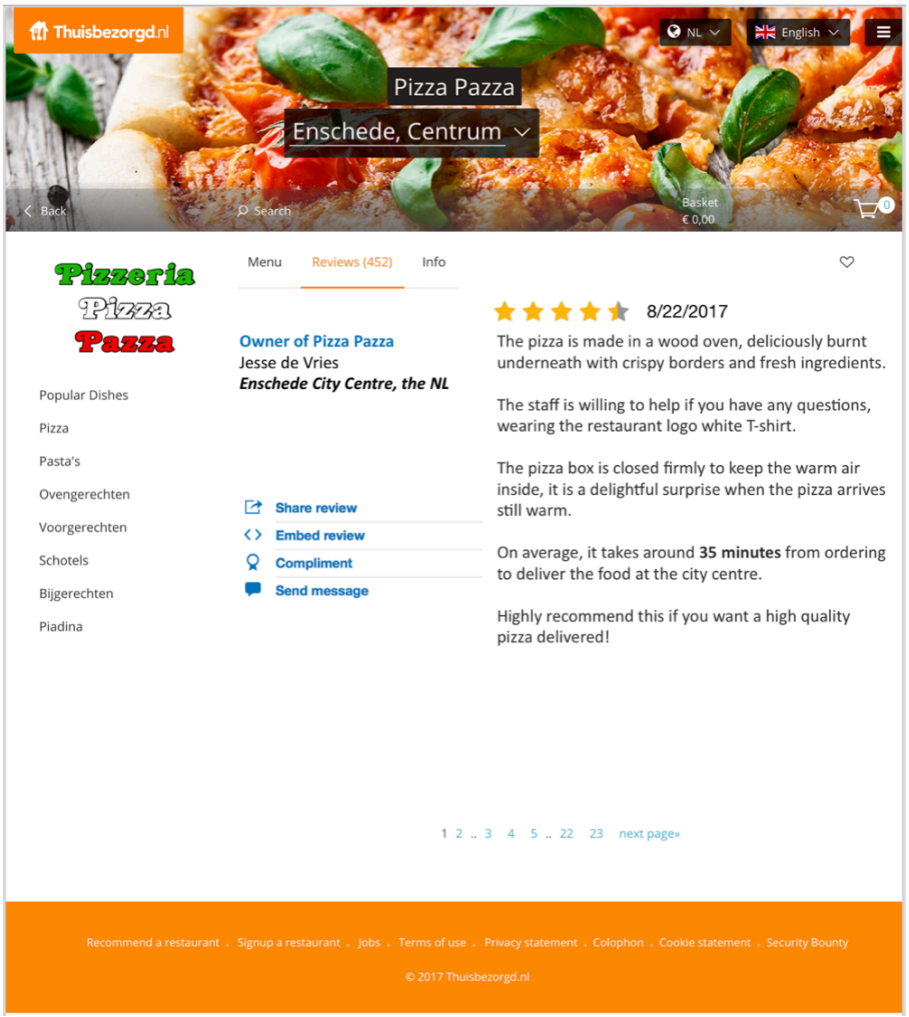
Scenario.
Imagine you are busy in the library on your final exams' preparation. You manage to pull yourself away from study to go home **(Enschede City Centre)**, but you know that once you are home, you will have other responsibilities that will take your attention. The important thing in your mind is to cook a meal for yourself.

Since you have an exhausting day, you use the online website **(www.thuisbezorgd.nl)** to find a pizza restaurant and it is delivered to your home directly. Before consumption, you decide to read online reviews for reference. At the top of the review page, a recommended review for Pizza Pazza is written by the owner: Jesse de Vries.



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Q1. The following questions are about your expected service quality based on the review. Please select the label the best describes your opinion.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The online food delivery service supplier provides the service reliable and consistently.	○	○	○	○	○	○	○
The online food delivery service supplier provides the service in a timely manner.	○	○	○	○	○	○	○
The online food delivery service supplier has approachable and easy to contact employees.	○	○	○	○	○	○	○
The online food delivery service supplier has courteous, polite and respectful employees.	○	○	○	○	○	○	○
The online food delivery service supplier has employees listen to me and we understood each other.	○	○	○	○	○	○	○
The online food delivery service supplier has employees who are neat and clean.	○	○	○	○	○	○	○

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Q2.
What is the maximum number of minutes you tolerate to wait for this online food delivery service?

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Long. Actually it takes 50 minutes to deliver the pizza to your door.

50 mins

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Q3.
Overall, how satisfied are you with this online food delivery service?

very dissatisfied — very satisfied

0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

Q4.
Based on your experience, how likely would you be to recommend this online food delivery service to a friend?

Not at all likely — Extremely likely

0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

Q5.
Based on your experience, how likely would you be to recommend this restaurant to a friend?

Not at all likely — Extremely likely

0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

Q6. The following questions are about your repurchase intention. Please select the label the best describes your opinion.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
You intend to continuously purchase this online food delivery service from the same restaurant.	○	○	○	○	○	○	○
You will pay close attentions to this online food delivery service offered from the same restaurant.	○	○	○	○	○	○	○
You intend to purchase other alternative online food delivery services from other restaurants.	○	○	○	○	○	○	○

Q7. What is your gender?

- ○ Male
- ○ Female

Q8. What is your age?

- ○ 18-21
- ○ 22-24
- ○ 25-28
- ○ 29-31

Q9. Are you a **Bachelor or Master student** at the University of Twente?

- ○ A Bachelor Student
- ○ A Master Student

Q10. Please select your study faculty

- ○ Behavioral, Management and Social sciences (BMS)
- ○ Engineering Technology (CTW)
- ○ Electrical Engineering, Mathematics and Computer Science (EEMCS / EWI)
- ○ Science and Technology (TNW)
- ○ Geo-Information Science and Earth Observation (ITC)

Appendix 3: Validity and Reliability Analysis

Validity of the constructs:

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Test		.840
Bartlett's Test of Sphericity	Approx. Chi-Square	1231.327
	df	66
	Sig.	.000

Component Matrix[a]

	Expected service quality	Satisfaction with the service	Repurchase intention
	One component	One component	One component
Expected service quality			
The online food delivery service supplier provides the service reliable and consistently.	.735		
The online food delivery service supplier provides the service in a timely manner.	.654		
The online food delivery service supplier has approachable and easy to contact employees.	.737		
The online food delivery service supplier has courteous, polite and respectful employees.	.827		
The online food delivery service supplier has employees listen to me and we understood each other.	.837		
The online food delivery service supplier has employees who are neat and clean.	.699		
Satisfaction with the service			
Overall, how satisfied are you with this online food delivery service?	.	.882	
Based on your experience, how likely would you be to recommend this online food delivery service to a friend?		.950	
Based on your experience, how likely would you be to recommend this restaurant to a friend?		.925	
Repurchase intention			
You intend to continuously purchase this online food delivery service from the same restaurant.			.878
You will pay close attentions to this online food delivery service offered from the same restaurant.			.818
RECODE: You intend to purchase other alternative online food delivery services from other restaurants.			.468

Extraction Method: Principal Component Analysis.
a. Only one component was extracted. The solution cannot be rotated.

Reliability of the constructs:

Overview of the constructs, number of items, mean, standard deviation and Cronbach's alpha

Construct	N of items	Mean	SD	Cronbach's alpha
Expected service quality	6	4.95	0.88	0.84
Satisfaction with the service	3	6.76	1.71	0.91
Repurchase intention	3	4.17	0.97	0.58

Checking Items related to Repurchase Intention:

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
You intend to continuously purchase this online food delivery service from the same restaurant.	7.74	3.625	.563	.355	.181
You will pay close attentions to this online food delivery service offered from the same restaurant.	7.96	4.153	.434	.316	.408
RECODE: You intend to purchase other alternative online food delivery services from other restaurants.	9.30	5.797	.203	.070	.718

Suggestion: Delete the last item, the Cronbach's Alpha increases to .718.

Appendix 4: Testing Mediation with Regression Analysis

Objective waiting time and repurchase intention:

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.991	1	25.991	19.541	.000[b]
	Residual	273.989	206	1.330		
	Total	299.980	207			

a. Dependent Variable: The Mean of repurchase intention

b. Predictors: (Constant), Objective waiting time

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.311	.169		31.369	.000
	Objective waiting time	-.022	.005	-.294	-4.421	.000

a. Dependent Variable: The Mean of repurchase intention

Objective waiting time, satisfaction with the service and repurchase intention:

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	128.103	2	64.052	76.396	.000[b]
	Residual	171.876	205	.838		
	Total	299.980	207			

a. Dependent Variable: The Mean of repurchase intention

b. Predictors: (Constant), The Mean of satisfaction with the service, Objective waiting time

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.577	.364		4.332	.000
	Objective waiting time	-.001	.004	-.008	-.144	.885
	The Mean of SS	.458	.041	.650	11.036	.000

a. Dependent Variable: The Mean of repurchase intention