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The Study on the Effect of Waiting Line on Consumers' Perceived Quality and Emotional State*

Nan Li**

Jae-Do Song***

This study examines a model which simultaneously contains two paths between waiting line and purchase intention: one tested the positive effect of waiting line through consumers' perceived quality, whereas another one go through consumers' emotional state to test the negative effect of waiting line on purchase intention. To further understand perceived quality, the study divided perceived quality into perceived product quality and perceived service quality. The study used restaurants in the experiment. Results indicated that although long waits in line will directly increase both consumers' product quality perception and negative emotions, the total indirect effects on purchase intention are still significantly positive. For consumers' perceived service quality, long waiting situations have no such effect on it. Significant results from a moderation analysis also shown that consumers in low-level knowledge settings are more influenced by waiting lines than those in high-level knowledge settings when they make the product's quality-related judgment. However, the level of consumer knowledge does not moderate the relationship between waiting lines and service quality.

Key words: Waiting Line, Perceived Quality, Emotional State, Consumer Knowledge Level, Purchase Intention

I. Introduction

Consumers frequently face situations in which

they spend time waiting for their desired products or services. Waiting in line is often seen as a necessary but an undesirable activity that consumers must undertake to complete

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their purchases. When waiting is mentioned, the negative emotions that accompanies this process is often the first thing that comes to mind for consumers. Previous studies that focused on minimizing negative emotions of consumers during waits in line fall mainly into two groups. The first group focuses on reducing consumers' real waiting times through operational techniques, the other group of related studies is concerned with efforts to reduce the consumers' perceived waiting time, without affecting the consumers' actual or objective waiting time.

However, another aspect of waiting lines is mentioned more in recent studies. Considering that, in real purchase situations, consumers may rely on a variety of quality signals to judge the quality of a product or service, such as price (Rao and Monroe 1988), the physical environment of store (Baker et al. 2002), advertisements or warranties (Akdeniz et al. 2014, Srivastava and Mitra 1998). Waiting lines, which function as a form of social influence, are suggested to serve as a quality signal (Giebelhausen et al. 2011; Koo and Fishach 2010).

Based on the social impact theory proposed by Latane (1981), individual can be affected by the real, implied actions of other individuals. Not only in interactive situations, individuals are also known to be influenced by the non-verbal actions of other consumers (Argo et al. 2005). Behavior of others can be a guidance for individuals, and they use imitation as a

practical heuristic given that behavior is thought to be a trustworthy form of information (Senecal and Nantel 2004). Thus, simply observing others waiting many positively influence one's decision and behavior. Prior studies in marketing literature discussed the positive effect of waiting line on consumers' quality (Giebelhausen et al. 2011) and whether this effect will occur only in a particular situation. For instance, the signal value of waiting line is more notable for consumer when others are behind them rather than ahead them in line (Koo and Fishach 2010). Compared with waiting for products, long waiting have more positive effect on consumers' positive emotions (e.g. pleasant and enjoyable) when they waiting for experiences (Kumar et al. 2014). In negative service environments, long waiting can also have positive effect on consumers' personal coping strategies (Miller et al. 2007).

Considering that there are conflicting conclusions about the effect of waiting line, this study aims to demonstrate this dual effect of waiting lines and understand which effect is more significant on the relation between waiting line and purchase intention. If the positive effect of waiting line is more dominant, stores can exploits them by better managing capacity and by modifying the design of the store to effectively show off the line to other or potential customers. Thus, more practical and useful wait management strategies can be made.

This study uses restaurant settings to examine

the relationship between waiting lines, perceived quality, and emotional state associated with the waiting experience. The study also examines the relationship between waiting lines and consumers' purchase intentions. With respect to perceived quality, product quality and service quality are considered separately. The research model assumes that waiting in line affects consumers' perceived product and service quality and emotional state associated with the waiting experience. In addition, the effects of perceived product and service quality on emotional state are also examined. Furthermore, the moderation effect of consumer knowledge level is considered because knowledgeable consumers are assumed to be less dependent on quality signals such as waiting in line. In accomplishing these objectives, this research provides overall insight into how practitioners can better manage consumers' perceived product and service quality by modifying various aspects of the waiting situation.

II. Theoretical Background and Hypothesis Development

2.1 Waiting in line and perceived quality

Waiting in line occurs whenever the number of arrivals at a facility exceeds the capacity of the system to process them (Lovelock and Wirtz 2011). Customers may wait in a line

before, during, or after a transaction. Besides the visible waiting situation, the invisible waiting also occurs in online situation which is discussed in Lee's (2017) study. The purpose of this study is to investigate the dual effect of waiting line on consumers' purchase intentions, and to estimate which effect may dominate the relation. Considering that offline waiting occurs more frequently in daily life and can be more easily observed by individuals, this study only focuses on visible waiting lines rather than online waiting situation.

In previous studies, perceived quality is defined as consumers' judgment about a product or service's overall excellence or superiority (Zeithaml 1988). Based on Rust and Oliver's (1993) research, service quality can be evaluated on three dimensions: service product quality, service delivery quality, and service environment. Considering that consumers can easily judge the quality of the service environment through simple observation and that the waiting line itself can also be regarded as part of the service environment, including service environment in the study seemed unnecessary. Thus, in this study, service product quality and delivery quality are the main dimensions of the evaluation of quality.

Consumers' perceived quality may not totally reflect a service's actual quality, because information asymmetry often exists between firms and consumers. As a result of this information asymmetry, consumers can have

impaired perceptions of quality, which increases the risk associated with their purchase decisions. Thus, from the perspective of the firm, producing and launching a high-quality product or service is simply not enough for success. Firms must also understand what customers perceive as high quality, and engage in marketing activities to inform consumers about it (Hennig-Thurau et al. 2006, Rajala et al. 2015). Conversely, customers also need to use quality signals as evaluative cues. Dual-process models can be used to explain quality signals' effect at the individual level. In the real world, individuals tend to use fast and frugal heuristics to reduce cognitive load and to make easy decisions in various situations (Gigerenzer and Todd 1999). Quality signals can be used as effective heuristics to help individuals make quality judgments. As Brady et al. (2005) summarized in their study, consumers have different motivations for using quality signals: to reduce perceived risk, to compensate for a lack of expertise, to compensate for a lack of intention to devote effort, to overcome complexity, and to match information searching preferences. In the service context, all the elements of a marketing system—ranging from service personnel to service facilities and equipment—represent cues which consumers could use to assess service quality (Lovelock 1983).

Many previous studies explored the effect of quality signals. James (1979) suggested that physical environment is experienced as a

meaningful entity and that perceptions about it convey direct information, when people make quality-related decisions. Mari and Poggessi (2013) demonstrated the relationship between servicescape cues and customer behavior. Lehtinen and Lehtinen (1991) argued that behaviors of other customers may have a stronger impact on perception of service quality than contact with service personnel, and Kennedy (1994) demonstrated that word-of-mouth communication between consumers can also serve as a signal of quality. Although a variety of quality signals is discussed in prior studies, the signaling effect of the waiting line has not yet been mentioned. Whether or not consumers use waiting line as a popularity cue to judge product or service quality is an interesting and worthy subject to explore.

In this study, the signaling effect of the waiting line on consumers' perceived quality is illustrated by understanding the line as information about popularity, and explanations from both demand and supply perspectives are provided separately. On the demand side, the wisdom of the crowd effect can be used to explain the signaling effect of waiting in line on consumers' decision-making. The wisdom of the crowd effect refers to the phenomenon that the aggregate prediction or forecast of a group can be more accurate than most or all of the individual forecasts of group members (Mavrodiev et al. 2012). When individuals become aware of the estimates of others, they

may revise their own estimates because they suspect others have better information (Banerjee 1992, Bikchandani et al. 1992). Thus, they will follow the wisdom of the crowd to make a decisions (Mannes 2009). Based on the wisdom of the crowd effect, a long waiting line may attract consumers' attention and entice them to infer that the quality of product or service for which the other people are waiting is worthy of an expenditure of time, and this quality inference will further influence their own quality judgments.

Interestingly, a recent study also demonstrated an even more extreme popularity bias phenomenon in which individuals favor more frequently reviewed products, even when they had lower objective quality, to higher quality and less frequently reviewed product. They viewed a product's popularity as an important social cue of its quality (Powell et al. 2017). That is to say, even when individuals know precisely that a product has low quality, they still prefer to act as intuitive statisticians and make incorrect quality inferences. Thus, in a waiting situation, the longer the waiting line is, the greater is the possibility that this bias phenomenon may occur.

The bandwagon effect of information about popularity can also apply to the signaling effect of waiting in line on perceived quality. According to the information cascade theory, when individual consumers have limited information on the product or service's quality, they observe

their predecessors' behavior and draw quality inferences from predecessors' decisions. In other words, the decision maker imitates previous decision makers' behavior and conforms to the same judgment, even while ignoring their own personal preferences (Bikhchandani et al. 1992, 1998).

Moreover, the concept of conformity also can be used to explain the relationship between waiting in line and perceived quality. Because of a natural desire for interpersonal attachment (Baumeister and Leary 1995), human beings have a fundamental motivation to belong. This interpersonal attachment can increase one's perceived belongingness and elicit a positive emotional response (Baumeister and Leary 1995, Festinger et al. 1950). As Oshagan (1996) suggested that consumers are more influenced by the opinion of their reference groups than that of the societal majority. Thus, in the waiting process, consumers may try to discover characteristics of the group of consumers waiting in line by observing their appearance and behavior and using these characteristics to judge whether the group is an appropriate reference group for them. If they considerate the group of waiting consumers as an appropriate reference group, they will have a strong sense of belongingness and will tend to follow the same decisions made by the group.

From the supply perspective, the number of customers that a company can serve per day is limited. When a long waiting line is observed

by consumers, it may convey a scarcity message that the product or service the company provides is difficult to obtain. This unavailability threatens people's perceived freedom to possess an unavailable resource (Worchel 1992). Furthermore it may also increase the people's desire to own a scarce product and make people perceive more value for this product or service (Lynn 1991).

In a related vein, Giebelhausen et al. (2011) suggested that, due to time spent waiting for services has an economic value to consumer, which can be considered as 'time price', thus, when a 'time price' is perceived as too low, consumers' suspicions of quality will arise. Based on these discussions, this study predicts that consumers will use waiting lines as popularity cues to infer high quality for the products. Therefore, the following hypothesis is suggested:

H1a: Long waiting lines will increase perceived product quality.

H2b: Long waiting lines will increase perceived service quality.

2.2 Waiting in line, perceived quality, and emotional state

Most people hate waiting in line even though it can suggest high quality of a product or service. Psychologists have suggested that waiting is objectionable because it wastes time, takes control away from customers, creates

boredom, leads to feelings of crowding and neglect, and delays gratification (Carmon et al. 1995, Osuna 1985, Schwartz 1975). These negative emotions are also mentioned as non-monetary costs, which include the time expenditures, physical and mental effort, and unwanted sensory experiences associated with searching for, buying, and using a service (Lovelock and Wirtz 2011). In this study, we merely focus on this negative emotions which arouse during the waiting time.

Based on previous studies, there are mainly two explanations for why long waiting times negatively affect the consumers' emotional state. First, waiting in line means spending time, which consumers often evaluate as equivalent to money. Similar to money, consumers treat time as a scarce resource. Time spent on waiting is considered to be an investment or cost necessary to obtain a service, and it reduces the net utility that can be derived from the service (Berry et al. 2002, Schwartz 1975). As Etkin et al. (2015) suggested, requiring consumers to wait makes them feel time-constrained and causes them to value their time more highly. The more valuable the customers perceive their time is, the more negative their perception about the waiting time becomes (Antonides et al. 2002, Osuna 1985).

Another explanation for the relationship between waiting in line and negative emotional state is that almost all consumers are goal oriented. Consumers engage in a service transaction to

achieve a certain outcome (Bagozzi 1992), and anything that blocks them from their goal can prompt a feeling of “desire-outcome conflict,” which can trigger negative affective reactions to a situation that ultimately detract from positive feelings toward a provider (Voorhees et al. 2009). In a waiting context, the waiting act stands between consumers and the accomplishment of desired goals (Meyer 1994); therefore, it often creates a sense of frustration or anger (Rafaeli et al. 2002, Voorhees et al. 2009). When consumers perceive greater goal conflict, the more stress and anxiety they feel during the waiting process.

Moreover, in waiting situations, inconvenient physical space may result in negative psychological changes. Researchers have found that when a social presence in close proximity is large in size, a personal space becomes invaded, creating stress and discomfort (Dabbs 1971, Sommer 1969). Considering that negative emotions and positive emotions are two opposed emotional states (Jang et al. 2009), our study mainly makes an assumption about negative emotions. Thus, to summarize the above discussions, the following hypothesis with respect to the relationship between waiting in line and emotional state is offered:

H2: Long waiting lines will increase negative emotions.

Our tolerance for waiting depends upon the

perceived value of the service for which we wait (Wirtz et al. 2012 p.285, Maister 1984). This effect of perceived value on individuals’ tolerance can be demonstrated by our common experience. For example, as Loewenstein (1987) suggested, when individuals wait eagerly for a kiss from a movie star, they will feel more expectant than bored. A delicious food may be incomparable with a movie star’s kiss, but the more quality the consumers perceive for this product or service, the more patience and tolerance they will have in a long waiting process, and the less likely it is that they will feel negative emotions. Positive emotions, such as satisfy or delight, are always derived from a high-quality product or service experience, and these positive emotions seem to have an adverse effect on the perception of negative emotions (Izard 2013, Westbrook 1987). A product’s appealing taste, freshness, appealing presentation, or the reliability of the service with which it is presented has been shown to positively influence perceived quality and satisfaction with the product or experience (Acebrón and Dopico 2000, Brady and Roberson 2001, Johns and Tyas 1996, Raajpoot 2002). As Jang et al. (2009) suggested, consumers’ perception of both product and service quality has a positive effect on emotion, and when consumers feel strong positive emotions through their perception of a superior product or service, negative emotions may be preclude. In line with this viewpoint, when consumers wait for

a service or product which is confirmed to have a superior quality, they may feel an increase in strong positive emotions and the probability of negative emotions will relatively decrease.

Thus, consistent with prior research, we predict the following:

H3a: Perceived product quality will decrease negative emotions.

H3b: Perceived service quality will decrease negative emotions.

2.3 Perceived quality, emotional state, and purchase intention

Purchase intention refers to the attempt to purchase a product or service (Dodds et al. 1991). Purchase intention at a retail store is influenced by several factors and perceived quality is one such factor that has attracted significant attention by researchers. In prior studies, both theoretical and empirical evidence supports the idea that there is a positive relationship between consumers' perceived quality and purchase intentions (Boulding et al. 1993, Wells et al. 2011). Purchase intentions often arise after consumers perceive the net utility and value of a product or service (Dodds et al. 1991), which directly influences actual purchase behavior (Luo et al. 2011, Morrison 1979).

Based on prior studies, it is hypothesized that perceived product quality and service quality

affect purchase intention positively. Thus, we offer our hypothesis:

H4a: Perceived product quality will increase purchase intention.

H4b: Perceived service quality will increase purchase intention.

Prior studies also suggest that there is a direct effect of negative emotions on purchase intention. The literature on poverty-of-time (Berry and Cooper 1990) and crowding (Eroglu and Harrell 1986, Hui and Bateson 1991) as well as studies on consumer responses to waiting (e.g., Hui et al. 1997, Taylor 1994) all suggest that negative emotions as a result of waiting weaken purchase intention.

Similar to prior studies, this study expects a negative link between negative emotions and purchase intention. This link is consistent with the association between affective reactions and behavioral response posited by Mehrabian and Russell (1974) and is also supported by marketing studies (Baker et al. 1992, Donovan et al. 1994, Hui and Bateson 1991, Wakefield and Baker 1998). Therefore, we hypothesize the following:

H5: Negative emotions will decrease purchase intention.

2.4 Moderating effect of consumer knowledge level

The manner in which product-related cues are used in quality evaluations may depend on individual differences (Cordell 1977, Lee and Lou 1995). Malhotra (1983) suggested that consumers with a high knowledge level experience a lack of motivation to search for information. They are more aware of their preferences and have more confidence when making decision (Bettman and Park 1980, Brucks 1985, Schraagen and Leijenhorst 2001). Subsequently, they are less dependent on additional information or quality cues such as waiting lines. Deutsch and Gerard (1955) also provide experimental evidence that the more uncertain an individual is about the accuracy of his or her judgment, the more susceptible he or she is to informational influences on decisions. This implies that consumers with low-level knowledge, which results in a high level of uncertainty, will rely more on quality cues.

The moderation effect of consumer knowledge level can also be explained by the prominence principle (Tversky et al. 1988, Hsee et al. 2008). According to this principle, when other attributes are difficult to evaluate, individuals will depend on an obvious attribute to make a judgment. Waiting lines, which are very easily observed by consumers and have intuitive associations with popularity, become more prominent to consumers with low-level knowledge

than to those with high-level knowledge. Giebelhausen et al. (2011) also demonstrated that for an unfamiliar service the presence of a wait can increase perceived quality, while for a familiar service the presence of a wait has no such effect on perceived quality.

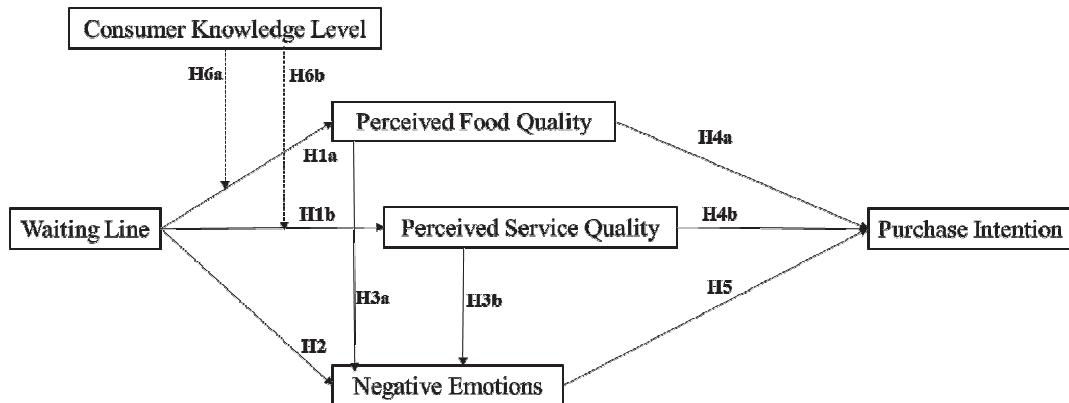
All the above discussions suggest that consumer knowledge level can play a moderating role in the relationship between waiting in line and perceived quality, and therefore, the following is hypothesized,

H6a: Level of consumer knowledge moderates the effect of waiting in line on perceived product quality, such that the positive effect of waiting in line on perceived product quality occurs only when there is low-level knowledge.

H6b: Level of consumer knowledge moderates the effect of waiting in line on perceived service quality, such that the positive effect of waiting in line on perceived service quality occurs only when there is low-level knowledge.

Based on the hypotheses above, the conceptual framework of this study is depicted in Figure 1.

<Figure 1> Conceptual framework of the study



III. Research Method

In this experiment, a 2×2 between-subjects design was used in which waiting line (long waiting line vs. short waiting line) and consumer knowledge level (high-level knowledge vs. low-level knowledge) was manipulated.

To empirically test the hypotheses in the model, as shown in Figure1, a paper-and-pencil task was utilized. There were 247 undergraduate students in Korea who participated in the experiment. Subjects were randomly assigned to one of four experimental conditions with different waiting lines (long or short) and levels of consumers' information (high or low level). To guarantee the objectivity of the results and avoid subtle suggestion of responses, the experimenter announced that the purpose of the experiment was to analyze the relationship between the exterior of the store and consumers' preferences. Subjects were asked to imagine

themselves waiting in line for a food service, and then they completed the questionnaire.

3.1 Experiment product selection

This study used restaurants as the context for the experiment. Restaurants are a representative example within the service industry, and waiting lines are commonly observed in front of restaurants. Unfamiliar restaurants and foods were considered, since as Kirmani and Rao (2000) have suggested, signaling is most useful for products such as experience goods whose quality is unknown by consumers before purchase. It is also unlikely that quality is conveyed for credence products, whose quality is not discernible even after purchase and use (Darby and Karni 1973). In sum, signaling may be particularly effective when consumers encounter new experience products or when they encounter experience products about which they are relatively uninformed but are quality sensitive.

With these considerations, a Japanese noodle store with a fictional name (*Rokurinsha*) was selected as the test product. The noodle, Ho Myeon, that was sold in the fictional restaurant was a very unusual one and was chosen because the subjects were not familiar with it. The appearance of the restaurant and the noodle are depicted in Appendix 1 and 2. In an independent manipulation check survey, all of the 247 subjects answered “no” to the question, “Have you ever tasted this food?”

3.2 Manipulation of waiting lines and consumer knowledge level

The waiting line is the only independent variable in our research model. To manipulate the length of the waiting line, subjects were asked to read a statement and observe a photograph of a waiting situation. In the long waiting condition, there were 12 people in the photograph, while in the short waiting condition there were only two people in the photograph. The photograph used in the experiment is shown in Appendix 1.

An independent survey was carried out as a manipulation check with respect to the length of the waiting line. In the survey, subjects were asked to evaluate three statements after seeing the photograph of the waiting line: 1) the waiting line in this store seems long; 2) waiting in this line for an order will take a long time; 3) waiting in this line for an order

seems very difficult to accept. Responses were measured along a 9-point scale ranging from 1 (strongly disagree) to 9 (strongly agree). The results showed that respondents perceived the photograph with two people in line as a short waiting situation, while the photograph with 12 people in line was perceived as a long waiting situation ($t\text{-value}=6.831, p < .001$).

Consumer knowledge level was manipulated by the level of information offered in the questionnaire, which is shown in Appendix 2. In the case of low-level knowledge, just the name of the noodle (Ho Myeon) and price are offered in the situation description. In contrast, in the high-level knowledge setting, more detailed written information about the noodle and a picture of the noodle were additionally provided immediately below the situation description.

Three items which were suggested in previous studies were adopted and adjusted for the manipulation check for perceived subjective knowledge (Chiou et al. 2002): 1) I know this food well; 2) compared with other people, I think I have more knowledge about this food; 3) I think I can make a confident decision when I purchase this food by using the knowledge which I have now. As predicted, results showed that respondents who completed the questionnaires with the additional information and the food-related photograph were more knowledgeable than respondents who had not seen the information ($t\text{-value}= -3.989, p < .001$).

3.3 Measures for dependent variables

There are four dependent variables in this study: perceived food quality, perceived service quality, emotional state, and purchase intention.

Questions on perceived food quality were adapted from the questions suggested by Stevens et al. (1995) and Vanniarajan and Meharajan (2012), and three items were used: 'The food in this restaurant seems delicious,' 'The appearance of this restaurant's food seems very good, and I would like to share this food's photograph with my friends,' and 'The food in this restaurant seems to be made of fresh and healthy ingredients.' Responses were measured along a 9-point scale ranging from 1 (strongly disagree) to 9 (strongly agree).

Perceived service quality was measured using three revised questions originally suggested by Stevens et al. (1995) and Vanniarajan and Meharajan (2012): 'The staff in this restaurant will be accurate in responding to orders and in payment services for customers,' 'The staff in this restaurant will answer customers' menu-related questions accurately,' and 'The staff in this restaurant will serve customers with a friendly manner'. Each item of perceived service quality was also measured using a 9-point scale, with 1 indicating strongly disagree and 9 indicating strongly agree.

Considering that positive emotion and negative emotion are negatively correlated (Mano and Oliver 1993), a bipolar view more appropriate

to our study is used to assess which kind of emotion is aroused from the waiting situation. Based on Russell (1983), consumers' emotional state from waiting was measured with four 9-point Likert scale items. The three statements were: 1) 'When I wait in this line, I will feel _____.' Respondents answered this question by choosing from 1 (extremely pleasant) to 9 (extremely unpleasant) to express their predicted emotion. 2) 'When I wait in this line, I will feel _____.' Similar to the first question, 1 indicated extremely excited, 9 indicated extremely bored, while 5 was for a difficult-to-judge situation. 3) 'When I wait in this line, I will feel anxiety' (1=Not feel anxiety at all to 9=Feel extreme anxiety.)

Three items revised from Baker et al. (2002) were used to measure purchase intention: 'I will purchase the food which is provided by this restaurant,' 'I will choose this food restaurant in preference to other food restaurants,' and 'I will recommend this food restaurant to my friends.' Responses were according to a 1-9 scale with 'strongly disagree' and 'strongly agree' at the extremes.

Additionally, an attention filter question was included in this questionnaire: 'If you read this question, please choose the number one answer,' and the surveys from those whose answer for the filter question was wrong were excluded.

IV. Result

4.1 Test of reliability and validity

Excluding the 12 participants who incorrectly answered the attention filter question, 235 participants successfully completed the questionnaire (41.3% female). Of the respondents, 79.19% ranged in age from 21-24 years, and 21.19%

ranged in age from 25-30 years. All the data were analyzed by using SPSS 23.0 and Amos 20.0.

To test the validity of the research variables, a principal factor analysis was applied. Considering that there may be a high correlation between purchase intention and other endogenous variables, purchase intention and other variables were analyzed separately. As a mathematical method of seeking a common variable among several

<Table 1> Result of exploratory factor analysis

Variables	Factor			Total	% of Variance	Cumulative(%)	Cronbach's alpha
	Food Quality	Service Quality	Negative Emotions				
Food Quality1	.876	.043	-.133				
Food Quality2	.876	.093	-.123	2.284	28.549	28.549	.837
Food Quality3	.840	.069	-.044				
Service Quality1	.071	.809	-.020				
Service Quality2	.060	.864	-.028	2.051	25.636	54.184	.769
Service Quality3	.066	.786	-.253				
Negative Emotions1	-.106	-.106	.906				
Negative Emotions2	-.138	-.076	.909	1.747	21.847	76.025	.806

Variables	Factor			Total	% of Variance	Cumulative(%)	Cronbach's alpha
	Purchase Intention						
Purchase Intention1		.819					
Purchase Intention2		.845		2.104	70.145	70.145	.780
Purchase Intention3		.849					

variables, factor analysis is considered secure when factor loading is above 0.7. Due to the factor loading of the emotional state third item turning out to be less than 0.7, it was excluded from this study.

The results from Table 2 indicated that all variables' factor loading exceeded the threshold level, 0.7. Thus, reasonable validity was achieved. The Cronbach's alpha value of each variable was higher than .7 as shown in Table 1 and reliability was also achieved.

Confirmatory factor analysis (CFA) was conducted to confirm the psychometric properties of the measure in this research, and the results are summarized in Table 2. The results of the CFAs indicated that the data fit the measurement model well ($\chi^2=52.314$, $df=38$, $p=.06$, $CFI=.986$, $GFI=.963$, $IFI=.986$, $NFI=.986$, $AGFI=$

.935, $RMSEA=.04$). Specifically, CFI and NFI surpassed typical benchmark levels, and the RMSEA statistics were reasonable as part of a holistic view of the overall model fit. Composite reliability (CR) and Average Variance Extracted (AVE) were analyzed to test construct validity and reliability. According to the Bagozzi and Yi (1988) research, .6 is considered as the threshold value for CR and .5 is for AVE. Considering that both CR and AVE were used for the same purpose, although two variables' CR values failed to attain the threshold value of CR which Bagozzi and Yi (1988) suggested, their AVE value also provided the same evidence that the items were accounting for more truth than error in the construct.

Table 3 shows correlations among variables. Shaded and bold numbers on the diagonal

<Table 2> Result of confirmatory factor analysis

	Description	Standardized Estimate	Unstandardized Estimate	S.E.	T-value	C.R	AVE
Food Quality	Food quality1	.833	1.000				
	Food quality2	.861	1.345	.098	13.777***	.65	.65
	Food quality3	.710	.965	.085	11.390***		
Service Quality	Service quality1	.654	1.000				
	Service quality2	.798	1.384	.167	8.279***	.57	.53
	Service quality3	.732	1.122	.135	8.302***		
Negative Emotions	Negative Emotions 1	.834	1.000				
	Negative Emotions 2	.848	1.387	.210	6.604***	.64	.70
Purchase Intention	Purchase Intention1	.717	1.000				
	Purchase Intention2	.724	1.110	.116	9.581***	.54	.55
	Purchase Intention3	.787	.931	.092	10.134***		

$\chi^2=52.314$ ($df=38$, $p=.061$), $CFI=.986$, $GFI=.963$, $IFI=.986$, $RMSEA=.04$

* $p < .1$ ** $p < .05$ *** $p < .001$

<Table 3> Correlation matrix

Descriptive	Food Quality	Service Quality	Negative Emotions	Purchase Intention
Food Quality	.806			
Service Quality	.205	.728		
Negative Emotions	-.306	-.257	.837	
Purchase Intention	.732	.269	-.394	.742

show the square root of AVE. The other values in Table 4 show that the all the values were below the square root of AVE. The results indicate that reasonable discriminant validity was achieved.

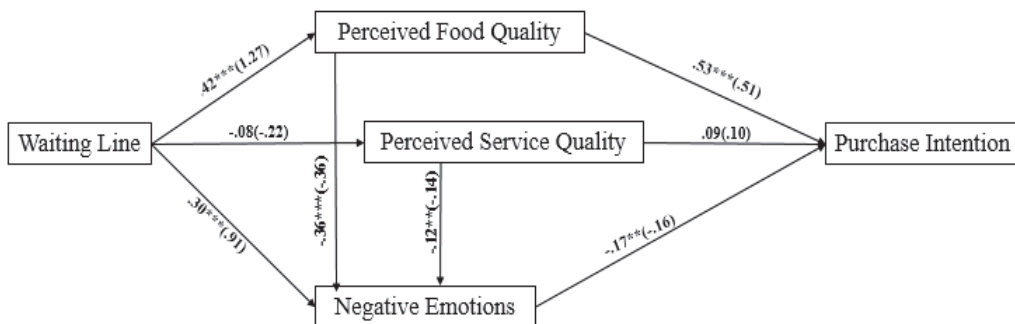
4.2 Main hypotheses testing

High and low-level consumer knowledge settings were analyzed synthetically using AMOS 20.0 and the results are presented in Figure 2. The fit measures of structural equation model indicated overall support for the model fit. ($\chi^2=12.291$, $df=2$, $p=.02$, $CFI=.95$, $GFI=.98$, $IFI=.95$, $NFI=.942$,

$AGFI=.85$, $RMSEA=.148$).

As shown in Table 4, almost all the hypotheses turned out to be supported (with $p < .05$) except the two hypotheses which relate to perceived service quality. Although waiting lines had a significant and positive effect on consumers' perceived food quality, providing support for H1a (p -value = .000), the effect of waiting lines on consumers' perceived service quality was still negative in an insignificant way, thus H1b was not supported (p -value = .198). When the waiting line is shorter or longer than expected, consumers will try to determine the reasons (Tom and Lucey 1995). For instance, a slow, inefficient checker, not enough dinner

<Figure 2> The analysis results of research model



Fit index: $\chi^2=12.291$, $df=2$, $p=.02$

table, or insufficient service staffs to serve customers. If they attributed the reason of long wait to restaurant, the long waiting lines may negatively affect consumers' perceived service quality rather than positively. This view contradict our hypothesis and result in a rejection of H1b. In addition, there was a significantly positive relation between waiting lines and consumers' negative emotions, which means that the longer the subjects expected to wait, the more negative emotions were anticipated during in the waiting process. Thus, H2 was supported (p-value = .000).

Moreover, both the effects of consumers' perceived food quality and perceived service quality on consumers' negative emotions were negatively significant. These results indicate that when people have a high perception of the food and service quality for which they are waiting, negative emotions of the waiting

process will decrease. Thus, H3a and H3b were accepted (p-value = .004; p-value = .000). Consumers' purchase intentions turned out to be affected by perceived food quality in a significantly positive way, while perceived service quality did not have such an effect on consumers' purchase intentions. Thus, only H4a was accepted (p-value = .000), and H4b was rejected (p-value = .189). In the prior studies which discussed the relation between service quality and purchase intention, perceived service quality considered an individual's long-standing attitude toward the firm (Bitner 1990, Vijayanthi, et al. 2012). However, our study used an unfamiliar fictional store as the experiment context which may weaken the effect of perceived service quality on purchase intention and led to a rejection of H4b. While, negative emotions had a significantly negative effect on purchase intention, supporting H5 (p-value = .002).

<Table 4> Results of hypotheses test

Hypotheses	Path	Standardized Estimate	Unstandardized Estimate	S.E.	C.R.	Result
H1a(+)	WL → FQ	.420	1.274	.180	7.074***	Supported
H1b(+)	WL → SQ	-.084	-.223	.173	-1.286	
H2(+)	WL → NE	.303	.913	.201	4.538***	Supported
H3a(-)	FQ → NE	-.361	-.359	.066	-5.421***	Supported
H3b(-)	SQ → NE	-.120	-.137	.069	-1.989**	Supported
H4a(+)	FQ → PI	.535	.508	.051	9.970***	Supported
H4b(+)	SQ → PI	.090	.097	.057	1.70	
H5(-)	NE → PI	-.171	-.163	.052	-3.165**	Supported

$\chi^2 = 12.291$ (df = 2, p = .02), CFI = .95, GFI = .98, IFI = .95, RMSEA = .148

*p < .1 **p < .05 ***p < .001

To further understand the effect of waiting lines on purchase intention and negative emotions, the mediation effects of perceived food/service quality and negative emotions were tested in each hypothesis path that we suggested in our model. Based on the results Table 5, although waiting lines can positively affect perceived food quality and negative emotions, which have different valences of effect on purchase intention, the total effect of waiting lines on purchase intention is positive in a significant way (p-value=.002). Moreover, the indirect effect of the waiting line on negative emotions through perceived food quality also turns out to be significantly negative

(p-value=.002), which suggests that long waiting lines encourage consumers to assume superior food quality and ultimately lead to a decrease in the perception of negative emotions.

4.3 Moderating effects testing

To test the moderation effect of consumer knowledge level, covariance-based multiple group structural equation modeling was applied, conducting separate analyses for the low and high levels of consumer knowledge. The constrained model was examined. The results, which are presented in Table 6, suggest that there was a significant decrease in model fit. Thus, H6a was

<Table 5> Total effect, direct effect, and indirect effect of the waiting line

Dependent Variables	Total effect (Direct effect; Indirect effect)			
	WL	FQ	SQ	NE
FQ	.420*** (.420*** n.a.)	n.a.	n.a.	n.a.
SQ	-.084 (-.084 n.a.)	n.a.	n.a.	n.a.
NE	.161*** (.303*** -.141**)	-.361*** (-.361*** n.a.)	-.120** (-.120** n.a.)	.000
PI	.189** (n.a. .189**)	.596*** (.535*** .061**)	.110 (.090 .020)	-.171** (-.171** n.a.)

*p<.1 **p<.05 ***p<.001

<Table 6> Moderation effect of consumer knowledge level

Hypotheses	The moderation effect of consumer knowledge level				Result	χ^2 Difference Test
	Low information setting (S. E; C.R)		High information setting (S. E; t-value)			
H6a(+): WL→FQ	.599, 8.740	p=.000	.095, .931	p=.352	Supported	$\chi^2(1) = 30.804$ p=.000
H6b(+): WL→SQ	-.140; .227	p=.098	.000; .001	p=.999	Unsupported	$\chi^2(1) = 1.141$ p=.286

<Table 7> Total effect, direct effect, and indirect effect of waiting lines (information setting)

	Low information setting			High information setting		
	Direct effect	Indirect effect	Total effect	Direct effect	Indirect effect	Total effect
WL-NE	.411**	-.239**	.172**	.188**	-.035**	.153**
WL-PI	.000	.320**	.320**	.000	.009	.009

* $p < .1$ ** $p < .05$ *** $p < .001$

accepted while H6b was rejected. As expected, consumers in the low-level knowledge setting are more likely to use waiting lines as a quality signal than consumers in the high-level knowledge setting.

The total effect of waiting lines on purchase intention and negative emotions was also tested in both the low and high information settings. Results showed that the effect of waiting lines on purchases intention was only significantly positive in the low information setting (p -value = .04), while in high information setting, the waiting line's effect was not significant (p -value = .994). Meanwhile, the effect of waiting lines on negative emotions was significantly negative in both information settings (p -value = .032; p -value = .042). Related results are shown separately in Table 7.

V. Discussion

Through linking waiting lines to perceived quality, emotional state, and purchase intention, this study indicated that although long waits

will arouse consumers' negative feelings, they will also lead to consumers making superior product quality inferences. Eventually, the waits will lead to high purchase intention. Conversely, waiting lines have no such effects on consumers' perceived service quality. Also, the higher the product and service quality that is perceived by consumers, the lower the negative emotions that are perceived by them during the waiting situation. Furthermore, the level of consumer knowledge about the target restaurant's food was shown to affect whether or not consumers use waiting lines as a quality signal. Compared to high knowledge consumers, low knowledge consumers are more likely to rely on the length of the waiting line when they make the product's quality-related judgment.

This study provides some significant contributions to marketing theory. First, although there are opposed views about the effect of waiting lines, prior studies have not simultaneously empirically tested the dual effects of waiting lines on consumers' purchase intentions. This study examines a model which simultaneously contains two paths between waiting line and purchase intention: one tested the positive

effect of waiting line through consumers' perceived quality, whereas another one go through consumers' emotional state to test the negative effect of waiting line on purchase intention. The empirical finding of this study revealed that, waiting lines increase consumers' quality perception and quality perception will also lead to higher purchase intention in positive effect path, while, in negative effect path, consumers' negative emotions will decrease purchase intention after waiting lines increase consumers' negative emotions. However, the total indirect effects of waiting lines on purchase intention are still significantly positive. Thus, this study confirmed that although the negative effect of waiting lines exist, the positive effect of waiting lines will still increase consumers' purchase intentions.

Moreover, to further understand which specific aspect of consumers' quality perceptions is affected by the length of the waiting line, this study divided consumers' perceived quality into perceived food and service quality and each was analyzed respectively. Findings suggested that consumers use waiting lines to judge the food quality as opposed to the service quality of restaurants. In other words, the length of the waiting line does not result in significant changes in perceived service quality. This can be explained by two contradicting effects. Long waiting lines can signal high overall quality, including service quality, which has a positive effect. Additionally, long waiting lines can also

signal congestion and remind people of busy and crowded places, which results in negative effects on perception of service quality. Thus, the combined result of the two contrasting effects can sum up to an insignificant overall effect. Perceived product quality is relatively free of this second negative effect of longer waiting lines.

Subsequently, results illustrate that the effect of consumers' perceived quality and negative emotions on purchase intention are meaningful. As a significant mediator variable, negative emotions can be affected by both quality perception and waiting lines. Findings also suggested that the effects of perceived product and service quality on negative emotions are both significantly negative. Therefore, by simultaneously considering the positive effect of waiting lines and the negative effects of perceived food and service quality, this study proved the importance of negative emotions that are aroused during the waiting situation.

Meanwhile, this study also demonstrated that the level of consumer knowledge is play an important moderating role in the relation between waiting lines and consumers' purchase intentions. Although the same results can be achieved when consumers have limited quality information, this positive effect of waiting lines on purchase intension is insignificant when consumers have a high level of quality information. Thus, our study emphasized the importance of consumer knowledge level when testing the

positive effect of waiting lines on purchase intention.

The above results have several managerial implications. Since the robustness of waiting lines' quality signaling effect is proven, practitioners may apply this finding and foster positive effect through thoughtful management of the capacity or design of the waiting space. The decisions about capacity should consider the signaling effect as well as other effects, such as reduction in consumers' waiting time, investment costs, and so on. Waiting space can also be utilized to show off the popularity of the store to potential customers. However, practitioners should note that the positive signaling effect of waiting lines only exists when consumers are unfamiliar with service products. Compared to stores that have an established customer base, store that frequently serve a large number of new consumers (i.e., a store which is located downtown or in an airport or station) may be more amenable to this kind of waiting line strategy. When stores are prepared to launch an unfamiliar service product or open a new branch, however, this waiting line strategy is worthy of consideration.

Furthermore, other tools to exhibit popularity can also be developed. Displaying certificates, awards, and photographs or autographs of visiting celebrities on the shopfront can also be effective ways to convey popularity information to potential consumers. All of these things can be used effectively as quality signals.

VI. Limitations and Future Research

The present study has several limitations and future research implications. First, our study involved only one service industry (i.e., restaurants) and relied on a fictional store or setting. Therefore, further testing across other service settings is required to generalize the results. For example, consumers may act differently when waiting for a hedonic service product vs. a utilitarian service product. For hedonic needs, consumers generally have a tendency to seek additional information and are more likely to invest time satisfying them (Okada 2005). Thus, consumers waiting for hedonic products may accept longer wait times than those waiting for utilitarian products.

Second, further research is needed to explore individual differences that moderate the present findings. For example, some people may naturally be more skeptical than others. Consumers who have skeptical tendencies may consider information from others as biased and not trustworthy (Obermiller and Spangenberg 1998). These consumers may infer that long waiting lines occur due to low service efficiency or low price promotion, and they may be influenced differently by waiting lines. Other consumer trait variables which relate to time perception, for instance, consumers' perceived goal conflict (Etkin et al. 2015), maximizing mindset (Ma et al. 2014)

and busy mindset (Kim et al. 2018), are also necessary for future research. Assessing this and other individual differences might provide additional insight into when and why consumers use waiting lines to infer quality. Additionally, our study is only considerate the visible waiting lines, whether the invisible waiting lines will have the same quality signal effect that seems worth exploring in further research.

Finally, it cannot be assumed that no other information is conveyed through the waiting line. In reality, perceptions about the other customers waiting in lines, who are often strangers, also have the potential to enhance or detract from an individual's evaluation and experience of a product or service (Mourali 2003). Further research should test the moderation effect of the characteristics of other consumers on the waiting line and perceived quality relationship.

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References

- Acebrón, Laurentino B. and Domingo C. Dopico (2000), "The Importance of Intrinsic and Extrinsic Cues to Expected and Experienced Quality: An Empirical Application for Beef," *Food Quality and Preference*, 11(3), 229-238.
- Akdeniz, M. Billur, Roger J. Calantone, and Clay M. Voorhees (2014), "Signaling Quality: An Examination of the Effects of Marketing-and Nonmarketing-controlled Signals on Perceptions of Automotive Brand Quality," *Journal of Product Innovation Management*, 31(4), 728-743.
- Antonides, Gerrit, Peter C. Verhoef, and Marcel Van Aalst (2002), "Consumer Perception and Evaluation of Waiting Time: A Field Experiment," *Journal of Consumer Psychology*, 12(3), 193-202.
- Argo, Jennifer J., Darren W. Dahl, and Rajesh V. Manchanda (2005), "The influence of a mere social presence in a retail context," *Journal of Consumer Research*, 32(2), 207-212.
- Bagozzi, Richard P (1992), "The Self-Regulation of Attitudes, Intentions, and Behavior," *Social Psychology Quarterly*, 178-204.
- Bagozzi, Richard P. and Youjae Yi (1988), "On the Evaluation of Structural Equation Models," *Journal of the Academy of Marketing Science*, 16(1), 74-94.
- Baker, Julie (1986), "The Role of the Environment in Marketing Services: The Consumer Perspective," *The Services Challenge: Integrating For Competitive Advantage*, 1(1), 79-84.
- Baker, Julie, Michael Levy, and Dhruv Grewal (1992), "An Experimental Approach to Making Retail Store Environmental Decisions," *Journal of Retailing*, 68(4), 445.

- Baker, Julie, Albert Parasuraman, Dhruv Grewal, and Glenn B. Voss (2002), "The Influence of Multiple Store Environment Cues on Perceived Merchandise Value and Patronage Intentions," *Journal of Marketing*, 66(2), 120-141.
- Banerjee, Abhijit V. (1992), "A Simple Model of Herd Behavior," *The Quarterly Journal of Economics*, 107(3), 797-817.
- Baumeister Roy F. and Mark R. Leary (1995), "The Need to Belong: Desire for Interpersonal Attachments as A Fundamental Human Motivation," *Psychological Bulletin*, 117(3), 497.
- Berry, Leonard L. and Linda R. Cooper (1990), "Competing with Time-Saving Service," *Business*, 40(2), 3-7.
- Berry, Leonard L. Kathleen Seiders, and Dhruv Grewal (2002), "Understanding Service Convenience," *Journal of Marketing*, 66(3), 1-17.
- Bettman, James R. and C. Whan Park (1980), "Effects Of Prior Knowledge and Experience and Phase of the Choice Process on Consumer Decision Processes: A Protocol Analysis," *Journal of Consumer Research*, 7(3), 234-248.
- Bikhchandani, Sushil, David Hirshleifer, and Ivo Welch (1992), "A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades," *Journal of Political Economy*, 100(5), 992-1026.
- _____ (1998), "Learning from the Behavior of Others: Conformity, Fads, and Informational Cascades," *Journal of Economic Perspectives*, 12(3), 151-170.
- Bitner, Mary Jo (1990), "Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses," *Journal of Marketing*, 54 (2), 69-82.
- Boulding, William, Aja Kalra, Richard Staelin, and Valarie A. Zeithaml (1993), "A Dynamic Process Model of Service Quality: From Expectations to Behavioral Intentions," *Journal of Marketing Research*, 30(1), 7-27.
- Brady, Michael K., Brian L. Bourdeau, and Julia Heskell. (2005), "The Importance of Brand Cues in Intangible Service Industries: An Application to Investment Services," *Journal of Services Marketing*, 19(6), 401-410.
- Brady, Michael K. And Christopher J. Robertson (2001), "Searching For A Consensus on the Antecedent Role of Service Quality and Satisfaction: An Exploratory Cross-National Study," *Journal of Business Research*, 51(1), 53-60.
- Brucks, M. (1985), "The Effects of Product Class Knowledge on Information Search Behavior," *Journal of Consumer Research*, 1-16.
- Carmon, Ziv, J. George Shanthikumar, and Tali F. Carmon. (1995), "A Psychological Perspective on Service Segmentation Models: The Significance of Accounting

- for Consumers' Perceptions of Waiting and Service," *Management Science*, 41 (11), 1806-1815.
- Chiou, Jyh-Shen, Cornelia Droge, and Sangphet Hanvanich (2002), "Does Customer Knowledge Affect How Loyalty Is Formed?" *Journal of Service Research*, 5(2), 113-124.
- Cordell, Victor V. (1997), "Consumer Knowledge Measures as Predictors in Product Evaluation," *Psychology & Marketing*, 14 (3), 241-260.
- Dabbs, James M. (1971), "Physical Closeness and Negative Feelings," *Psychonomic Science*, 23(2), 141-143.
- Darby, Michael R. and Edi Karni (1973), "Free Competition and the Optimal Amount of Fraud," *The Journal of Law and Economics*, 16(1), 67-88.
- Deutsch, Morton and Harold B. Gerard (1955), "A Study of Normative and Informational Social Influences upon Individual Judgment," *The Journal of Abnormal and Social Psychology*, 51(3), 629.
- Dodds, William B., Kent B. Monroe, and Dhruv Grewal (1991), "Effects Of Price, Brand, and Store Information on Buyers' Product Evaluations," *Journal of Marketing Research*, 307-319.
- Donovan, Robert J., John R. Rossiter, Gilian Marcoolyn, and Andrew Nesdale (1994), "Store Atmosphere and Purchasing Behavior," *Journal of Retailing*, 70(3), 283-294.
- Eroglu, Sevgin, and Gilbert D. Harrell (1986), "Retail Crowding: Theoretical and Strategic Implications," *Journal of Retailing*.
- Etkin, Jordan, Ioannis Evangelidis, and Jennifer Aaker (2015), "Pressed for Time? Goal Conflict Shapes How Time Is Perceived, Spent, and Valued," *Journal of Marketing Research*, 52(3), 394-406.
- Festinger, Leon, Stanley Schachter, and Kurt Back (1950), "Social Pressures in Informal Groups: A Study of Human Factors in Housing."
- Giebelhausen, Michael D., Stacey G. Robinson, and J. Joseph Cronin (2011), "Worth Waiting for: Increasing Satisfaction by Making Consumers Wait," *Journal of the Academy of Marketing Science*, 39(6), 889-905.
- Gigerenzer, Gerd, and Peter M. Todd (1999), *Simple Heuristics That Make Us Smart*. Oxford University Press.
- Hennig-Thurau, Thorsten, Mark B. Houston, and Shrihari Sridhar (2006), "Can Good Marketing Carry a Bad Product? Evidence from the Motion Picture Industry," *Marketing Letters*, 17(3), 205-219.
- Hsee, Christopher K., Jean-Pierre Dubé, and Yan Zhang (2008), "The Prominence Effect in Shanghai Apartment Prices," *Journal of Marketing Research*, 45(2), 133-144.
- Hui, Michael K., and John EG Bateson (1991), "Perceived Control and the Effects of Crowding and Consumer Choice on the Service Experience," *Journal of Consumer Research*, 18(2), 174-184.

- Hui, Michael K., Laurette Dube, and Jean-Charles Chebat (1997), "The Impact of Music on Consumers' Reactions to Waiting for Services," *Journal of Retailing*, 73(1), 87-104.
- Izard, Carroll E. (2013), *Human Emotions*. Springer Science & Business Media.
- James G. (1979), *The Ecological Approach To Visual Perception*. Dallas: Houghton Mifflin.
- Jang, Soocheong S and Young Namkung (2009), "Perceived Quality, Emotions, and Behavioral Intentions: Application of an Extended Mehrabian - Russell Model to Restaurants," *Journal of Business Research*, 62(4), 451-460.
- Johns, Nick and Phil Tyas (1996), "Use of Service Quality Gap Theory to Differentiate between Foodservice Outlets," *Service Industries Journal*, 16(3), 321-346.
- Kennedy, Peter W. (1994), "Word-Of-Mouth Communication and Price as a Signal of Quality," *Economic Record*, 70(211), 373-380.
- Kim, Jeehye Christine, Monica Wadhwa, and Amitava Chattopadhyay (2018), "When Busy Is Less Indulging: Impact of Busy Mindset on Self-Control Behaviors," *Journal of Consumer Research*, 45(5), 933-952.
- Kirman, Amna and Akshay R. Rao (2000), "No Pain, No Gain: A Critical Review of the Literature on Signaling Unobservable Product Quality," *Journal of Marketing*, 64(2), 66-79.
- Koo, Minjung and Ayelet Fishbach (2010), "A Silver Lining of Standing in Line: Queuing Increases Value of Products," *Journal of Marketing Research*, 47(4), 713-724.
- Kumar, Amit, Matthew A. Killingsworth, and Thomas Gilovich (2014), "Waiting for Merlot: Anticipatory consumption of experiential and material purchases," *Psychological Science*, 25(10), 1924-1931.
- Latané, Bibb (1981), "The psychology of social impact," *American Psychologist*, 36(4), 343.
- Lee, Younghwa, Andrew NK Chen, and Traci Hess (2017), "The Online Waiting Experience: Using Temporal Information and Distractors to Make Online Waits Feel Shorter," *Journal of the Association for Information Systems*, 18(3), 231.
- Lee, Moonkyu and Yung-Chien Lou (1995), "Consumer Reliance on Intrinsic and Extrinsic Cues in Product Evaluations: A Conjoint Approach," *Journal of Applied Business Research*, 12(1), 21.
- Lehtinen, Uolevi and Jarmo R. Lehtinen (1991), "Two Approaches to Service Quality Dimensions," *Service Industries Journal*, 11(3), 287-303.
- Loewenstein, George (1987), "Anticipation and the Valuation of Delayed Consumption," *The Economic Journal*, 97(387), 666-684.
- Lovelock, Christopher H (1983), "Classifying Services to Gain Strategic Marketing Insights," *The Journal of Marketing*. 9-20.

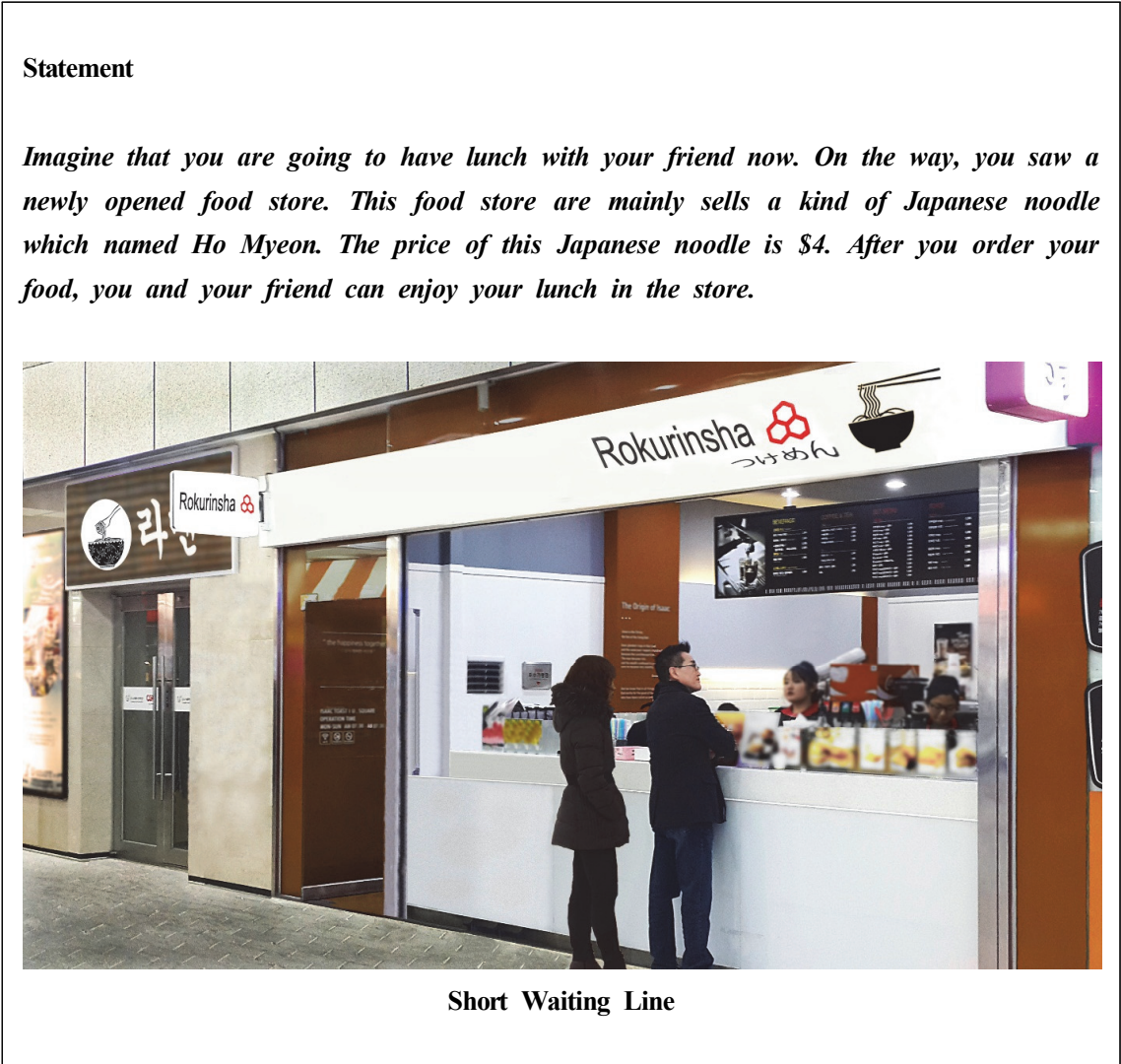
- Lovelock, Christopher H. and Jochen Wirtz (2011), *Services Marketing: People, Technology, Strategy*, 7th Edition, Pearson Press.
- Luo, Margaret Meiling, Ja-Shen Chen, Russell KH Ching, and Chu-Chi Liu (2011), "An Examination of the Effects of Virtual Experiential Marketing on Online Customer Intentions and Loyalty," *The Service Industries Journal*, 31(13), 2163-2191.
- Lynn, Michael (1991), "Scarcity Effects on Value: A Quantitative Review of the Commodity Theory Literature," *Psychology & Marketing*, 8(1), 43-57.
- Ma, Jingjing, Ying Wang, and Neal Roese (2014), "The Impact of the Maximizing Mindset on Decision Time." *Advances in Consumer Research*, 42, 590-591.
- Maister, David H (1984), *The Psychology of Waiting Lines*. Boston, MA: Harvard Business School.
- Malhotra, Naresh K (1983), "On Individual Differences in Search Behavior for a Nondurable," *Journal of Consumer Research*, 10(1), 125-131.
- Mannes, Albert E (2009), "Are We Wise About The Wisdom of Crowds? The Use of Group Judgments in Belief Revision," *Management Science*, 55(8), 1267-1279.
- Mano, Haim and Richard L. Oliver (1993), "Assessing the Dimensionality and Structure of the Consumption Experience: Evaluation, Feeling, and Satisfaction," *Journal of Consumer Research*, 20(3), 451-466.
- Mari, Michela and Sara Poggese (2013), "Servicescape Cues and Customer Behavior: A Systematic Literature Review and Research Agenda," *The Service Industries Journal*, 33(2), 171-199.
- Mavrodiev, Pavlin, Claudio J. Tessone, and Frank Schweitzer (2012), "Effects of Social Influence on the Wisdom of Crowds," *In Proceedings of the 2012 Collective Intelligence Conference*, 1-7.
- Mehrabian, Albert, and James A. Russell (1974), *An Approach To Environmental Psychology*. The MIT Press.
- Meyer, Thierry (1994), "Subjective Importance of Goal and Reactions to Waiting in Line," *The Journal of Social Psychology*, 134(6), 819-827.
- Miller, Elizabeth Gelfand, Barbara E. Kahn, and Mary Frances Luce (2007), "Consumer Wait Management Strategies for Negative Service Events: A Coping Approach," *Journal of Consumer Research*, 34(5), 635-648.
- Morrison, Donald G. (1979), "Purchase Intentions and Purchase Behavior," *The Journal of Marketing*, 65-74.
- Mourali, Mehdi (2003), *Customer-To-Customer Interactions and Their Effects on Service Evaluation: A Role Theoretic Perspective*. Working Paper.
- Obermiller, Carl and Eric R. Spangenberg (1998), "Development of a Scale to Measure Consumer Skepticism toward Advertising."

- Journal of Consumer Psychology*, 7(2), 159-186.
- Okada, Erica Mina (2005), "Justification Effects on Consumer Choice of Hedonic and Utilitarian Goods," *Journal of Marketing Research*, 42(1), 43-53.
- Oshagan, Hayg (1996), "Reference Group Influence on Opinion Expression," *International Journal of Public Opinion Research*, 8(4), 335-354.
- Osuna, Edgar Elias (1985), "The Psychological Cost of Waiting," *Journal of Mathematical Psychology*, 29(1), 82-105.
- Powell, Derek, Jingqi Yu, Melissa Dewolf, and Keith J. Holyoak (2017), "The Love of Large Numbers: A Popularity Bias in Consumer Choice," *Psychological Science*, 28(10), 1432-1442.
- Raajpoot, Nusser A. (2002), "TANGSERV: A Multiple Item Scale for Measuring Tangible Quality in Foodservice Industry," *Journal of Foodservice Business Research*, 5(2), 109-127.
- Rafaeli, Anat, Greg Barron, and Keren Haber (2002), "The Effects of Queue Structure on Attitudes," *Journal of Service Research*, 5(2), 125-139.
- Rajala, Risto, Pekka Töytäri, and Tuomas Hervonen (2015), "Assessing Customer-Perceived Value in Industrial Service Systems," *Service Science*, 7(3), 210-226.
- Rao, Akshay R. and Kent B. Monroe (1988), "The Moderating Effect of Prior Knowledge on Cue Utilization in Product Evaluations," *Journal of Consumer Research*, 15(2), 253-264.
- Russell, James A. (1983), "Pancultural Aspects of the Human Conceptual Organization of Emotions," *Journal of Personality and Social Psychology*, 45(6), 1281.
- Rust, Roland T. and Richard L. Oliver (1993), *Service Quality: New Directions in Theory and Practice*. Sage Publications.
- Schraagen, J. and Henk Leijenhorst (2001), *Searching for Evidence: Knowledge and Search Strategies Used By Forensic Scientists*, Lawrence Earlbaum.
- Schwartz, Barry (1975), *Queueing and Waiting*. University of Chicago Press, Chicago, IL.
- Senecal, Sylvain and Jacques Nantel (2004), "The Influence of Online Product Recommendations on Consumers' Online Choices," *Journal of Retailing*, 80(2), 159-169.
- Sommer, Robert (1969), *Personal Space. The Behavioral Basis of Design*, 176.
- Srivastava, Joydeep and Anusree Mitra (1998), "Warranty as a Signal of Quality: The Moderating Effect of Consumer Knowledge on Quality Evaluations," *Marketing Letters*, 9(4), 327-336.
- Stevens, Pete, Bonnie Knutson, and Mark Patton (1995), "DINESERV: A Tool for Measuring Service Quality in Restaurants," *Cornell Hotel and Restaurant Administration Quarterly*, 36(2), 56-60.
- Taylor, Shirley (1994), "The Effects of Filled Waiting Time and Service Provider Control

- Over the Delay on Evaluations of Service.” *Journal of the Academy of Marketing Science*, 23(1), 38-48.
- Tom, Gail, and Scott Lucey (1995), “Waiting Time Delays and Customer Satisfaction in Supermarkets.” *Journal of Services Marketing*, 9(5), 20-29.
- Tversky, Amos, Shmuel Sattath, and Paul Slovic (1988), “Contingent Weighting in Judgment and Choice,” *Psychological Review*, 95(3), 371.
- Vaijayanthi, P., K. A. Shreenivasan, and Reena Roy (2012) “Antecedents to Customer Purchase Intention: An Empirical Study of Service Quality and Customer Satisfaction in Food Services in the Indian Milieu.” *2012-International Conference on Management Issues in Emerging Economies (ICMIEE)*. IEEE.
- Vanniarajan, T. and T. Meharajan (2012), “Dineserv: A Tool for Measuring Service Quality in Restaurants,” *Journal of Marketing and Communication*. 8(2).
- Voorhees, Clay M., Julie Baker, Brian L. Bourdeau, E. Deanne Brocato, and J. Joseph Cronin Jr (2009), “It Depends: Moderating the Relationships among Perceived Waiting Time, Anger, and Regret,” *Journal of Service Research*, 12(2), 138-155.
- Wakefield, Kirk L. and Julie Baker (1998), “Excitement at the Mall: Determinants and Effects on Shopping Response,” *Journal of Retailing*, 74(4), 515-539.
- Wells, John D., Joseph S. Valacich, and Traci J. Hess (2011), “What Signal Are You Sending? How Website Quality Influences Perceptions of Product Quality and Purchase Intentions,” *MIS Quarterly*, 373-396.
- Westbrook, Robert A. (1987), “Product/Consumption-Based Affective Responses and Postpurchase Processes,” *Journal of Marketing Research*, 258-270.
- Wirtz, Jochen, Patricia Chew, and Christopher H Lovelock (2012), *Essentials of Services Marketing*, 2nd Edition, Pearson Press.
- Worchel, Stephen (1992), “Beyond a Commodity Theory Analysis of Censorship: When Abundance and Personalism Enhance Scarcity Effects,” *Basic and Applied Social Psychology*, 13(1), 79-92.
- Zeithaml, Valerie A. (1988), “Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence,” *The Journal of Marketing*, 2-22.

〈Appendix 1〉 Scenario and waiting line photograph used in the experiment
(low information setting)

〈Figure A1〉 Scenario and waiting line photograph (low information setting)



〈Appendix 2〉 Scenario and waiting line photograph used in the experiment
(high information setting)

〈Figure A2〉 Scenario and waiting line photograph (high information setting)

Statement

Imagine that you are going to have lunch with your friend now. On the way, you saw a newly opened food store. This food store are mainly sells a kind of Japanese noodle which named Ho Myeon. The price of this Japanese noodle is \$4. After you order your food, you and your friend can enjoy your lunch in the store.



- This Japanese noodle is a new menu which is developed by a famous Japanese noodle store named Rokurinsha.
- Through the fresh material of food and delicious bone soup, it can bring a spicy and very rich flavor to diners, which make it become very popular in SNS.



Long Waiting Line