

중국 온라인 타임 세일이 실제 구매에 미치는 효과 : 징동닷컴에 대한 실증 연구

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Exploring the Effect of Online Time-Deals on
Actual Purchase in China : An Empirical Study on JD.com

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■ Abstract ■

This study explores the effect of time-deals, i.e., online promotions with time limit. Recently many online/mobile shopping sites in China utilize so called hot deal marketing technique for a short duration at a specific time. The purpose of "time-deals" is to attract online shoppers with deep discounted price and induce consumers to purchase items. This paper examines the effect of time-deals on sales volume, firstly by comparing the sales volume of time-deal days with that of no time-deal days and secondly by comparing the sales volume of days before and after two types of time deals, usual time-deals and special time-deals,

Although some prior research studied the role of time-deals in promoting consumers' purchase behavior, most used the experimental approach by building mock-up shopping sites and asking participants purchase intention. However, purchase intention does not always result in purchase behavior. This study extracted actual purchase data for four items on time-deals from an online shopping site in China.

A comparison of sales volumes on time-deal days with no time-deal days has shown the significant difference in the sales volumes. This finding confirms the positive effect of time-deals on purchase behavior. This study has also found that special time-deals soak up near-future demands in advance and lower the sales after the special time-deal event, although there is no significant difference in sales before and after usual time-deals.

Keyword : Online Shopping, E-Commerce, Time-Deal Effect, Promotion, Purchase Behavior,
Special Time-Deal

1. Introduction

Online or mobile shopping sites in China and Korea have employed hot deal marketing techniques called “time-deals” which provide deep discounts for selected items for a limited time. Time-deals or limited-time promotions are neither new nor unique to online shopping. Traditional retailers used to offer flash sales, holiday sales, anniversary sales, or seasonal sales. The sale periods cover a wide variety of lengths, from less than one hour to several weeks.

A famous time-deal event in the US is the Black Friday sale. On the next day after Thanksgiving, retailers usually used to offer one-day sale bonanza with deep discounted prices for a variety of items in their stores. Nowadays, the sales event starts even before Thanksgiving and extends to next Monday called Cyber Monday with the rise of the Internet. In 2018, the sales amount, online and offline combined, was estimated to be 143.8 billion dollars in total and online sales reached 17.8 billion dollars (Xinhua, 2018).

The Chinese version of Black Friday is called Singles Day which is November 11 (11-11). Chinese consumers have specific characteristics that are quite different from those in other economies (Chang et al., 2012). Alibaba started a 24-hour shopping event in 2009 for comforting singles ostensibly, and in 2018 made \$30.8 billion sales which is much higher than online sales on Black Friday and Cyber Monday combined in the US. Now, other online shopping sites such as Jingdong (JD.com) and Suning(suning.com) joined the sales spree in order not to lose their customers. As a result, Singles Day becomes a national event and is labeled as an example of ‘day marketing’ which is a kind of time-deals.

Although it is well known that day marketing events like Singles Day generate large sales, each event happens only once a year. Some reports point out that retailers may suffer from low sales for some time before and after those events (Cao, 2018; Luan et al., 2018). This could be possible if consumers delayed purchases until the event day and bought more items than necessary on the event day. However, there is an opposite view that participants to day marketing events expressed higher intention to revisit the shopping site and to repurchase the items for reasons of lower price and convenience (Li and Whang, 2016).

In addition, prior research showed conflicting results. Some studies found that time-restriction had positive effect on purchase intention (Lynn, 1992a; Swain et al., 2006), while others found no effect (Delvin et al., 2007; Hanna et al., 2016).

Typically, a time-deal imposes a time limit and can be classified into two types: usual and special. Everyday, online shopping sites promote usual time-deals which offer discounts for selected items at a specific time of a day. The same item can be on usual time-deals again either sporadically or periodically. In contrast, special time-deal events are held on a particular anniversary or holiday. Chinese e-commerce giants usually launch special time-deals on the Singles day (November 11), Double 12 (December 12), and their Anniversaries every year by offering massive discounts on almost everything from electronics to cars. Generally, consumers get higher discounts from special time-deals than usual time-deals.

Although it is obvious that a special time-deal increases sales, the effect of usual time-deals is not obvious. The first research question of this study is whether usual time-deal promotions

have a positive effect on purchase behavior. The second question is how sales change before and after both types of time-deals.

2. Background

2.1 Online Time-Deal Mechanism

Each shopping site sets up time limits in its own way (Shim and Rhee, 2013). This section summarizes time-deals of representative Chinese online companies. Alibaba has two shopping sites: Taobao and Tmall. When customers visit their home pages or open their mobile apps, they see a banner: 'Buy in a hurry.' This banner is linked to a web page that displays usual time-sale items with a limited quantity on sale for a limited hour(s) starting at a specific time. Time durations are various: midnight~8:00, 8:00~10:00, 10:00~11:00, 11:00~12:00, 12:00~13:00, 13:00~14:00, 14:00~16:00, 16:00~18:00, 18:00~20:00, 20:00~22:00, 22:00~23:00, and 23:00~24:00. For each time block, different items are listed with a discounted price which is sometimes less than half of the regular price. Quality items with bigger discounts tend to be sold out much faster than the closing time. Consumers can set up an alarm notification for items with interest in advance. Selling items during a time-deal was free for sellers initially. Later, shopping sites charged sellers fees for a time-deal as more consumers purchased items during the time-deal.

JD.com has 'Spikes Deals' whose original Chinese word has a meaning that items on 'Spikes Deals' will be sold out in a second due to their lowest prices. 'Spike Deals' list both Jingdong's and other sellers' items on separate

pages. This site lets consumers know when to sell what items with what price 24 hours ahead of the time-deal. It updates items every morning from 8 o'clock. 'Spike Deals' for each item may last for hours, a day, days, a week, a month, or until sold-out. JD.com also launches its special time-deal events on the Singles Day (November 11), Double 12 (December 12), and the company's June 18 Anniversary every year.

Suning.com has 'Special Sales' that sell special brand items for special prices at special hours and update items at 9:30 every morning. This site shows how many people are interested in each item to be sold in the coming hours.

All of the aforementioned shopping sites show original price, discount price, remaining volume, percentage of items sold, and items to be sold in coming hours.

2.2 Previous Studies

According to the prospect theory (Kahneman and Tversky, 1979), people are more sensitive to loss than gain from a reference point¹⁾ and try to avoid regret over missing opportunities. This theory implies that consumers would be more willing to purchase items with discounted prices for a limited duration.

Previous studies on scarcity messages in advertisement or promotion have consistently reported that in general scarcity messages have a positive effect on increasing the purchase intention. Although scarcity messages can be classified into two groups, quantity scarcity and time scarcity (Cialdini, 2007), all the shopping

1) People consider a positive difference between an expected outcome and a reference point as gain and a negative difference as loss.

sites surveyed in the previous section utilize a combination of both quantity scarcity and time scarcity.

Scarcity messages increase the perceived value of an item, product or service (Bozzolo, and Brock, 1992; Kim, 2013), incite the desire to own the item (Brock and Brannon, 1992; Jang et al., 2015), and expedite consumers' decision to purchase the item (Lynn, 1992a). In case of time and volume restricted promotion offer, perceived value-price ratio would be much higher, thanks to dumpy prices of listed items.

Scarcity messages increase the attractiveness of an item due to its emphasis on unavailability (Lynn, 1992b). Rare items are usually more expensive than easily available ones. As a result, only a limited number of people can possess rare items. However, online shopping sites usually offer popular items rather than rare items.

Scarcity messages put psychological pressure on potential buyers. Time restriction raises felt-time pressure, creates consumer's sense of urgency, and urges consumers to take actions (Swain et al., 2006). However, in other studies, the effect of time restriction was not significant, although there was a marginal interaction effect between time limit and discount (Delvin et al., 2007; Hanna et al., 2016).

Most studies have adopted experimental approaches and the purchase intention as the dependent variable. In the experiments, participants were asked to visit mock-up shopping sites, read scarcity messages, and then answer questions about intention to purchase, repurchase, or recommend items to others.

Although intention is a precedent of purchase behavior and a measurable variable and widely accepted as a substitute for actual purchase

behavior (Newberry et al., 2003), there are many other factors between intention and behavior. It would be better if there is a way to measure purchase behavior directly. This becomes possible recently, since some shopping sites open visitors' behavior data to public and additionally web crawling and big data analysis tools are available.

3. Research Approach

In order to examine the effect of online time-deals on purchase behavior, the authors had to choose an online shopping site and items. As a way to find out an appropriate online shopping platform and product category for this exploratory study, a preliminary survey was conducted through a series of in-depth field interviews with 20 Chinese consumers. The purpose of the survey was to identify the popular shopping site and items on time-sales. Participants had experiences in purchasing items during both usual and special time-deal events.

The survey result showed that JD.com was their major online shopping site. 12 participants selected JD.com as their first shopping site. Consumer electronics items were purchased most frequently during the usual time-deals. During the special time-deals, consumer electronics ranked at the second while home appliances were at the top (See <Table 1>).

<Table 1> Purchased Items on Time-Deals

Most frequently purchased items	usual time-deals	special time-deals
Electronic products	8	5
Kitchen supplies	6	3
Home appliances	5	9
Office supplies	1	3

This study chose JD.com among the major online shopping sites for collecting data about purchase behavior. First, JD.com was the most well-known Chinese e-commerce brand in 2019 with an awareness of 87.8%, in comparison with Alibaba's Tmall (87.5%), Pinduoduo (69.8%), and Suning.com (61.3%). Although JD.com occupies about a quarter of the online market in China, it sells consumer electronics with high quality and its market share is over 50%. Second, it has offered for years both usual time-deals every day and special time-deals on event days such as the Singles' Day, Double 12 and the Anniversary Day, i.e., June 18. However, Alibaba has two separate online platforms, i.e., Tmall and Taobao. Tmall has a special time-deal on Single's Day while Taobao has one on Double 12. This makes data collection more difficult. Third, JD.com opens order data to the public.

This study utilized big data analysis software 'BAZHUYU' developed in China since it has web crawling features.

3.1 Study 1

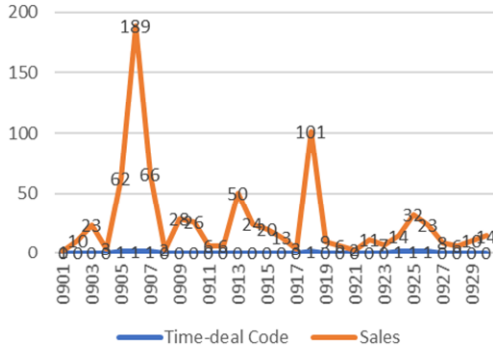
In order to address the first research question, whether usual time-deals affect purchase behavior, this study compared sales volume of time-deal days with that of no time-deal days. For the comparison, four consumer electronics items of electric rice cooker, electric shaver, cleaning robot, and smartphone were selected, since their prices were quite diverse. The original prices of the electric rice cooker, the electric shaver, the cleaning robot, and the smartphone were listed at 399 yuan, 549 yuan, 999 yuan, and 2,199 yuan, respectively. The discount rates were 12.5 percent for the electric

rice cooker, 9.1 percent for the electric shaver, 10.0 percent for the cleaning robot, and 9.1 percent for the smartphone. These items were on usual time-deal promotions from time to time. In contrast, the discount rates on special time-deal promotions for the electric cooker and the smartphone were 22.6 percent and 22.7 percent, respectively.

JD.com was crawled in order to collect sale data over six months (from September 2017 until February 2018)²⁾. The crawled data items included User ID, Membership level, Review, Review time, Additional review time, Purchase time, Order quantity, Upvote number, Comment number, Website, Website title, and Data crawling time. In total, 3,036 purchase data were crawled and summarized into daily sales for the four items.

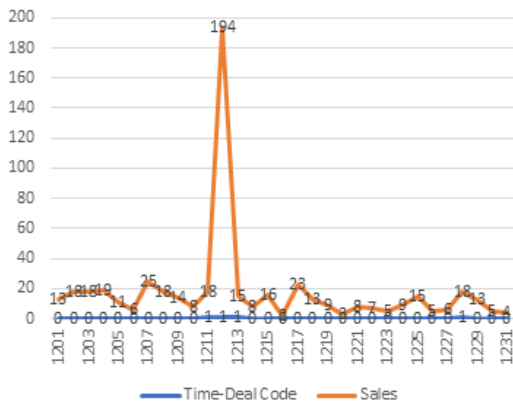
Daily sales volumes of the four items for a month are shown in [Figure 1]~[Figure 4]. Sales volume of the cleaning robot for September 2017 is shown in [Figure 1]. The horizontal axis represents each day and '0' represents a day without time-deals while '1' represents a day with time-deals. For example, the cleaning robot was listed in time-deals for three days, September 5~7, and the sales volumes were 62, 189, and 66 each day. The item was on the usual time-deal for one day on September 18 whose sale volume is 101. The next time-deal was for three days, September 24~26, and sales volumes were 14, 32, and 23. The first two time-deals resulted in spikes in sales, but the third one did not.

2) Time-deal dates were not the same for four items. In order to extract data enough to perform statistical tests, sales volumes of ninety days were necessary for each item. Crawling over six months generated necessary data.



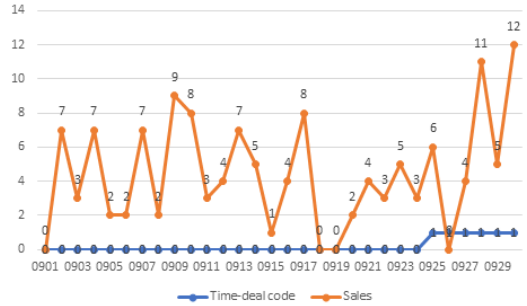
[Figure 1] Cleaning Robot Sales Volume

[Figure 2] shows daily sales of the electric rice cooker in December 2017. The rice cooker was on a time-deal for 3 days, December 11~13. The sales volumes were 18, 194, and 15 each day. The second deal was on December 28 and the sales volume was 18. Although there was a spike in sales at the first time-deal, December 12 was the Double Day, a special time-deal event. The sales volume on 12/12 was excluded from the analysis of usual time-deals. There was no spike at the second time on 12/28.



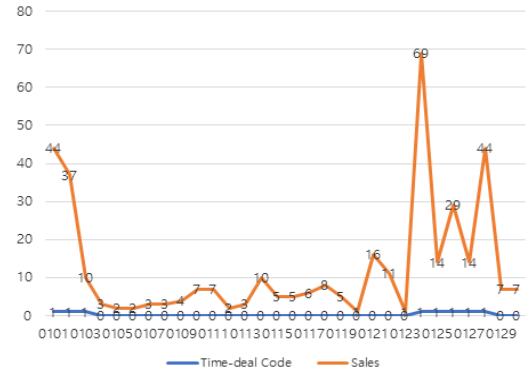
[Figure 2] Electric Cooker Sales Volume

Daily sales volume of the electric shaver in September 2017 is shown [Figure 3]. It was on a time-deal for six days, 25~30, and sales volumes were 6, 0, 4, 11, 5, and 12 each day.



[Figure 3] Electric Shaver Sales Volume

[Figure 4] shows daily sales of the smartphone in January 2018. Two time-deals for 8 days, January 1~3 and 24~28, were offered and the sales volumes spiked on both time-deals.



[Figure 4] Smartphone Sales Volume

[Figure 1]~[Figure 4] generally show the sales increase on usual time-deal days over non-time deal days. In order to examine statistical significance in sale differences, the authors conducted t-tests and the result is shown in <Table 2>.

<Table 2> Time-Deal vs. No Time-Deal Days

Items	Time-deal			No time-deal			t value	P value
	N	Mean	STD	N	Mean	STD		
Cleaning Robot	14	28.5	28.5	77	5.0	8.1	3.1	0.009**
Electric Cooker	9	12.3	7.1	81	5.4	5.5	3.5	0.001**
Electric Shaver	13	7.3	4.6	79	4.3	3.7	2.6	0.011*
Smartphone	8	32.6	20.1	81	2.3	2.9	4.3	0.004**

*p < 0.05, **p < 0.01.

The cleaning robot was on usual time-deals for 14 days and not on time-deal for 77 days. The average sales volume on a time-deal day was 28.5, while the average on a non time-deal day was just 5.0. A t-test result shows the sales volume on a time-deal day is significantly higher than that on a non time-deal day.

In case of the electric cooker, it was on usual time-deal for 9 days and not on time-deal for 81 days. The average sales volume on a usual time-deal day was 12.3, while the average on a non time-deal day was 5.4. A t-test result confirms the significant difference in the sales volume on a usual time-deal day from that on a non time-deal day.

The electric shaver was on usual time-deal for 13 days and not on time-deal for 79 days. The average sales volumes were 7.3 for usual time-deal days and 4.3 for no time-deal days. Again, the sales volume difference was statistically significant at the 5% level.

In case of the smartphone, usual time-deal days were 10, but 81 days were not on time-deal. The average sales volume on a time-deal day was 40.0. In contrast, the average on a non time-deal day was only 2.4. A t-test result shows the sales volume is significantly higher on a time-deal day than on a non time-deal day.

In summary, this study confirms that usual time-deals have a positive effect on consumers' purchase behavior and result in sales boost. This finding is in line with previous studies that showed a positive effect of time limit on purchase intention (Swain et al., 2006). Online promotions emphasizing the scarcity of items increase consumers' urgency and thus encourage them to purchase the items on the usual time-deals (Jang et al., 2015).

3.2 Study 2

The second study is to check how sales pattern changes before and after time-deals, both usual and special. The same data were used for the second study. The sales of the cleaning robot and the electric shaver were examined for usual time deals, since the crawled data did not include any special time-deal day.³⁾ The sales of the electric cooker and the smartphone were used for analyzing special time-deals.

Since there was no prior research suggesting how many days would be appropriate for comparing sales before and after time-deals, the authors decided to include the same number of days before and after time-sales for all items in both types. The number of available days for comparisons were 23 and 35 days for the cleaning robot, 38 and 23 days for the electric shaver, 21 and 23 days for the electric rice cooker, and 23 and 31 days for the smartphone. Eventually sales for 21 days were used for comparisons.

JD.com notifies customers which items would be on time-sale, just one day ahead of a usual time-sale. Customers would be able to delay the purchase of the time-sale item until the next day. It would also be possible to purchase the time-sale item in advance during the time-sale. Unfortunately, how many days in advance is anyone's guess. The delay effect can be removed if the sale of the day immediately before a usual time-sale is excluded.⁴⁾

3) Sales data were collected in July, August, and September for cleaning robots, and for electric shavers in August, September, and October. There was no special time-deal in July~October.

4) The authors refined the comparison, thanks to the valuable comments addressed by one of the reviewers. Another comparison without excluding the sale of the previous day before a usual time-sale also showed no significant difference for both items.

As shown in <Table 3>, the average sales volume of the cleaning robot for 21 days before usual time-deals was 6.2, while the average for 21 days after time-deals was 5.8. A t-test showed that the difference was not significant at the 5% level. In case of the electric shaver, the average sales volume before usual time-deals was 4.1. In contrast, the average after time-deals was 4.5. Another t-test also showed no significant difference at the 5% level.

<Table 3> Sales Before/After Usual Time-Sale

Items	before time-sale			after time-sale			t value	P value
	N	Mean	STD	N	Mean	STD		
Cleaning Robot	21	6.2	7.7	21	5.8	7.9	0.18	0.86
Electric Shaver	21	4.1	2.7	21	4.5	4.6	-0.3	0.75

In summary, there is no evidence that usual time-deals decrease sales afterwards. In other words, consumers would not become too desperate not to lose the usual time-sale event, since they expect that the same item would be on the usual time-sale again sooner or later. Frequent promotional offers may make consumers quickly become desensitized to discounts due to “promotion fatigue” (O'Donnell, 2011; Stone, 2015). Another study has found that consumers show cynicism toward time-restricted promotion (Devlin et al., 2007). The authors observed online sellers tried to offer usual time-deals when their sales continued to be slow for a while.

<Table 4> Sales Before/After Special Time-Sale

item	before time-sale			after time-sale			t value	P value
	N	Mean	STD	N	Mean	STD		
Electric Cooker	21	10.7	8.3	21	6.5	3.8	2.1	0.04*
Smartphone	21	1.9	1.8	21	0.7	0.8	2.6	0.01*

* p < 0.05.

More comparisons of the sales before and after the special time-deals were carried out for the electric cooker and the smartphone and the results are shown in <Table 4>. In case of the electric cooker, the average sales volume for 21 days before the special time-deals was 10.7, while the average for 21 days after the time-deals was 6.5. A t-test showed that the average sales volume before the special time-deals was significantly higher than that after the special time-deals at the 5% level. The average of the smartphone before the special time-deals was 1.9. In contrast, the average after the time-deals was just 0.7. Another t-test also revealed that the difference was significant at the 5% level.

In summary, this study has found the evidence that special time-deal events decrease more sales afterwards than beforehand. This finding is consistent with the observations by Cao (2018) and China Business Network (2018). Consumers do not want to lose opportunities for buying items with big discounts. Special time-sales events soak up near-future demands in advance. As a result, sales after the events would be lower than usual, even if the purchase delay effect is considered.

4. Conclusion

This study investigated the effect of time-deals with focus on consumer behavior, rather than purchase intention that most past research adopted as a dependent variable. In addition, this study collected and analyzed real sales data from real consumers who purchased electronic items from a real online shopping site, JD.com, rather than subjective survey responses from participants who visited a mock-up shopping

site. This study offers unique and valuable contributions to the accumulation of empirical evidence by reconfirming and extending the previous research on consumers' purchase behaviors to online shopping platform.

There are three findings. First, usual time-deals encourage consumers to make a purchase and result in significant sales increase. Time-deals could be considered as an effective promotion technique. Second, there is no evidence that usual time-deals decrease sales after time-deals. This confirms that online consumers are rational in that they do not show buying spree during usual time-deals. Third, this study has found that the sales volumes of items on special time-deals after the events are significantly lower than those before the events. This means that the special time-deal events with unusually big discounts soak up near-future demands in advance. This study provides practical implications for online shopping platforms and sellers on those platforms to make efforts to minimize the side effect of special time-deals.

However, this study examined only a few electronic items, although the price range covered both low price and high price. This study also has limits in that overall long-term effect of time-deals was not investigated.

In the future, it is necessary to study time-deal effects with items in other categories such as service items and investigate what would be the best interval between usual time-deals. It would be interesting to examine whether decrease in sales volume after special time-deals is temporary or lasting and check long-term effects on online sellers, although the increase in sales volume during time-sales is definitely beneficial to online shopping sites like JD.com.

References

- Bozzolo, A.M. and T.C. Brock, "Unavailability Effects on Message Processing : A Theoretical Analysis and an Empirical Test", *Basic and Applied Social Psychology*, Vol.13, No.1, 1992, 93-101.
- Brock, T.C. and L.A. Brannon, "Liberalization of commodity theory", *Basic and Applied Social Psychology*, Vol.13, No.1, 1992, 135-144.
- Cao, S., "The Underlying Logic of the 'Double Eleven,'" *Economic Observer*, 12 November, 2018, <http://www.eeo.com.cn/2018/1112/340948.shtml>, accessed on 26 December 2018.
- Chang, Y., K.H. Kim, and Y.S. Jung, "The effects of general country attributes and general service product attributes on Chinese consumers' pre-assessment and usage intention for international Internet shopping mall services according to their using experience", *Journal of the Korea Society of IT Services*, Vol.11, No.2, 2012, 49-68.
- Cialdini, R., *Influence : Science and Practice*, 5th Ed., Boston : Allyn and Bacon, 2008.
- Devlin, J., C. Ennew, S. McKechnie, and S. Andrew, "A Study of Time Limited Price Promotions", *Journal of Product and Brand Management*, Vol.16, No.4, 2007, 280-285.
- Hanna, R., S.D. Swain, and L.J. Abendroth, "Optimizing Time-limited Price Promotions", *Journal of Marketing Analytics*, Vol.4, No. 2/3, 2016, 77-92.
- Jang, W. E., Y. Ko, and J. D. Morris, "Scarcity message effects on consumption Behavior : Limited Edition Product Consideration", *Psychology and Marketing*, Vol.32, No.10, 2015, 989-1001.
- Kahneman, D. and A. Tversky, "Prospect theory :

- An Analysis of Decisions under Risk”, *Econometrica*, Vol.47, No.2, 1979, 263–291.
- Kim, B., “The role of site stickiness and its antecedents in a social commerce environment”, *Journal of the Korea Society of IT Services*, Vol.12, No.3, 2013, 23–37.
- Li, N. and Y.C. Hwang, “Satisfaction and repurchase intention on day–marketing participants of China’s internet shopping mall”, *Journal of Business*, Vol.1, No.1, 2016, 39–44.
- Luan, L., Y. Le, Z.Y. Lin, T.J. He, and J.Y. Lu, “Double 11 Overdraft Worry : Breast Pump Sales Surged More Than 30 Times a Day, Leaving 364 Days to Sell What?”, China Business Network, 12 November, 2018, <https://www.yicai.com/news/100057732.html>, accessed on 26 December 2018.
- Lynn, M., “The Psychology of Unavailability : Explaining Scarcity and Cost Effects on Value”, *Basic and Applied Social Psychology*, Vol.13, No.1, 1992a, 3–7.
- Lynn, M., “Scarcity’s Enhancement of Desirability : The Role of Naive Economic Theories”, *Basic and Applied Social Psychology*, Vol.13, No.1, 1992b, 67–78.
- Newberry, C., B. Klemz, and C. Boshoff, “Managerial Implications of Predicting Purchase Behavior from Purchase Intentions : A Retail Patronage Case Study”, *Journal of Services Marketing*, Vol.17, No.6, 2003, 609–620.
- O’Donnell, J., “Websites Selling Daily Deals Lose Luster”, USA Today, 31 August 2011, Available online at <https://abcnews.go.com/Business/websites-selling-daily-deals-lose-luster/story?id=14427697>, accessed on March 16, 2020.
- Shim, E.S. and H. J. Rhee, “Influences of consumer perceived risks and valence of word of mouth information on purchase intention in social commerce”, *Journal of the Korea Society of IT Services*, Vol.12, No.3, 2013, 73–93.
- Stone, S., “Caution : Promotion Fatigue Ahead”, The Marketing Advisory Network, November 12, 2015, Available online at <https://marketingadvisorynetwork.com/2015/11/12/caution-promotions-fatigue-ahead/>, assessed on March 16, 2020.
- Swain, S. D., R. Hanna, and L. J. Abendroth, “How Time Restrictions Work : The Roles of Urgency, Anticipated Regret, and Deal Evaluations”, In C. Pechmann and L. Price(Eds), *NA-Advances in Consumer Research*, 33, 523–525, Duluth, MN : Association for Consumer Research, 2006.
- Xinhua, “Spotlight : Boundary between offline and online blurs in Americans’ big holiday shopping spree”, http://www.xinhuanet.com/english/2018-11/27/c_137633208.htm, accessed on 26 December 2018.

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고려대학교 심리학과(석사)에서 소비자광고심리를 전공하였다. 현재 고려대학교 디지털 경영학과(박사수료)에서 E-business를 전공하고 있으며, 주요 연구분야는 빅데이터 분석, 온라인 소비자 행동, 온라인 구전행동, E-business 전략을 포함한다.



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