

How Product Arrangement and Quantity Influence Consumer's Intention: The Role of Disliking Disorderliness and Scarcity Effects

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ABSTRACT

Previous research claimed that disgust and contamination fears mediated the relationship between touch and purchase intention. Disorganized product display used as a contamination cue and a limited quantity of product used as a cue that the product has been more touched. Contrary to that, several studies showed that people did not like messiness itself, and limited product quantity could be a scarcity cue that increased the positive perception of the product. This research aimed to study the relationship between buying intention and product arrangement as well as product quantity. Using 2 (product arrangement: organized vs. disorganized) x 2 (product quantity: fully-stocked vs. one product) between subjects' experimental design, it was found that 'the perception that product has been contaminated' and 'the feelings of dislike toward messiness' variables mediate the relationship between product arrangement and purchase intention. Furthermore, the relationship between product quantity and purchase intention mediated by the level of perception that the product is in high demand, while the perception that the product has been more touched does not mediate the relationship.

1. Introduction

Research conducted by Castro *et al.* (2013) suggested that consumer's intention to buy products in organized and fully-stocked condition was higher than the intention to buy product in disorganized and only one-product left. In the study, the condition of disorganized product had the most unfavorable condition and the lowest purchase intention. They used disorganized condition as a cue that the product has been touched by others (contamination cue) that aroused disgust and contamination fears, which then lowered the buying intention. They also used the limited product quantity to increase contamination fears because it may lead to a perception that the product has been more touched, that the touch of previous buyers will be concentrated to the only 1 piece product.

Contamination effects arise because consumers know or have a perception that the product has been touched by others, so the consumer's evaluation of the product decreases (Argo *et al.*, 2006; Castro *et al.*, 2013). Consumers do not need to see directly other people touch the product, the indication that the product has been touched is enough for the consumer to conclude that a touch has occurred, one of the clues that consumers recognize is the disorganized product arrangement (Castro *et al.*, 2013). The more people touching (Argo *et al.* 2006) or the less

quantity of targeted contamination products (Castro *et al.*, 2013) the more contamination effect will be.

The authors consider the use of disorganized product display as contamination cue, raising doubts. Because other research show that people dislike the disorderliness itself. The low purchase intention might be the result of consumer’s displeasure or avoidance of the messiness. On the other hand, the use of limited product quantity as a cue of more touches and strengthened contamination fears also raises doubts, as other research indicate that a limited quantity can be a scarcity cue that enhances positive evaluations of the product.

The society believed that neatness is the ideal condition and messiness is associated with numerous social and personal danger perceptions (Campkin and Cox 2007). Messiness is contrary to socially acceptable norms of neatness (Baudrillard, 1968; Munro and Madigan 1999), taught in schools and disseminated through various media (Dion *et al.*, 2014) and applied in the workplace (Abrahamson and Freedman 2007). It is believed to be able to destruct efficiency, complicated the system (Ellias 2000; Simon 1962), associated with bad things like unhealthy lifestyles (Vohs *et al.*, 2013), poor self-control (Chae and Zhu 2014), and a chaotic environment will cause disorderly thoughts and behaviors (environmental-behavior links) (Belk *et al.*, 2007).

In contrast, neatness is widely accepted by the norm and is perceived as something good (Baudrillard, 1968; Dion *et al.*, 2014). It is disseminated through educational institutions and media so that neatness is accepted by crosscultural society as an ideal norm (Dion *et al.*, 2014). Improvement of the services and sales of product organizing systems show that people need neatness in their lives (Seo and Li, 2007; Cheung and Ma, 2005).

In their research, Castro *et al.* (2013) claim that the relationship between disorganized product display and buying intention is mediated by disgust. The authors argue that the low buying intention of disorganized products is not necessarily related to disgust and contamination fears. Another thing to be considered is that people do not like the messiness and try to avoid the inconvenience it caused. The perception arises in the minds of consumers when facing the disorganized condition and what perception mediates between product arrangement and buying intention was tested in this study.

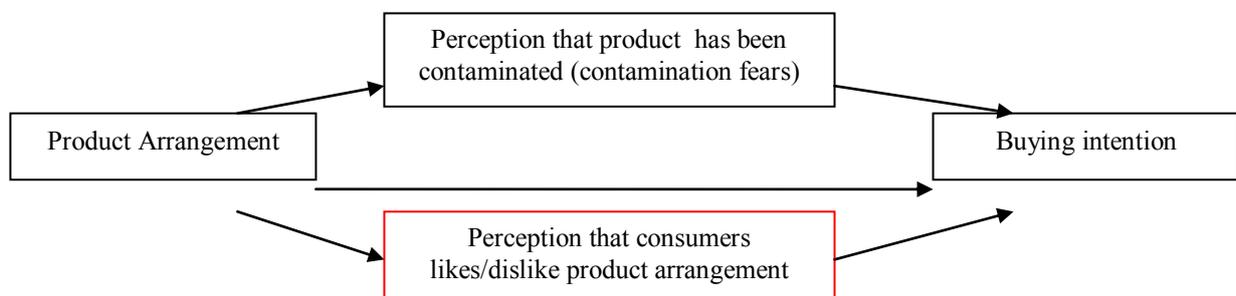


Figure1. Two mediator variables to be tested. Variable in red square is a new variable that we proposed, while the disgust variable is a variable claimed by Castro *et al* (2013) and has not been measured.

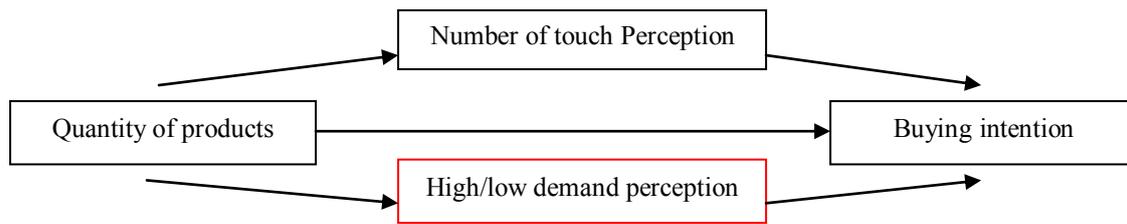


Figure 2. Two mediator variables to be tested. Variable in red square is a new variable we propose, while the number of touch perception is the variable that Castro *et al* (2013) claimed and has not been measured.

The scarcity effects arise because of the conditions leading to the scarcity condition that is limited quantity of supply (Aggarwal *et al.*, 2011; Cialdini 1993, 2008; Worchel *et al.*, 1975), or limited time scarcity (Aggarwal *et al.*, 2011; Jang *et al.*, 2013). The scarcity favored by consumers is demand-related scarcity rather than the scarcity caused by supply-related scarcity (Aguirre-Rodriguez 2013; Herpen *et al.*, 2005). Other studies indicate that scarcity increases the perception of value (Brock 1968, Jang *et al.*, 2013, Chen and Sun 2014; Worchel *et al.*, 1975), increases consumer preferences (Aguirre-Rodriguez 2013), and improves purchase intentions (Aggarwal *et al.*, 2011; Jung and Kellaris 2004).

In detail, the purpose of this study is described as follows: (1) To know which independent variable is more dominant on determining buying intention; (2) To know the perception that arises in the mind of the consumer if dealing with organized and disorganized products; (3) To know perception that arises in consumer mind if dealing with product with fully stocked and limited quantity display; (4) To find out the factors that mediate the relationship between product arrangement and buying intention; (5) To know the factors that mediate the relationship between product quantity and buying intention.

2. Hypothesis

Research by Castro *et al.* (2013) showed that in organized conditions, both in fully-stocked-organized ($M = 4.14$) and one-product-organized ($M = 4.10$), the buying intention were higher than the fully stocked-disorganized condition ($M = 3.98$) and one-product-disorganized condition ($M = 3.58$). These results showed that products arrangement is more dominant than products quantity in determining buying intention. To prove this, the importance of the two independent variables on the H1 hypothesis that aims to answer the first research objective was examined

H1: The role of the product arrangement is more dominant than the role of the product quantity in determining buying intention.

In fully stocked condition, there is no scarcity cue, which means the buying intention is only determined by the products arrangement. If it refers to the theory of consumer contamination (Argo *et al.*, 2006; Castro *et al.* 2013), in fully stocked condition, the buying intention of organized products will be higher than the buying intention of disorganized products. This prediction was tested on the H2 hypothesis.

H2: In fully-stocked condition, the buying intention of organized products is higher than the buying intention of disorganized products.

In organized-fullystocked condition, there is no scarcity cue or contamination cue so it is predicted that perception of liking the arrangement will appear predominantly caused by consumer response to neat arrangement condition, and the perception that products have beencontaminated will be low because there is no contamination cue. This prediction wastestedon the H2a hypothesis.

H2a: In organized-fully-stocked conditions, the perception of liking the arrangement is higher than the perceptions that the products have been contaminated.

In disorganized-fullystocked conditions there is no scarcity cue, but there is contamination cue, so it is predicted that in this condition the perception of liking arrangement is lower than the contaminated perception.

H2b: In disorganized-fully-stocked conditions, perception of liking the arrangement is lower than the perceptions that the products have been contaminated.

The organized-one product condition will have two advantages at once, because it has scarcity cue and no contamination cue. The perception of liking arrangement will be high and the perception of scarcity will increase the perception of product value. While in the disorganized-one product conditions, scarcity cue and contamination cue will weaken each other. From both circumstances, it is predicted that the buying intention of organized-oneproduct will be higher than the buying intention on the disorganized-oneproduct conditions as set forth in the hypothesis H3. Then we will test hypothesis H3a and H3b to answer the third study objective, is to know perceptions that appear dominantly when consumers face products with fully-stocked and only one product conditions.

H3: In one product condition, the buying intention of organized product is higher than the buying intention of disorganized product.

In an organized-one product condition, there is no contamination cue so that perception that the product has been more touched will be low because of the trigger factor does not exist, then there is scarcity cue to encourage the emergence of high-demand perception.

H3a: In the organized-one product condition, the perception of high-demand is higher than the perception that the product has been more touched.

In disorganized-one product conditions, there are contamination cue and scarcity cue together. Scarcity cue raised the value of buying intention, while contamination cue lowered it, these two cues are mutually debilitating. In this condition, it is predicted that the high-demand perception will be lower than perception that the product has been more touched.

H3b: In the disorganized-one productconditions, the perception of high-demand is lower than the perception that the product has been more touched.

In the organized condition, there is no contamination cue. In this condition, if the quantity is fully stocked (organized-fully stocked condition) will be a good condition to get a high buying intention. If the quantity of products is only one piece (organized-one product condition) will have two advantages at once because there is a scarcity cue that encourages a positive assessment of the product and increases the buying intention. It is predicted that the buying intention of organized-fully stocked products will be lower than the buying intention of a product with organized-one product condition.

H4: In the organized conditions, the buying intention of fully-stocked product is lower than the buying intention of product in one-product condition.

In disorganized condition, there is contamination cue which decreases the buying intention. In this condition, it is predicted that the high-demand perception will not appear for product with one-product condition because the scarcity cue will be defeated by contaminated perceptions, and the quantity of only one product will be the cue that the product has been more touched (Castro *et al.*, 2013). It is predicted that the buying intention of product with disorganized-fully stocked condition will be higher than the buying intention of product with disorganized-one product condition.

H5: In disorganized condition, the buying intention of product with fully-stocked condition is higher than the buying intention of product with one-product condition.

In H1a and H1b hypothesis, it is observed which perception predominantly emerges as consumer response when dealing with the product in organized-fully stocked and disorganized-fully stocked conditions. The two perceptions tested are the perceptions of liking the arrangement (response according to the study of orderly/disorderly) and perception that the product has been contaminated (response according to the theory of consumer contamination). In hypothesis H6 will be measured which perception really emerge as the response of product arrangement, and is closely related to dependent variable of buying intention. The results of these measurements will conclude which perceptions are appropriate to be the mediating variable between variables products arrangement and buying intentions.

H6a: The relationship between products arrangement and buying intention is mediated by the perception of liking the product arrangement.

H6b: The relationship between products arrangement and buying intention is mediated by perception that the products have been contaminated.

In H2a and H2b tests, the issue regarding perceptions that emerge as consumer response when faced with product with one product condition were tested. Perceptions tested were perceptions of high-demand and perceptions that the product has been more touched. The high-demand perception is the perception that emerges as a consumer response when dealing with product in limited quantity condition, according to the scarcity theory, the limited number of products gives impression that the product has been more purchased (demand-related scarcity) or in high-demand. Perception has been more touched is the perception can emerge when the quantity of available products is limited, according to the theory of consumer contamination, if the product is few then the touch of consumers will be concentrated to only those few products. The H7 hypothesis predicts that the relationship between the product quantity and buying intentions

Table 1. Test matrix with dependent variable buying intention.

	Fully Stocked	One Product
Organized	$\mu_{\text{intention1.1}}$	$\mu_{\text{intention1.2}}$
Disorganized	$\mu_{\text{intention2.1}}$	$\mu_{\text{intention2.2}}$

mediated by the demand perception.

H7: The relationship between the products quantity and buying intentions is mediated by the perception of high-demand.

H7a: The relationship between the products quantity and buying intentions is mediated by the perception that the product has been more touched.

3. Design and Method of Research

This research utilized experimental design 2 (product arrangement: organized, disorganized) x 2 (product quantity: fully-stocked, one-product) between subjects. Table 1 shows test matrix used in this study.

This study chose buying intention as the dependent variable, and product arrangement and product quantity as independent variables. The mediation variables which were employed to link the products arrangement and buying intention are the perception that products has been contaminated and the perception of liking the products arrangement. The mediation variables which were utilized to link product quantity and buying intention are the perception of high demand and the number of touches.

Research procedure begun with an explorative study to determine the type and brand of products used in this study. The second step was the manipulation check to ensure that participants can identify and respond to the manipulations used in accordance with the manipulation plans made by the researchers. The third step was pretest and ensure that there is a significant difference in response to the variables used in the experiment. The fourth step was data collection through the lab-experiment where participants receive a stimulus in the form of product images according to their manipulation conditions and are asked to answer questions about buying intentions and perceptions that arise in response to manipulation conditions.

4. Results

4.1. Pretest

The pretest examined the perception of liking the product arrangement. 2-cell test (product arrangement: organized vs disorganized) between subjects to ensure that the preference for organized condition is higher than the preference for disorganized condition. The result shows participants' preference on the organized arrangement ($M = 4,73$), and the disorganized arrangement ($M = 2,40$), $\text{sig} = 0,000^{**}$. It indicates that the preference for organized arrangement is different and higher than the preference for disorganized arrangement. It means the

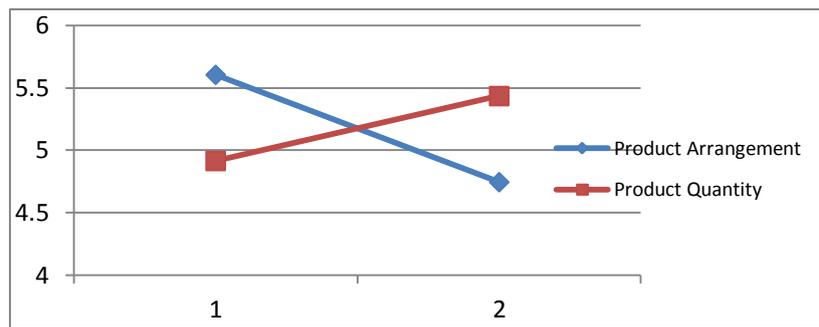


Figure 3. Shows that changes to product organization have more effect on buying intentions, than changes in product quantities. Number 1 indicates a tidy and a fully-stocked condition, number 2 indicates the disorganized and one-product conditions.

perceptions of liking the arrangement have different values under different set conditions, thus these variables can be used as the response to product arrangement variable.

The second pretest tests high-demand perception, conducted to ascertain the perception of high-demand of products in the rare condition is higher than the perception of high-demand of products that are not under rare conditions. 2-cell test (product quantity: fully-stocked vs. one-product) between subjects. The result shows the perception of high-demand the product with a rare condition ($M = 6.13$) and product without rare condition ($M = 4.60$), $sig = 0.001^{**}$. It indicates that the perception of high-demand in rare conditions is higher than the perception of high-demand in not rare conditions. It justifies that the high-demand perceptions can be used as the response of product arrangement conditions.

4.2. Product Arrangement is More Dominant in Determining the Buying Intention

The main effects test shows the difference of the influence of the two independent variables namely products arrangement and products quantity to the dependent variable purchase intention. In the product arrangement variable, the change from the tidy condition ($M = 5,605$) to the untidy condition ($M = 4,745$) makes the buying intention down by 0.86. While in the variable of product quantity, change from fully-stocked ($M = 4,915$) to one-product condition ($M = 5,435$) raises buying intention by 0,52.

Figure 3 shows the skewness of the lines made by the difference in the influence of the two independent variables on the buying intention. It can be concluded that the variables of product arrangement are more dominant in affecting buying intention.

4.3. Test Interaction effects to determine the manipulation conditions that result in high buying intentions.

Table 2 shows the test results of H2, H3, H4, and H5 with one-way Anova. The highest buying intentions were obtained under the conditions of organized arrangement and one-product ($M = 5.89$), the second highest intention was in organized-fully stocked condition ($M = 5.32$), the third is disorganized-one product ($M = 4.98$), and lastly the disorganized-fully stocked condition ($M = 4.51$).

Table 2. Result of H2, H3, H4 dan H5 tests.

DV = Buying Intention

	Disorganized-Oneproduct (M=4.98)	Organized-Oneproduct (M=5.89)	Disorganized-Fullystocked (M=4.51)
Disorganized-Oneproduct (M=4.98)		H2: Morg-one > Mdisorg-one; Sig = 0,003** (supported)	H4: Mdisorg-ful > Mdisorg-one; Sig = 0,373 (not supported)
Organized-Oneproduct (M=5.89)	H2: Morg-one > Mdisorg-one; Sig = 0,003** (supported)		
Disorganized-Fullystocked (M=4.51)	H4: Mdisorg-full > Mdisorg-one; Sig = 0,373 (not supported)		
Organized-Fully stocked (M=5.32)		H3: Morg-full < = Morg-one; Sig = 0.058 (supported)	H1: Morg-full > Mdisorg-full; Sig = 0.011* (supported)

Organized-one product condition results highest buying intention according to prediction because it has two advantages. The first advantage because in the organized condition there is no contamination cue so that the perception of liking the arrangement to be high. The second advantage is the presence of scarcity cue which emphasizes a positive evaluation of the product. Both advantages result a high buying intention.

Conversely, the disorganized-fully stocked condition has two flaws. The first deficiency is due to contamination cue so that contaminated perception becomes high and the perception of liking the arrangement is low. The second deficiency is the fully-stocked that makes the scarcity cue do not appear. These two flaws make the buying intention relatively low.

4.4. *Perceptions of Liking the Arrangement and Perception of Products Contaminated Appears Dominantly as Response to Product Arrangement.*

H2a and H2b tests aim to find out what perceptions appear predominantly in response to organized and disorganized product arrangement. The result of H2a shows $M_{liking-arrangement} = 5.18$; $M_{Contaminated} = 2.38$; Mean Difference = 2.798; Sig = 0.000**; indicates that the higher buying intention in organized-fully stocked condition more influenced by consumer preference to organized products arrangement. This result supports H2a.

The result of H2b test shows that $M_{liking-arrangement} = 2.28$ and $M_{contaminated} = 3.50$; MD = -1.218; sig = 0.000 ** indicates that the perception of liking-arrangement is lower than the perception of contamination. This result supports H2b.

From both test results, it is concluded that in an organized-fully stocked condition, consumers have a high perception of liking the arrangement and low contaminated perceptions. On the other hand, in the disorganized-fully stocked condition, consumers have low perceptions of liking the arrangement and high contaminated perceptions. These results suggest that both perceptions arise as responses to the variable of product arrangement.

4.5. *The High-Demand Perceptions Appear Dominantly as Response to Variable Quantity of Products*

The H3a test determines which variables appear predominantly in the organized and one-product condition. The two variables compared are the perceptions of high-demand and the product has been more touched. The results show that $M_{\text{high-demand}} = 6.27$ and $M_{\text{moretouched}} = 4.52$; $MD = 1.747$; significance = 0,000 ** which indicates that the high-demand perception is significantly higher than the perception that the product has been more touched. This result supports H3a.

Hypothesis H3b compares perceptions of high-demand and product has been more touched, for the product in disorganized-one product condition. The result with paired sample t-test shows $M_{\text{high-demand}} = 5.55$, $M_{\text{moretouched}} = 4.82$, $MD = 0.726$, $\text{Sig} = 0.002$ ** indicates that the perception of high-demand is higher than the perception that the product has been more touched. It doesn't support H3b, which is in disorganized condition, the scarcity cue can still appear predominantly and increase buying intention ($M = 4,98$). This may be due to low consumer perceptions of potential contamination because the products used in the study are packaged products. Then it can be concluded that in conditions that indicate scarcity, consumers will ignore the worries of contamination and buying intention remains high.

4.6. *Perceptions of Liking the Arrangement and Perceptions of product contaminated, Mediating Relationships between Product Arrangement and Buying Intentions*

H6a tests whether the perception of liking the arrangement mediates the relationship between product arrangement and buying intention. The result through two simple regression tests obtained $a = -2.545$; $B = 0.164$; $SEa = 0.185$; $SEb = 0.045$ then with Sobel test obtained $Z = -3.5229$ (absolute value > 1.96); sig = 0.000 (<0.05) means there is indirect influence where the perception of liking the arrangement mediates relationship between the product arrangement and the buying intention. Since the direct effect of product arrangement on buying intention is also significant (regression coefficient = -0.838; sig = 0.000) then the mediation is partial. It supports H6a.

H6b tests whether the perception of the product has been contaminated mediates the relationship between product arrangement and buying intention. Using two simple regressions obtained value of $a = 0.743$; $b = -0.161$; $SEa = 0.211$; $SEb = 0.049$ and then with Sobel test got value $Z = -2.4023$ (absolute value > 1.96); sig = 0.02 (<0.05) mean the relationship between products arrangement and buying intention also mediated by perceived contamination. Since the direct effect of products arrangement on buying intention is also significant (regression coef = -0.838; sig = 0.000), the mediation is partial. Thus, support H6b.

4.7. *Perceptions of High-demand Mediates the Relationship between Products Quantity and Buying Intentions*

H7a tests whether perceived high-demand mediates the relationship between product quantities and buying intentions. With simple regression test got the value of $a = 1,041$; $B = 0.335$; $SEa = 0.169$; $SEb = 0.056$. Then with Sobel test we get the value of $Z = 4.291$ (> 1,96) with sig = 0,000 (<0,05) means that there is an indirect influence or in other words the

perceptions of high-demand mediates the relationship between product quantity and buying intention. Since the direct effect of the product quantity on the buying intention is also significant (regression coefficient = 0.477; sig = 0.012), then the mediation is partial.

H7b tests whether perceptions of number of touch mediates the relationship between product quantities and buying intentions. The result of simple regression test shows the value of $a = -0.296$; $B = 0.050$; $SEa = 0.197$; $SEb = 0.054$ and with Sobel test got value $Z = -0.788$ (absolute value < 1.96); sig = 0.430 (> 0.05) meaning there is no indirect influence, hence perception number of touch does not mediate relationship between product quantity and buying intentions. Thus, does not support H7b.

5. Conclusion

The findings of this study show that product arrangement plays a bigger role in determining buying intention, compared with the role of product quantity. In an organized arrangement, buying intentions are relatively higher for both fully-stocked and limited products quantities. Anorganized arrangement can improve the perception of liking the arrangement and eliminate contaminated perception because there is no contamination cue. Anorganized product display can improve the buying intention, regardless of the number of products. This result answers the first research objective: to know which independent variable is more dominant in determining buying intention.

This study also shows that there are two perceptions that emerged significantly in response to product arrangement, they are the perception of liking arrangement and the perception that the product has been contaminated. In organized condition, the perception of liking arrangement would have a higher value than the contaminated perception. Conversely, in the disorganized condition, the perceptions of liking arrangement will be lower and contaminated perception will be higher. This result answers the second research objective is to know the perception that arises in the minds of consumers if dealing with products that are in organized and disorganized conditions.

Furthermore, this study also demonstrates the perception that arise significantly when consumers faced with many and limited quantity of products. In many products condition, there is no scarcity cue so that the perception of the high-demand is low, but the contamination fears decreased because the consumers' touches are distributed to many products (the perception has been more touched is low). In limited quantity condition, high-demand perceptions and perceptions of more touched are high, but the high-demand perception appears more dominant. These results support the third research objective of knowing the perceptions that arise in the minds of consumers when faced with products with fully-stocked and limited quantities.

This study also examines which variables mediate the relationship between product arrangement and buying intention. Test results show that both perception of liking the arrangement and perception the product has been contaminated, partially mediate the relationship between product arrangement and buying intention. It answers the fourth purpose of this research is to find out the factors that mediate the relationship between product arrangement and buying intention.

This research also shows that the high-demand perception mediates the relationship between product quantity and buying intention. While the perception that the product has been more touched does not mediate that relationship. Thus, it answers the fifth purpose of the research: to find out which variable mediates the relationship between products quantity and buying intention.

In this research, the highest buying intention was found on organized and one-product condition. This condition has two advantages, first, the tidy conditions lead to high preference of arrangement and low contaminated perception, thereby increases consumer preference. The second advantage is the presence of scarcity cue that encourages the perception that the product is in high-demand. Both conditions encourage positive evaluation and improve buying intentions.

In one-product condition, the perception of the high demand remain high even though the product was in disorganized condition. This indicated that product quantity also has a strong influence on buying intentions. However, in the testing of main effects that previously conducted, it showed that the products arrangement is more dominant in determining the intention to buy, when compared with product quantity.

6. Limitations of Research

This research was conducted in laboratory, where consumers' perception was merely influenced by stimulus given. In the real reality, consumers will meet more products in retail stores, where the presence of other goods can affect consumer perceptions. To further closer the results with real conditions in the field, it is advisable for further researchers to do field experiment, where we can also involve the real consumers (not only students).

Another limitation of this study is to not consider brand image as a variable that determines consumer perceptions of the product. Future research can incorporate brand image as a variable that influences consumer choice.

This study used only two variations of product quantity that are fully-stocked and one-product conditions. For further research, it is advisable to make more variations in quantities in order to be able to measure how many products need to trigger scarcity cue. Similarly, product organization that uses only two organized and disorganized combinations. Subsequent research should make a variety of neatness or messiness to determine the level of neatness that triggers perceived liking the products arrangement and contaminated perceptions.

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