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ABSTRACT

Comparison-Shopping (CS) websites, such as mySimon.com, assist consumers in managing the vast amount of information offered by multiple retailers on the Internet. Conventional wisdom would have dictated that the provision of the best set of alternatives by CS websites should lead to high consumer satisfaction and purchase propensity. However, consumers may experience decision difficulty to choose among alternatives that are non-dominated (i.e., none of the alternative is inferior for all product attributes). Consequently, they may simply avoid making a decision by not committing to any purchase. Grounded on behavioral and context-dependent decision-making literature, this paper builds a model that explores the effects of choice content and choice order sequence on consumer behavior and explains how they can potentially alleviate the difficulty of making purchase decisions.

Keywords

Comparison-shopping, context effect, contrast effect, choice order sequence.

INTRODUCTION

Consumers, bounded with limited processing capacity, are turning to Comparison-Shopping (CS) websites, such as mySimon.com and Shopper.com, to assist them in managing the vast amount of information offered by multiple retailers on the Internet (Brynjolfsson and Smith, 2000). These CS websites assist consumers in matching their needs with the retailers' product offers, by filtering and consolidating vast amounts of product information (Redmond, 2002), thus serve to enhance the consumer experience not only by getting the consumers to bypass the long lists of products with their prices and features, but also in presenting the consumers with a well-suited set of alternatives according to their specifications (Redmond, 2002).

However, the provision of the best set of alternatives may not necessarily lead to any purchase intention as consumers may experience difficulty in assessing or evaluating the tradeoffs among all the non-dominated alternatives (i.e. none of the alternative is inferior for all product attributes) (Anderson, 2003). Consequently, consumers may choose decision avoidance by not making any purchases. One way to overcome such information processing difficulties in making decision is to manipulate the display of information.

Despite prior attempts at investigating the influence of information presentation, the conditions and the degree in which the presentation of alternatives will influence the consumer response and decision remain relatively hazy. Relatively little research effort has been devoted to examine the impact of presentation strategies on the alternative selection process. Given the lack of evidence of how CS websites can influence consumer behavior through information display, it cannot be assumed that merely providing the consumers with product information and aesthetic website interface would please the consumers. This study attempts to provide suggestions on how CS website can influence consumer behavior through information display.

CONCEPTUAL MODEL

We posit that a better presentation of different product or service alternatives could improve the processing of the information, and hence reduce the decision difficulty encountered (Sen, 1998) by the customers. Building on this notion, processing of information and choice made by consumers can be improved via two aspects of information presentation: choice contrast and choice order sequence (Bettman, Luce and Payne, 1988) as displayed in Figure 1. The choice contrast is described as the degree of including dominated – if there is at least one other alternative that is superior on at least one attribute while not being inferior on any attribute – and non-dominated – if no other alternative is superior on an attribute nor being inferior on at least one other attribute - alternatives in one result display (Haubl and Trifts, 2000). For instance,

consider three alternatives in Table 1. It is obvious that alternative 1 dominates alternative 2 as alternative 1 has lower price and higher quality than alternative 2. The choice of the dominated alternative is clearly a suboptimal decision. As for alternative 1 and 3, neither alternative dominates the other. Hence, both alternatives 1 and 3 are considered to be non-dominated alternatives.

Alternative number	Price	Quality
1	$2.00	Highest
2	$3.00	Higher
3	$1.00	High

Table 1. Dominated and Non-Dominated Alternatives

For the choice order sequence, it is characterized by the display sequence of the alternatives. These two independent variables will together influence the different decision outcomes, namely the perceived choice set comprehensiveness (i.e. the perceived value of the set of alternatives presented in facilitating a consumer to make an informed decision), the final decision made (i.e. whether a consumer chooses to avoid (or defer) making a choice or to make an explicit selection among the alternatives presented) and decision satisfaction (i.e. the extent to which the decision made fulfils or matches the initial purchase goal set by the consumer).

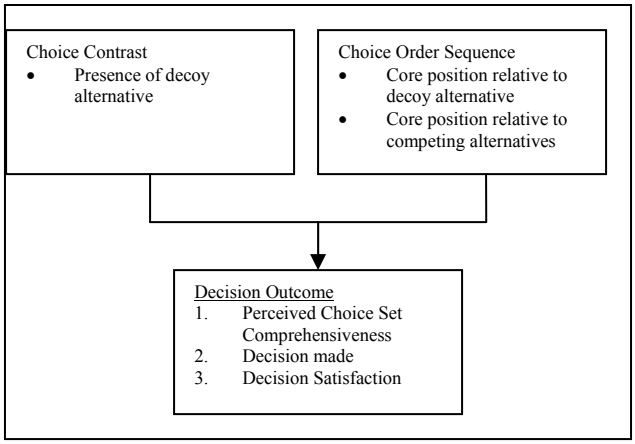

Figure 1. Research Model

Choice Contrast

One of the ways to reduce the choice difficulty is to add dominated alternatives to the choice set that serve to contrast or draw more attention to the non-dominated alternatives (Lynch, Chakravarti and Mitra, 1991). Huber, Payne, and Puto (1982), in their experiments, showed that the inclusion of an asymmetrically dominated alternative (i.e. one that is dominated by at least one alternative in the set and not dominated by at least another) into a choice set can increase the probability of choosing the alternative that dominates it. Consider the following example: a cheap and slow processing laptop (core alternative) versus an expensive and fast processing laptop (competing alternative) resulted in conflicting attributes and requiring trade-offs be made. It may subsequently be difficult for a consumer to decide which laptop to purchase. However, if there exists a third alternative with the slowest processing speed but ranks second in terms of costs, then this third alternative (decoy) will be dominated by the core (i.e., dominating) alternative and creates an asymmetrically dominated choice set – at least one alternative (i.e. core) dominates the set but at least one other does not. In this way, the added alternative heightens the contrasting effect between the core and the competing alternative. At the same time, the decoy also raises the attractiveness of the alternative (in this case, it is the core alternative) that dominates it (Ariely and Wallsten, 1995).

From the consumer perspective, it has been observed that the clear inferiority of the decoy alternative to the core alternative will serve as a reason for a consumer to choose the latter over the competing alternative. In other words, by increasing the range of values of the target's weaker attribute, which is the processing speed of the core alternative, the perceived utility distance between the core and competing alternative based on this attribute is increased. This psychophysical distortion makes the first (core) alternative more attractive, resulting in attraction effect (Sen, 1998) and enhancing its choice probability (Tversky and Kahneman, 1991).

One could contest that the change in the decision pattern could possibly be due to the information display or limited product knowledge possessed by the consumer. In a series of experiments conducted by Tversky and Simonson (1993), they observed that the changes to the decision pattern were still taking place even when subjects viewed and were aware of all the alternatives before the decision task. One likely reason for this "consistent" change in decision pattern across situations is that consumers may exhibit a tendency to over-emphasize confirming evidence (Pyszczynski and Greenberg, 1987) and selectively search for confirming evidence (Snyder and Swann, 1978). In this sense, when consumers encounter a combination of dominated and non-dominated alternatives, they would always tend to focus on comparisons between the better (i.e., non-dominated) alternatives against the worse (i.e., dominated) alternatives and identifying the core and decoy alternatives to ascertain that they have made the correct choice. This notion in comparison is often reflected in price perception studies, where consumers may depend on the mean estimated prices of the products evaluated concurrently, the price range observed and the reference frames used to judge prices (Lynch et al., 1991). In this vein, searching for confirming evidence also seeks to justify goal-fulfillment (non-fulfillment), which ultimately leads to satisfaction (dissatisfaction).

In a nutshell, it appears that providing a decoy alternative could make the core alternative "stand out" relative to the other non-dominated alternatives enhance the probability of search termination, and thereby, lead to lower occurrence of decision avoidance (Tversky and Kahneman, 1991). More specifically, a right combination of alternatives (i.e., inclusion of decoy alternative) could prompt consumer to make choices in a much easier

fashion. To the extent that the core alternative is perceived more favorably in the presence of decoy alternative, CS website could capitalize on this behavioral tendency by inducing the consumers to purchase from retailers who offer higher commissions (i.e., the core alternative). This can be done via alternative contrast manipulation, in order to bring the intended preference into the limelight. Hence, we hypothesize that:

The inclusion of a decoy (dominated) alternative will:

H1a. increase the perceived choice set comprehensiveness;

H1b. decrease the propensity of avoiding making a decision; and

H1c. increase decision satisfaction.

Choice Order Sequence

While the provision of decoy alternative is very likely to increase the consumers' propensity of choosing the core alternative, prior information presentation research has indicated that this provision could be further enhanced by the order sequence of the alternative presentation (Dhar and Simonson, 1992). According to behavioral research, consumers often exhibit the characteristic of cognitive miser by aiming to exert as little cognitive effort as possible while retrieving and processing information (Costley and Brucks, 1992). In the extreme situation, consumers may selectively choose to ignore certain alternatives to reduce the cognitive processing effort (Bettman et al., 1988). In this regard, if the decoy is placed at a non-strategic location, then it is very likely that the attractiveness of the core alternative may not be felt.

For these reasons, it is conjectured that when consumers perform the directed learning of the stimuli with the information processing as the primary goal to anticipate future choice decisions, consumers' information processing outcome based on its acquisition could be affected by the sequence in which information is presented (Bettman and Kakkar, 1977). Essentially, we conjecture that the choice contrast strategy has to be complemented by an appropriate choice order sequence (Dhar and Simonson 1992) which refers to the alternative presentation sequence organization with the specific focus on ordering the core (non-dominated) and the decoy (dominated) alternatives by different placements among the choice set.

Relative Placement of Core and Decoy

When alternatives are presented sequentially, consumers conduct pair-wise comparisons among the alternatives in a first to last fashion (Hogarth and Einhorn, 1992). This view suggests that consumers initially compare between the two alternatives at the beginning of the list, by judging whether the first alternative is inferior (dominated) or not (non-dominated) compared to the second. A preliminary preference is made when one of the alternatives dominates another. Moreover, upon receiving the subsequent alternatives, consumers anchor on the current set of alternatives, and then adjust their belief on the basis of the strength and direction (positive or negative) of each new alternative (Hogarth and Einhorn, 1992). This process repeats until there is sufficient confirming evidence indicating that an alternative is the best among all the alternatives (Pyszczynski and Greenberg, 1987). In this regard, distancing the core and decoy alternatives with other competing alternatives between the two will increase the cognitive difficulty in identifying the core alternative. In this manner, the overall decision performance and satisfaction may subsequently be reduced. Hence, it is plausible to posit that the design of the choice order sequence by arranging the alternatives in an easy-to-process manner, particularly placing the decoy alternative next to the core one would minimize cognitive effort on information editing, memorizing, recalling and further increase the decision making outcome optimality. Then, should the decoy alternative be placed before or after the core alternative?

According to Dhar, Nowlis and Sherman (1999), consumers' reaction towards the several alternatives presented is mainly based on the memorizing manner and the presentation of the decoy option may probably form a particularly inferior impression of overall attribute as a memorized reference point for future comparison. And in some researches examining the order in which consumers prefer to experience a series of consumption outcomes, results show that consumers mostly prefer to experience pleasant outcomes after experiencing unpleasant ones, rather than the reverse (Ross and Simonson, 1991). Following this inclination, the subsequent presentation of the intended option (i.e. the core) is very likely to induce consumers' attention by significantly increasing the features' predominance against the immediate previous decoy option.

After comparing the core option which is most firmly memorized and most easily recalled by its apparently superior features relative to the decoy, consumers' confidence over the judgment to choose the core is high, which could lead to the core alternative being chosen. In other words, as long as the core option is testified to be superior relative to the decoy, consumers' choice of the core will hardly be flexuous any more. In this regard, placing the decoy option right before the core one is deemed to effectively enhance consumers' decision making outcome by giving prominence to the intended option (i.e., the core) in the immediate contrasting process. Hence we hypothesize that:

The placement of the core alternative immediately after the decoy alternative will:

H2a. increase the perceived choice set comprehensiveness, compared to other placements;

H2b. decrease the propensity of avoiding making a decision, compared to other placements; and

H2c. increase decision satisfaction, compared to other placements.

Relative Placement of Core and Competing Alternatives

There are two fields of thoughts regarding the consumers' reactions toward the placement of the alternatives. The first is recency effect where it is posit that each new alternative creates a new mental anchor where recent alternative is weighted more than prior alternatives. Explanatorily, information content that is presented at a closer temporal proximity will be more readily accessible in the mind (Miller and Campbell, 1959). Consumers are able to recall better on the latest reviewed non-dominated alternatives, if most of them are presented at the bottom part of the choice set. Based on this recency effect, should consumers fail to find satisfactory non-dominated alternative initially, consumers may weigh the later information more heavily than the information presented much earlier, thus, implying the demand to attend to new information and revise previous judgments.

Empirically, in a series of experiments conducted by Houston, Sherman and Baker (1989), in which they found that when alternatives were presented sequentially, the subjects exhibited a higher tendency of using the second alternative as the focal point of comparison before evaluating any alternatives. Hence, it appears that placing the core and decoy alternatives below all other alternatives could increase the consumers' propensity to choose the core alternative. However, from the cognitive miser view, consumers may find it time-wasting and cognitive exhaustive to continue searching and processing alternatives without the assurance that the most attractive alternative can be spotted towards the end of the choice set. Consequently, early search termination and decision avoidance are very likely. In this sense, placing the core and decoy alternatives right at the bottom of the choice set may not necessarily yield optimum results.

Another field of thoughts, which is more plausible in this case, is that it is more likely for a consumer to weigh the prior, as opposed to the recent alternative, more heavily, thereby leading to the primacy effect. This is because there could be a disproportional influence of a previous better attributed alternative on a subject's final alternative choice (Haugtvedt and Wegener, 1994). By ordering the alternatives by placing core and decoy alternatives (i.e., non-dominating alternative) at the top of the choice set, consumers have a tendency to create an initial impression that core alternative is more attractive compared to competing alternatives. Furthermore, having such top placement order of the core and decoy alternatives could reduce consumers' cognitive effort and time, as compared to bottom placement of core and decoy alternatives. This further facilitates effective and efficient decision making to avoid null-choice or unadvisable purchasing outcome, thereby leading to higher consumer satisfaction. Indeed, as opposed to recency effect, primacy effect may be more observable in the online shopping environment where consumers may not be willing to exert sufficient cognitive effort to diligently evaluate every single alternative and these judgments are very likely to be made under incomplete information integration because of time pressure or high level of expertise (Kruglanski and Freund, 1983).

In this view, we posit that placing the core and decoy alternatives before the other (i.e., competing) alternatives in the choice set could lead to higher decision performance and satisfaction, compared to other types of placements. For example, if the core and decoy alternatives are presented much later, consumers who are not always patient enough to browse and search the complete list may miss such alternatives. This could result in consumers giving up making a purchase decision before reaching the core and decoy alternatives. Hence, we hypothesize that:

The placement of the core and decoy alternatives relatively at the top of the choice set will:

H2d increase the perceived choice set comprehensiveness, compared to other placements;

H2e. decrease the propensity of avoiding making a decision, compared to other placements; and

H2f. increase decision satisfaction, compared to other placements.

CONCLUSION

Grounded on the theories of behavioral and context-dependent decision-making, this paper builds a research model to examine the effects of choice contrast and choice order sequence on consumer behavior in the context of CS website. From a theoretical perspective, this study will extend our current state of knowledge in online consumer decision-making behavior by examining the impact of information presentation, characterized by choice content and choice order sequence, and the degree of that influence. From a practical perspective, this study also has potential implications by providing CS website designers with possible combinational strategy in displaying the dominated versus non-dominated alternatives, as well as the order in presenting these alternatives to provide optimum decision quality and induce consumer satisfaction and repurchasing. This could lead to a win-win situation for both the consumers and retailers. This paper is an initial step towards empirically evaluating how choice contrast and choice order sequence influence consumer judgment and decision-making behavior. In future, empirical studies will be needed to test the accuracy and validity of the model built in this paper. At the present, we are in the process of designing the lab experiments. The main idea is to conduct a within-subject lab experiment in three phases using student subjects in order to investigate the three sets of hypotheses (H1a-c, H2a-c, H2d-f) in that sequence. Using a specially designed CS website to manipulate the different displays of alternatives, we hope

to present a realistic CS website environment to the subjects. More details are to be worked out.

REFERENCES

1. Ariely, D., and Wallsten, T. S. (1995) Seeking Subjective Dominance in Multidimensional Space: An Explanation of the Asymmetric Dominance Effect, *Organizational Behavior and Human Decision Processes*, 63, 3, 223-232.
2. Anderson, C. J. (2003) The Psychology of Doing Nothing: Forms of Decision Avoidance Result from Reason and Emotion, *Psychological Bulletin*, 129, 1, 139-167.
3. Bettman, J. R., and Kakkar, P. (1977) Effects of Information Presentation Format on Consumer Information Acquisition Strategies, *Journal of Consumer Research*, 3, 233-240.
4. Bettman, J. R., Luce, M. F., and Payne, J. W. (1988) Constructive Consumer Choice Processes, *Journal of Consumer Research*, 25, 187-217.
5. Brynjolfsson, E., and Smith, M. D. (2000) Frictionless Commerce? A Comparison of Internet and Conventional Retailers, *Management Science*, 46, 563-585.
6. Costley, C. L., and Brucks, M. (1992) Selective Recall and Information Use in Consumer Preference, *Journal of Consumer Research*, 18, 464-474.
7. Dhar, R., Nowlis, S. M., and Sherman, S. J. (1999) "Comparison Effects on Preference Construction," *Journal of Consumer Research*, 26, 293-306.
8. Dhar, R., and Simonson, I. (1992) The Effect of the Focus of Comparison on Consumer Preference, *Journal of Marketing Research*, 29, 4, 430-440.
9. Haugtvedt, C. P., and Wegener, D. T. (1994) Message Order Effects in Persuasion: An Attitude Strength Perspective, *Journal of Consumer Research*, 21, 1, 205-218.
10. Haubl, G., and Trifts, V. (2000) Consumer Decision Making in Online Shopping Environments: The Effects of Interactive Decision Aids, *Marketing Science*, 19, 1, 4-21.
11. Hogarth, R.M. and Einhorn, H.J., "Order Effects in Belief Updating: The Belief-Adjustment Model," *Cognitive Psychology*, 1992, 24, 1-55.
12. Houston, D. A., Sherman, S., and Baker, S. M. (1989) The Influence of Unique Features and Direction of Comparison on Preferences, *Journal of Experimental Social Psychology*, 25, 3, 121-141.
13. Huber, J., Payne, J. W., and Puto, C. (1982) Adding Asymmetrically Dominated Alternatives: Violations of Regularity and the Similarity Hypothesis, *Journal of Consumer Research*, 9, 90-98.
14. Kahneman, D. and Tversky, A. (1979) Prospect Theory: An Analysis of Decision under Risk, *Econometrica*, 47, 263-291
15. Kruglanski, A. W., and Freund, T. (1983) The Freezing and Unfreezing of Lay Inferences: Effects on Impressional Primacy, Ethnic Stereotyping, and Numerical Anchoring, *Journal of Experimental Social Psychology*, 19, 448-468.
16. Lynch, J. G. Jr., Chakravarti, D., and Mitra, A. (1991) Contrast Effects in Consumer Judgments: Changes in Mental Representations or in the Anchoring of Rating Scales? *Journal of Consumer Research*, 18, 284-297.
17. Miller, N, and Campbell, D. (1959) Recency and Primacy in Persuasion as a Function of the Timing of Speeches and Measurements, *Journal of Abnormal and Social Psychology*, 59, 1-9.
18. Pyszczynski, T., and Greenberg, J. (1987) Toward an Integration of Cognitive and Motivational Perspectives on Social Inference: A Biased Hypothesis Testing Model, in *Advances in Experimental Social Psychology*, volume 20, ed. Leonard Berkowitz, San Diego, CA: Academic Press, 297-340.
19. Redmond, J. H. (2002) The Potential Impact of Artificial Shopping Agents in E-Commerce Markets, *Journal of Interactive Marketing*, 16, 1, 56-66.
20. Ross, W. T., and Simonson, I. (1991) Evaluation of Pairs of Experiences: A Preference for Happy Endings, *Journal of Behavioral Decision Making*, 4, 273-282.
21. Sen, S. (1998) Knowledge, Information Mode, and the Attraction Effect, *Journal of Consumer Research*, 25, 1, 64-77.
22. Snyder, M., and Swann, W. B. (1978) Hypothesis-Testing Processes in Social Interaction, *Journal of Personality and Social Psychology*, 36, 1202-1212.
23. Tversky, A., and Kahneman, D. (1991) Loss Aversion in Riskless Choice: A Reference Dependent Model, *Quarterly Journal of Economics*, 106, 4, 1039-1061.
24. Tversky, A., and Simonson, I. (1993) Context-dependent Preferences," *Management Science*, 39, 1179-1189.
25. Wilde, L. L., and Schwartz, A. (1979) Equilibrium Comparison-Shopping, *Review of Economic Studies*, 46, 3, 543-553.