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Motivating Events at the Point of Online Purchase: An Online Business-to-Business Retail Experiment

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Abstract

The point of online purchase includes the location and conditions in which an online transaction takes place. The term usually comprises the presentation of the products available for purchase by consumers as well as the means of completing the transaction. Knowledge about how the online setting and the specific situation influence consumers at the point of online purchase setting may increase the success of online marketing activities. An online experiment was arranged for the analysis of motivating events at the point of the online purchase situation. A total of 1992 business-to-business customers from an online retailer were randomly assigned to two groups. The treatment group (n=999) received an up-sell offer related to either a product improvement and/or to a lower price offer within two months. The control group (n=993) did not receive any form of up-sell offers in the same two-month period. The results show that the treatment group had a conversion rate of approximately 39% for up-sell offers. Also, results show an increased revenue of 87.94% for the treatment group compared to the control group. Results of the experiment are discussed in relation to the concepts of rule and rule-governed behavior at the point of online purchase.

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1. Introduction

The *point of purchase* is, in general, the location and conditions in which a transaction takes place [12]. The term usually covers the presentation of the products available for purchase as well as the means of completing the transaction. From this definition, the point of purchase includes both the elements that attract business and the means used to allow the customer to pay for the products selected. When a customer is going to buy a product, the purchase itself can be understood as the result of conflicting behaviors. According to Alhadeff [1], “These conflicting behaviors will be designated approach and escape.” Each behavior (approach or escape) is controlled by different consequences in the specific online purchase situation. What influences the point of purchase behavior in the choice situation is of great importance for online companies that are working hard designing effective digital marketing activities [3, 4]. Even small improvements may have a huge influence on the online company’s conversion rates.

Antecedents such as instructions, statements, or advice that signal the relationship between behavior and its consequences can be defined as *rules* [13]. For example, the advice “Join our customer loyalty program and get 20% off on your first order” on a company’s web store indicates that the consequence of registration is less money paid for the first order. In this context, rules describe some aspects of the online contingencies—the relationship between antecedents, purchase, and consequences. According to Pierce and Cheney [13], the term *rule-governed behavior* is used when a person’s behavior is regulated by contingency-specifying instructions, statements, or advice. For example, if a customer upgrades his online order based on the statement “Upgrade your choice to product X, and get a better price,” the purchase could be considered as rule-governed behavior. Wells [16] argues that rules and rule-governed behavior is an unexplored direction and argues that it is necessary to investigate how rules influence consumer choice in different contexts.

Based on a person’s different socially mediated reinforcement history, Hayes, Barnes-Holmes [10] distinguish three main functional units of a person’s rule-governed behavior: *pliance*, *tracking*, and *augmenting*. *Pliance* is described as rule-governed behavior enforced by consequences that the rule provider controls [10]. The rule itself is termed *ply*. An example of *ply* can be “Free delivery when you spend \$100 or more” on a company’s web store. The second type of rule-governed behavior is *tracking* [10]. Tracking is rule-governed behavior under the control of “a history of coordination between the rule and the way the environment is arranged independently of the delivery of the rule” [10] p. 109. The rule itself is termed *track*. An example of tracking would be a person walking to pick up an online order at a pick-up point after having read advice from previous customers on a social media platform: “The best route to find this pic-up point is to take a left from the central station, and then walk 100 meters. The pick-up point will be on your left,” given that this behavior is under the control of the rule and the location of the specific pick-up point. The third type of rule-governed behavior described by Hayes, Barnes-Holmes [10] is *augmenting*. The rule itself is termed *augmental*. Augmenting is a type of rule-governed behavior that alters (augments) the reinforcing value of the consequences specified in the rule. According to Hayes, Barnes-Holmes [10], there are two types of *augmentals*; *motivating augmentals* and *formative augmentals*. Motivating *augmentals* is defined as instructions, statements, or advice that have the effect of temporarily increasing the value of reinforcers specified within the rule. A motivating *augmental* is a verbal stimulus that has an evocative or abative effect on online purchase, such as other customers’ reviews that claim, “This web store has great offers and they deliver on time.” Formative *augmentals* establish new events as an important consequence. An example of a formative *augmental* is the message on a company’s web store: “Upgrade the product in your shopping basket to product X, and get a better price.”

Fagerstrøm and Arntzen [4] have conceptually discussed the use of rule-governed behavior in the context of online point of purchase, and some empirical studies have investigated the implication of rule-governed behavior for understanding online purchasing behavior [2, 7]. For the empirical studies, functional assessment was developed to generate assumptions about the impact from rules in an online shopping situation, and conjoint studies were conducted to test the assumptions from an online shopping scenario. These studies have contributed to the understanding of the impact of rules and rule-governed behavior at the point of online purchase. However, these studies are not founded on the analysis of online purchasing behavior in a natural setting, and neither have the assumptions been tested experimentally. The objective of the present study was, therefore, to bring the concept of rule and rule-governed behavior out in a natural setting and experimentally test its ability to understand, explain, and influence online purchasing behavior.

2. Method

2.1. Participants

A Norwegian division of a global online retailer was interested in participating in the study. The participants, who were selected in cooperation with the online retailer's account managers, consist of 1992 individual customers from the small and medium-sized business market. The customers work as purchasers at, for example, a hospital, school, and church office and regularly buy office supplies such as pens, copy paper, Post-it notes, and so forth. All participants had the same tender agreement, meaning they would primarily buy the same product category and were governed by almost the same limitations and opportunities regarding which products and how many items they could buy.

2.2. Apparatus

The treatment stimulus was made as a pop-up. A pop-up is a graphical user interface display area, usually a small window, which appears ("pops up") in the foreground of the visual interface. The pop-up stimulus was programmed in Java and HTML/CSS and was integrated at the online retailer's web store. Data was collected from the online retailer's SAP data warehouse.

2.3. Procedure

After logging in to the online retailer's web store, the participants search for products and add items to the shopping basket. If the participant selects one of the predefined trigger products, an *up-sell offer* will appear on the screen as a pop-up window and will, at the same time, be registered in the data warehouse as triggered up-sell offer. Based on the participant's choice, different data will be registered. Pressing "Keep selected item," mouse-clicking outside the pop-up window, or pressing Escape on the keyboard will be registered as declined, meaning that the participant is not interested in the up-sell offer that is given by the online retailer. The result is that the product originally selected will remain in the shopping basket. Pressing "Select suggested item" will be registered as an accepted up-sell offer, and the suggested item will replace the initially selected item. This sequence may occur more than once or not at all, depending on whether the items added to the shopping basket are predefined as trigger products. Having added all the wanted products to the shopping basket, the participant may complete the order or may postpone the completion until sometime in the future.

2.4. Design

A list of the participants was exported from the online retailer's back-end system. The participants were then randomly divided approximately in half, with one group, the treatment group, having 999 participants while the control group consisted of 993 participants. Ten products from the online retailer's product portfolio were selected as trigger products. All trigger products were picked based on the participants' purchasing history and included items such as toilet paper, copy paper, binders, and other workplace supplies. All trigger products were presented with an up-sell offer designed as formative augmentals, which establish a new event as an important consequence. Six products had an up-sell offer that indicated a lower price and better product quality (see example in Fig. 1), and four products had an up-sell offer that indicated only a lower price (see example in Fig. 2). The treatment group received up-sell offers

within a period of two months (from beginning of July until end of August). The control group did not receive any form of up-sell offers in the same period.

A better alternative

Why choose MultiCopy?

- **A very good price**
- Some of the best copy paper on the market
- Unique ColorLok-technology which gives perfect color
- Works for all printers

Copy paper MULTICOPY Org. A4 80g (2500)
Part number 766416
NOK 649,14



Keep selected item

Select suggested item

Fig. 1. Example of up-sell stimulus that indicates a lower price and better product quality.

A less expensive alternative

A similar product is among your agreed price.
Buy this product instead and we guarantee a favorable price!

Geleroller PILOT G2 Limited 07 gold
Part number 766493
NOK 98,92



Keep selected item

Select suggested item

Fig. 2. Example of up-sell stimulus that indicates a lower price.

3. Results

No customers from either the treatment or control groups terminated their business relationship with the merchant during the two-month experiment. Neither did we receive any complaints from customers or stakeholders about the treatment stimulus (pop-up) in the same period. Table 1 is a summary of the total results. Columns 1 and 2 present the trigger product and type of up-sell stimulus, respectively. Column 3 presents the treatment group's triggered up-sell offers, Column 4 accepted up-sell offers, Column 5 declined up-sell offers, Column 6 number of orders, Column 7 number of items sold, and Column 8 revenue. Column 9 presents the control group's number of orders, Column 10 number of items sold, and Column 11 revenue.

Table 1. Results from the two-month experiment for the treatment group (n=999) and the control group (n=993).

| Trigger product | Up-sell stimulus | Treatment group | | | | | | Control group | | |
|-----------------|-------------------|--------------------------|-------------------------|-------------------------|--------|------------|---------------|---------------|------------|---------------|
| | | Triggered up-sell offers | Accepted up-sell offers | Declined up-sell offers | Orders | Items sold | Revenue (NOK) | Orders | Items sold | Revenue (NOK) |
| 1 | Product and price | 8 | 3 | 5 | 2 | 35 | 1736.7 | 0 | 0 | 0 |
| 2 | Product and price | 14 | 7 | 7 | 2 | 168 | 3417.12 | 3 | 208 | 4230.72 |
| 3 | Product and price | 6 | 3 | 3 | 2 | 5 | 1007.5 | 1 | 1 | 201.41 |
| 4 | Product and price | 37 | 14 | 23 | 8 | 360 | 10220.4 | 9 | 370 | 10504.3 |
| 5 | Product and price | 10 | 4 | 6 | 10 | 123 | 18368.8 | 2 | 15 | 2240.1 |
| 6 | Product and price | 11 | 3 | 8 | 6 | 55 | 3890.7 | 7 | 35 | 2475.9 |
| 7 | Price | 1 | 0 | 1 | 1 | 20 | 151.4 | 1 | 20 | 151.4 |
| 8 | Price | 1 | 0 | 1 | 1 | 20 | 151.4 | 4 | 100 | 757 |
| 9 | Price | 6 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | Price | 7 | 1 | 6 | 1 | 1 | 342.89 | 1 | 1 | 342.89 |
| Sum | | 101 | 37 | 64 | 33 | 787 | 39286.5 | 28 | 750 | 20903.7 |

Table 1 shows that the number of triggered up-sell offers for the treatment group was 101, of which 86 up-sell offers were in terms of product + price stimuli and 15 up-sell offers were in terms of price stimuli. Totally, 37 up-sell offers were accepted by the treatment group, which gives a conversion rate of approximately 39%. The treatment group placed more orders than the control group: 33 orders and 28 orders, respectively. In the treatment group, 787 items were sold of the triggered up-sell offered products, while in the control group, 750 items were sold of the same products. Table 1 also shows that the total revenue in the treatment and the control groups was NOK 39,286.5 (approximately 3784 USD) and NOK 20,903.70 (approximately 2013 USD), respectively. This gives an increased revenue of 87.94% for the treatment group compared to the control group.

4. Discussion

The objective of this study was to bring the concepts of rule and rule-governed behavior out in a natural setting and experimentally test their ability to understand, explain, and influence online purchasing behavior. Triggered products were presented with an up-sell offer designed as formative augmentals. Formative augmentals are rules that establish a new event as an important consequence. Results from the experiment show that up-sell offers had a conversion rate of approximately 39% and gave an increased revenue of 87.94% for the treatment group compared to the control group. Considering that business-to-business customers usually have a more formalized buying process, with constraints regarding what to buy and how much to buy, the result is not that bad.

The concepts of rule and rule-governed behavior have several applied benefits in that they are designed to facilitate intervention as they are formulated in terms of environmental stimuli that can be manipulated directly. Thus, results from the present experiment demonstrated that rule and rule-governed behavior can be more immediately applied to

influence customers' point of online purchase. The concepts of rule and rule-governed behavior does not completely change how online companies interact with their customers in the online purchase situation [5]. Rather, it increases companies' precision when describing point of purchase behavior in that specific situation. However, online companies' marketing activities can be made more effective by knowing the effects of antecedent events on the company's web store.

4.1. Managerial implications

The definition of electronic customer relationship management (eCRM) is “the alignment of business processes with customer strategies supported by software and technology” [8] to create business opportunities beneficial to both the customer and the company [15]. As demonstrated in this study, using antecedent stimuli with motivating functions such as formative augmentals in an eCRM systems can yield that goal if the implementation is done properly. According to Foxall [9], learning history is one of the factors that define the consumer situation in an online point of purchase context. This learning history is available as previous purchase data in the information systems. By analyzing customers learning history data, online companies can, for instance, better understand what types of products trigger the customers to purchase and what price range they usually buy within. Based on this customer information, companies can more easily target functionality and design on the website directed at communicating efficient antecedent stimuli for the target customers. In the present experiment, we looked at what categories of products the customer group primarily bought from and the most popular products. The availability of this information made it possible to target the antecedent stimuli at the areas that were most effective. Using information about the customer's price range made it possible to offer products that were at the same or even lower price points, sometimes with improved functions or quality.

The information gathered in the eCRM systems is key to understanding your customers, and understanding your customers is key to creating profitable and strong relationships with them. By knowing about motivating functions in the context of point of online purchase, it is easier to fulfill the promise of eCRM, creating business opportunities beneficial to both the customer and the company [14]. A marketing manager considering a campaign for a mass emailing solution, for instance, would have a better possibility of succeeding by understanding the motivating functions.

An online company could implement the functionality described in this experiment, with adjustments to make it more viable in the company's particular setting, of course; adjusting it towards other opportunities, such as cross-sale or even just increasing customer satisfaction by implementing better design features or functionality for easier shopping (Amazon's “one-click-shopping”). Furthermore, the people responsible for the web shop should look at the whole chain of events and use motivating functions to influence the customer throughout their whole shopping experience. Furthermore, although this experiment has been implemented and completed manually, the managerial implications underlying it are that they should strive for an automated process, where the customers themselves feed the eCRM systems with data that is transformed into antecedent stimuli aiming to present them with opportunities they may otherwise have missed.

4.2. Limitations and future studies

This study is not without limitations. Field experiments offer less control of the variables than lab experiments, and this may affect internal validity [11]. However, by contrast, a field experiment increases external validity since it is conducted in the natural environment of the participants [6]. The current research should be looked at as a step toward a better understanding of the concepts of rule and rule-governed behavior to understand, explain, and influence online purchasing behavior. This perspective has the potential to enrich marketers' terminology, methodology, and accountability in such a context.

5. Conclusion

The overall aim of this study was to bring the concepts of rule and rule-governed behavior out in a natural setting and experimentally test its ability to understand, explain, and influence online purchasing behavior. To the best of our

knowledge, this is the first study that uses the concept of rule-governed behavior to investigate the impact of content on a web company's website. Results from a field experiment show that two months with up-sell offers had a conversion rate of approximately 39%, and gave an increased revenue of 87.94%.

This study offers a behavior analytic framework to understand the impact of intervention on a company's website. For researchers, it demonstrates the advantage of using the concepts of rule and rule-governed behavior to understand point of online purchase behavior. The study is also valuable for practitioners who work to increase the impact of their online activities by offering a framework that focuses on manipulable antecedents and consequences for which their target behavior is the result. As a continuation of this study, we could replicate the study and include other online activities.

References

- [1] Alhadeff, D.A., *Microeconomics and Human Behavior: Toward a New Synthesis of Economics and Psychology*. 1982, Berkeley, CA: University of California Press.
- [2] Eriksson, N. and A. Fagerstrøm, *The Relative Impact of Wi-Fi Service on Young Consumers' Hotel Booking Online*. Journal of Hospitality & Tourism Research, 2018. **42**(7): p. 1152-1169.
- [3] Fagerstrøm, A., *The motivating effect of antecedent stimuli on the web shop: A conjoint analysis of the impact of antecedent stimuli at the point of online purchase*. Journal of Organizational Behavior Management, 2010. **30**(2): p. 199–220.
- [4] Fagerstrøm, A. and E. Arntzen, *On motivating operations at the point of online purchase setting*. The Psychological Record, 2013. **63**: p. 333-344.
- [5] Fagerstrøm, A., G.R. Foxall, and E. Arntzen, *Implications of motivating operations for the functional analysis of consumer choice*. Journal of organizational behavior Management, 2010. **30**(2): p. 110–126.
- [6] Fagerstrøm, A. and V. Sigurdsson, *The Experimental Analysis of Consumer Choice*, in *The Routledge Companion to Consumer Behavior Analysis*, G.R. Foxall, Editor. 2016, Routledge: London and New York.
- [7] Fagerstrøm, A., J.P. Stratton, and G.R. Foxall, *The Impact of Corporate Social Responsibility Activities on the Consumer Purchasing Situation*. Journal of Organizational Behavior Management, 2015. **35**(3-4): p. 184-205.
- [8] Fjermestad, J. and N.C. Romano, *Electronic customer relationship management*. Business Process Management Journal, 2003.
- [9] Foxall, G.R., *The behavioural perspective model*. European Journal of Marketing, 1999.
- [10] Hayes, S.C., D. Barnes-Holmes, and B. Roche, eds. *Relational Frame Theory: A post-Skinnerian account of human language and cognition*. 2001, Kluwer Academic/Plenum Publishers: New York.
- [11] Hoyle, R.H., M.J. Harris, and C.M. Judd, *Research methods in social relations*. 2002, Wadsworth: Cengage Learning.
- [12] Naimark, G.M., *A shift in the Point-of-Purchase?* Journal of Marketing, 1965. **29**(January): p. 14–17.
- [13] Pierce, W.D. and C.D. Cheney, *Behavior Analysis and Learning*. 2013, New York: Psychology Press.
- [14] Scullin, S., et al. *Electronic customer relationship management: benefits, considerations, pitfalls and trends*. in *Proceedings of the IS one world Conference*. 2002.
- [15] Scullin, S.S., J. Fjermestad, and N.C. Romano, *E-relationship marketing: changes in traditional marketing as an outcome of electronic customer relationship management*. Journal of Enterprise Information Management, 2004.
- [16] Wells, V.K., *Behavioural psychology, marketing and consumer behaviour: a literature review and future research agenda*. Journal of Marketing Management, 2014. **30**(11-12): p. 1119-1158.