

# IMPACT OF VALUE PROPOSITIONS AND SOCIAL INFLUENCES ON COUPON SALES IN B2C MODERATED BY PRODUCT VIDEO AND DAILY VIEWS

*Hoang Do, Department of Information Technology Management, University of Hawaii at Manoa,  
2404 Maile Way, Honolulu, HI 96822, 808-956-5565, [hoangdo@hawaii.edu](mailto:hoangdo@hawaii.edu)*

*Siva Sankaran, Department of Systems and Operations Management, California State University,  
18111 Nordhoff Street, Northridge, CA 91330, [siva.sankaran@csun.edu](mailto:siva.sankaran@csun.edu)*

*Tung Bui, Department of Information Technology Management, University of Hawaii at Manoa,  
2404 Maile Way, Honolulu, HI 96822, 808-956-5565, [tungb@hawaii.edu](mailto:tungb@hawaii.edu)*

## ABSTRACT

Online group-buying such as *Groupon*, *LivingSocial*, *BuyWithMe* and *SocialBuy*, has increasingly been popular for bargain hunters. Sellers offer coupons, featured deals as *value propositions* and apply *social influence* principles such as group rating and information on early sales. Today, many online sellers also offer *product videos* and *daily views*. Using data from *Groupon.com*, a regression model was fitted with *value propositions* and *social influence* as independent variables and *coupon sales* as dependent variable and found to be significant. Moderating variables *product videos* and *daily views* showed potential for structural shifts in *coupon sales* as well.

**Keywords:** Group buying, Daily view, Product video, Value proposition, Social influence.

## INTRODUCTION

This research evaluates the impact of value propositions and social influences on coupon sales moderated by product video and daily views in Business to Consumer settings (B2C). Successful e-commerce sites depend on a user-friendly interface with visually appealing content. In order to increase sales, marketers continually seek new advertising formats to deliver their product messages. Many of these formats are based on two fundamental principles: i) *value propositions*, and ii) *social influence*. According to Anderson et al. [2], value propositions include benefits a company can deliver to target customers in order to satisfy their needs including economic, functional, emotional and symbolic. On the other hand, social influences come about through peers, superiors, subordinates, family, friends and media [1][12]. In addition to static features like product descriptions, price and brand value, lively *product videos* have become an increasingly important B2C feature in attracting potential buyers. In this research, one of our objectives was to empirically measure the impact of introducing product videos in online group-buying.

Our research also tests the impact of *daily views* as social information cues. B2C sites now offer daily views feature – a real-time information about the number of people having viewed the product – as a rich information cue on the market response to help potential buyers make better and quicker purchase decisions. Besides, positive daily views can help provide the buyer a perception of product quality, that buying would be the correct decision and would win social approval of the purchase. Therefore, the second objective of this research was to test the effect of daily views on coupon sales.

Using data collected from *Groupon.com* before and after the company introduced product videos and data view features in a B2C setting, we fit a regression model with value proposition and social influence as

independent variables and coupon sales as the dependent variable. We specify product videos and daily view features as the moderating variables. Thus, our third objective was to assess the resultant structural shifts in the regression model influenced by the two moderating variables using Chow's test [8].

The rest of the paper is organized as follows. First, we present a brief review of the literature limited to the variables used in this paper. Second, we propose a research model and related hypotheses. Third, we describe the statistical research methodology. Fourth, we discuss the results of the statistical analysis. Finally, we close with concluding remarks.

## LITERATURE REVIEW

The principal objective of this paper is to evaluate the influence of the two moderating variables, the introduction of *daily views* and *product video* on *coupon sales*. We first present a brief literature review with respect to these variables.

### Daily views

Social shopping is a type of e-commerce that seeks to involve people with similar tastes in online shopping platforms. Many sites allow shoppers to create personal wish lists and share them with members of their social network. *Groupon* is an example of such a shopping platform. In order to attract customers to make purchase decisions, *Groupon* provides a *Daily View* feature that shows the number of people currently viewing the deals. The number of daily views is a signal informing how many people have similar interests. This feature is considered a shopping cue for consumers to make a purchase decision. The fact that many people have viewed a particular deal might be a sign of product or service quality [10]. Furthermore, if more people are interested in a deal, customers are likely to become anxious that they might lose the opportunity to win the deal [9]. This would lead them to make purchase decision promptly. The above discussion points to the distinct possibility that introducing information on daily views would cause a shift in sales.

### Product Video

Marketers take advantage of technological advancements and social developments to seek new advertising formats to effectively deliver their messages. Video marketing has proved to be a powerful digital marketing tool that can help enterprises to advertise their products (e.g., YouTube). We focus on the product video which is intended to explain the functions and benefits of a product or service. The video demonstrates how a product or service would function in the real world. Bowman [6] indicates reasons for enterprises to use video marketing. First, when adding a product video on a merchant's website to advertise its product or service, it is possible to reach out to millions of consumers within a short period of time. Second, the marketing message becomes more effective with vivid and lively information. Third, this is the best way to explain how the products or services work, so that the customers will remember what they viewed. Furthermore, in the group buying context, product videos with richer visuals and sound effects are more attractive to customers, inducing them to buy the advertised products. Based on the above discussion, we posit that the introduction of product video causes a positive shift in sales.

We now turn to the review of the literature related to the identification of measurable variables that can be used to quantify Value proposition and Social influence as discussed earlier. This paper uses two structural variables, (i) value proposition and (ii) social influence, as predictors of coupon sales. In

measuring value proposition, literature points to *Price* and *Featured deal* as relevant variables. Social influence is best represented by *Early sales* and *Time to tip*.

### Coupon Price and Featured Deal

For most buyers, the marked price of a product is an important consideration prior to purchase. Various researchers have found that perceived value of a coupon serves to dampen the consumer’s perception of over-pricing and affects purchase intention positively [5] [1]. The higher the value of the coupon, the higher would be the likelihood of a purchase in spite of the original marked price [3]. A featured deal is a banner or a graphic advertisement that is prominently displayed in large fonts on the opening page to grab the attention and stick to memory. Research on online advertising has shown that the size of ads affects direct response of the target audience in terms of click-through rates [4]. Amblee & Bui [1] found that deals close to the top of the home page improve the overall sales. Based on these findings, we seek to verify that featured deals would increase coupon sales in *Groupon*.

### Early Sales and Time to Tip

When a deal is launched online, the sales activity during the early hours determines how well the subsequent customers react to the deal. Again, Amblee & Bui [1] point out that high volume early sales influences potential customers favorably. Hence, many online marketers apply this social influence principle by displaying the number of deals transacted to inform shoppers about the product demand. A large *early sales* has an effect on the time to tip which is expressed as the time when the minimum number of buyers is reached to activate the deal. Thus, one can make a reasonable argument that the occurrence of an early sale acting as social influence positively affects coupon sales, and so would the speed at which a deal results in high initial sales.

## MODEL AND HYPOTHESES

The research model is shown in Figure 1. The dependent variable is *Coupon Sales*. The two variables shown on top left represent the different aspects of the common theme, Value Proposition. The two variables shown on bottom left capture different aspects of Social Influences. Upon regression, we seek to measure the level of influence of the moderating variables, *Product Video* and *Daily Views* when they are present or absent, in impacting *Coupon Sales*.

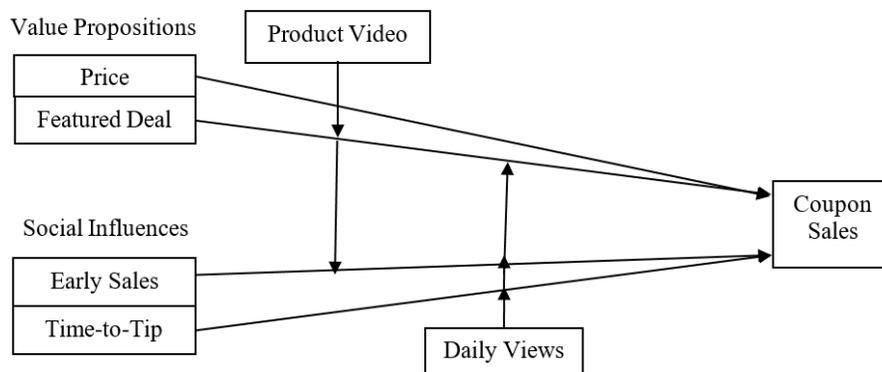


Figure 1

Model relating Value Propositions and Social Influences on Coupon Sales moderated by Product Video and Daily Views

Based on the earlier discussion, we state the following hypotheses. The first four seeks to validate findings of Amblee & Bui [1]. H5 and H6 are new and unique to this research.

- H1: Price has a negative impact on coupon sales.
- H2: Featured deals have a positive impact coupon sales.
- H3: Early sales has a positive impact on coupon sales.
- H4: Shorter Time-to-Tip have a positive impact on coupon sales compared to longer Time-to-Tip.
- H5: Daily views cause shift in coupon sales.
- H6: Product videos cause shift in coupon sales.

## DATA AND RESEARCH METHODOLOGY

Data on all the variables shown on our model (Figure 1) were collected from *Groupon* for the area in and around Honolulu metropolis. The data covered periods both before and after introduction of product video and daily views features online. The data set had complete data from start of the deal to expiration (n=393).

Regression methodology was used to evaluate the model. The model can be expressed as,

$$\text{Coupon\_Sales} = \beta_0 + \beta_1 * \text{Price} + \beta_2 * \text{Featured\_Deal} + \beta_3 * \text{Early\_Sales} + \beta_4 * \text{Time-to-Tip} + \varepsilon \quad (1)$$

We used dummy coding, which refers to using a binary vector to encode the featured deal (*Feature\_Deal*=1) and the non-featured deal (*Non\_Featured\_Deal*=0). In measuring Early Sales, we recorded the number of coupons sold approximately eight hours after launching the deal. *Time-to-Tip* was calculated as the difference between tip date and start date (*Time-to-Tip*=*Tip\_Date* - *Start\_Date*).

## RESULTS

### Regression

		Hypotheses	Parameter Estimate	Beta	P-value
	Constant		3.67	0	<.0001
Value Proposition	Price	H1	-0.24	-0.13	<.0001
	Featured_Deal	H2	0.98	0.27	<.0001
Social Influence	Early_Sales	H3	0.25	0.62	<.0001
	Time-to-Tip	H4	-0.11	-0.26	<.0001
Model Fit $F_{(6, 392)} = 342.03$		$p < 0.0001$	Adj $R^2 = 0.8392$		

Table 1  
Regression results

The results of the regression analysis are shown in Table 1. The overall model is significant ( $F_{(6,392)}=342.03$ ,  $p < 0.0001$ ) and has an adjusted  $R^2 = 0.8392$ , which indicates that the independent variables are able to explain 83.92% of the variance in the total number of coupons sold for a particular deal. All parameter estimates have  $p < 0.0001$ . The results support hypotheses H1 thru H4.

### Analysis of Moderating Effect of the Daily View

Our dataset had records relating to periods before and after the introduction of the two moderating variables, *Daily view* and *Product video* features. Therefore, we split the dataset into sub-sample periods (i.e., before and after implementation of these features) and tested for their impacts using the Chow test

[8] on the structural change in the model, measured by changes in coupon sales. In order to test the effects of each moderating variable, we compared the estimates of coefficients of the two regression models of the early and later periods. By subtracting corresponding coefficient values between the early period and later period, we arrived at the differential estimates of the coefficients and tested if these differed significantly from zero. Table 2 shows that three of the variables were significantly different.

Variables	Early Period	Later Period	Difference
Intercept	3.17117***	4.01491***	0.84374
Price	-0.15456*	-0.26638***	-0.11182
Featured Deal	0.28448*	1.48202***	1.19754***
Early_Sales	0.25316***	0.18915***	-0.06401***
Time-to-Tip	-0.12770***	-0.09404***	0.03366***

Table 2  
Results of comparison of the two regression models for Daily Views

### Analysis of Moderating Effect of Product Video

The introduction of product video amplifies the impact of early sales on total coupon sales. As shown in Table 3, both featured deals and early sales were significant.

Variables	Early Period	Later Period	Difference
Intercept	4.01491***	3.30392***	-0.71099
Price	-0.26638***	-0.21350***	0.05288
Featured Deal	1.48202***	1.02566***	-0.45636***
Early_Sales	0.18915***	0.27759***	0.08844***
TimetoTip	-0.09404***	-0.08855***	0.00549

Table 3  
Results of comparison of the two regression models for Product Video

The introduction of product video amplifies the impact of early sales on total coupon sales. The possible explanation could be that the product video containing persuasive information may have helped customers gain a better appreciation about products and services. After viewing the product video, consumers may have perceived deals to fit their needs, so they can make purchase decisions quickly. Furthermore, the findings also show that featured deals had a smaller effect on coupon sales when deals are supported with product video. The possible reason is that the product videos are more dynamic and enhanced by audio compared print only advertisements, thus causing them to pay less attention to featured deals in making their purchase decision.

## CONCLUSIONS

Earlier studies have generally been limited to reviews on group buying based on questionnaire surveys [11] [13] or theoretical mathematical modeling [7] [14]. In contrast, this study relies on investigating factors influencing coupon sales in a group-buying context with emphasis on practical application. *Daily views* and *product videos* cause a shift in sales, indicating their important moderating role in affecting

coupon sales. Second, the findings show that social influences, measured by *early sales*, would help generate coupon sales. This study shows that group buying agents should have a strategy on how to increase the number of coupons sold during early hours after launching to induce more and more potential customers to buy deals. This would create effective words-of-mouth for a deal and, consequently, help deals tip over faster. Overall, the online reviews and the number of coupons sold in early hours can be considered information cues to inform and further entice the potential customers. In practice, when time series data is available, marketing managers could generate the regression model coefficients appropriate to the business and fine-tune the input variables to achieve the desired level of coupon sales. This research can also help understand the effectiveness of data views and product videos under various levels of value propositions and social influences that the business projects through the online media. Again, by tweaking these levels, a manager can achieve the intended shifts towards sales targets. Above all, this study provides a helpful analytic model and guidelines for group buying agents and merchants.

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