

Effectiveness of Marketing Techniques In-Store to increase Sales

Chhaya Bhatia

Harrisburg University of Science and Technology

### Abstract

In the world of marketing, there are many levers that marketers can use that communicate with the consumers. The consumers may get a chance to interact with the brand through different mediums like TV, radio, social, online or instore. Within each of these mediums, there are several options from which marketers' plan to optimize their budget effectively. This paper aims to understand the effectiveness of the marketing done instore where the purchase decisions are made by the consumer. While most of the levers in marketing are run by the marketing team, in-store marketing has some levers that are run by the sales team. Hence the effectiveness of in-store marketing is also dependent on the dynamics cross of functional teams.

**Keywords:** Effectiveness, Trade Marketing, Shopper Marketing, Sales

### Effectiveness of Marketing Techniques In-Store to Increase Sales

In-store marketing is usually the most important touch point for most brands. This is the point of sale and hence there are a couple of factors that affect the consumer's decision, one can be the loyalty of the consumers whereas the other can be the environment in the store. Consumer loyalty is built over a period of time and may vary at different points in time. In some cases, the consumer may be a loyalist or prefer a particular brand and would not purchase any other brand. In other cases, the consumer may prefer to try different products and would like to experiment within the category. The consumer might also get influenced by the environment in the store. Factors like discount offers or a communication on the packaging or on the shelf play an important role in the decision making of the consumer in-store.

### **Literature Review**

There have been several attempts to define shopper marketing. One suggestion by Desforges and Anthony (2013) is that shopper marketing is just another name for trade marketing, but the objective is to change the shopper behavior to increase consumption. Shopper marketing is defined as "All marketing stimuli, developed based on a deep understanding of shopper behavior, designed to build brand equity, engage the shopper (i.e., a consumer in 'shopping mode'), and lead him/her to make a purchase" in a report by GMA and Deloitte (2007). Shopping mode is when a person is contemplating buying a product or a service in-store or outside the store. The report also recommends that the store is used as a marketing medium since it's a critical and attractive touch point for consumers and 70 percent of the decisions are made in the store of which 68 percent are impulse.

Uniyal and Sinha (2009) make a relevant point which is worth a consideration that the shopper may not be the consumer since the end user might be different for each product. A mom

might purchase for the entire family even if she is not the end user of the product. Price discounts, store designs, and product packaging are marketing tools to the shopper whereas the consumer may be indifferent to all of these if they are loyal to a particular brand and are not doing the task of purchasing in-store. The first motive of shopper marketing program is to discover the shopper. The shopper in shopper marketing program is described as "a consumer with a predisposition to buy." (Flint et al., 2014). Manufacturers and retailers constantly gather insights about the shoppers in their respective category and strategize category management collaborations as suggested by Desforges, (2013) and Egol et al., (2013). A research conducted by the Retail Commission on Shopper Marketing program in 2010 found that 46-93 percent of the shopper's purchase decisions are unplanned (Schmutzler et al., 2015) (Shankar et al., 2011). Hence both retailers and manufacturers realized that they should develop and implement more strategies to influence the shopper in the store. The second reason why shopper marketing programs gained traction was due to the increase in the sophistication of retailers (Flint et al., 2014). Many retailers today have their own marketing divisions that perform analysis on continuous improvement, category management, and target their shoppers to improve the retail branding versus the competition (Schmutzler et al., 2015). Thus, increasing the pressure on manufacturers to be upscale with the retailer's shopper knowledge. Harris (2010) sights that some manufacturers have started building strong relationships with select few retailers in category management collaborations and thus have leveraged their relationships in shopper marketing initiatives. Some authors also believe that shopper marketing is an evolution from category management - "Shopper marketing is firmly based on the foundation created by category management." (Frey et al., 2011). While Shopper marketing does involve a lot of relationship building with the retailer, none of it would be significant if the brand does not deliver in-store which is the top prerogative of the retailer. Hence

it is imperative for the manufacturer to be on the top of its game to roll out innovations and keep the consumers engaged with the brand.

While shopper marketing has different perspectives, Trade marketing also has not been consistently defined. The literature on Trade marketing is limited and has been led by a few authors. On one hand, Cespedes (1993) and Dewsnap and Jobber (2002) defined Trade Marketing as a process to integrate the objectives of the sales and marketing functions, It ensures that it meets the needs of the retailer in terms of promotional offers. The salesperson then relays this to the marketing team to be executed as part of the marketing mix. On the other hand, Cortsjens and Corsthens (2007) think that it is not a function that integrates but it is a function by itself to maintain the B2B marketing with the retailers. Hence the definitions have some confusion regarding two things one is what is the core role and what are the tasks that Trade Marketing intends to achieve, second is the position of the function in the organization. Does Trade Marketing belong in Sales or Marketing or is it a separate function by itself?

Research by Promotion Optimization Institute (2015) - Case Studies: This case study describes how manufacturers have approached measuring the impact of Shopper Marketing programs and incorporated the findings to improve utilization of spending. For analysis purpose, it considers the following two case studies - 1. Retailer-specific events, 2. Total Market events and provides a detailed explanation of the implications and observations on improving measurement and evaluation of Retailer Shopper Marketing Programs. Shopper marketing program investments had doubled from 2012- 2014 with an overall annual investment of USD 34 Billion in the US. Thus, marketing spending needs to be justified with volume impacts and return on investment. Of the 4 P's of marketing - Product, Price, Place, and Promotion, Shopper Marketing program has high involvement in Price and Promotion strategies. Retailer-Specific Shopper Marketing

promotion strategies include Multi-Buys, Consumer coupons (digital, "classic" distribution), In-store merchandising, Demo's, Seasonal sponsorships. And some of the key challenges faced in evaluating Retailer Specific Shopper Marketing promotions are a limited timeframe, limited causal data and strategizing unique mix of products. In this case study, the manufacturer aimed at establishing a cost-effective and reliable method of measuring over 400 promotion events annually. They developed a standard template and portal for collecting promotion details and spending, created benchmarks after measuring a large number of promotional events and strategies. Finally, with this exercise, they concluded the following for an increasing number of events: 1. Limiting the number of brands to 5-6 per event increased overall ROI 2. Simpler consumer offers increased ROI 3. Promotion themes leveraging product usage occasions directly increased ROI. "Seasonal Themes" directly related to product usage are more powerful than NASCAR/"Super Bowl" themed events. Total Market event promotion strategies include many key elements of the brand marketing mix (for example Sports sponsorships, Super Bowl, Movie Sponsorships), Trade Promotion - In-Store Merchandising, Packaging, Broad Market Advertising (TV, Digital, other), Geographic impact as it can be national or regional. In this case study, the manufacturer also aimed at establishing a valid and reliable method of measuring 5-6 national promotion events annually. For effective measurement, they separated out the consumer impact-lift, from the trade merchandising impact-lift. Finally, with this exercise, they concluded the following: 1. A price promotion component should be included in all future events 2. High cost/low ROI events that requiring significant licensing fees or sponsorship costs should be avoided. Based on the above experimental case studies we can conclude that to measure the effectiveness of shopper marketing promotion programs we need to ensure the financial evaluation of its respective ROI, put a consistent process in place for capturing the event tactics, product timing and

fixed/variable spend, level of accuracy and reliability and brand benchmark. Trade spends as a percentage of gross sales has remained, but the customer specific programs have grown, also there has been a shift to digital promotions from traditional media. Understanding the long-term effects of trade promotions on shopper purchase behavior remains to be the next step of optimization. As per the recommendations of this case study, there might be several upsides to the inclusion of trade promotion in each of these prime events in the year, but this inclusion also has several downsides. The brand can be perceived as a brand that is always on discount and hence consumers tend to question the quality of the brand. Also, the other downside is the consumer will buy the brand only when it is on discount and the brand will see a sharp drop in sales when there are no trade promotions.

If we would consider the two key reasons for the effectiveness of Trade Marketing programs, they can be defined as below: 1. Firstly, trade marketing plays an integrative role in the marketing and sales functions of the manufacturer and the retailer as mentioned in the definition by Dewsnap and Jobber (2002) and Randall (1994) 2. Secondly, trade marketing also serves B2B (business-to-business) marketing initiatives targeted at the retailer through trade promotions and communication materials for the retailer as described by Cortsjens and Corsthens (2007), Dewsnap and Jobber (2002) and Thain and Bradley (2014). Thus, trade marketing helps retailers to differentiate themselves from their competition by offering customized promotions (Kotzab, 2013). This dissertation misses a key component on the consumer side, which is that trade marketing is also effective to induce trial. Trade promotions are particularly attractive for consumers that seek value from their buying decisions.

There are also some interesting theories pointing out the need for integration of in store and out of store communication. A paper by Marreiros (2014) suggests that while shopper marketing is a skill

that needs development through factual data, the need for better integration in store and out of the store is crucial. Also, the author lays emphasis on the importance of the consistency of the key brand elements to help create memories and association for the shoppers at the point of purchase. Many marketers are increasing the spends at the point of purchase programs, they believe that the last 5 percent manifests itself at the point of purchase just before the consumers make his buying decision (Harvard Business Review, 1983). There is a need for integration between brand strategy and trade-marketing actions both at the distribution channel and at the Point of purchase (POP). Sommer (2010) fact emphasized the need for producers and retailers to be consistent in their brand positioning strategy for a highly integrated communication activity inside and outside the POP and for integrated communications planning in shopper marketing. Markus and Ville (2012) noted that Shopper marketing provides in-store stimulus to influence impulse and purchase that are not planned. Respondents also pointed out that in practice most of the activities in the store seem too tactical and like a sales promotion and do not have a strategic thought in execution. It was also pointed out that a new challenge and opportunity is arising with the use of mobile in store and out of the store. They will not only enrich the experience for the shopper but also give the brand an opportunity to drive unplanned purchases (Hui et al., 2013). To further elaborate there is not only a need for integration of instore and out of store communication but also for alignment of communication across all mediums. This will act as a catalyst to make sure the brand interacts with the consumer at different touch points to influence his/her purchase decision at the store. A well-integrated and designed campaign help achieve the goals of the brand in a faster and sustained manner.

Nowadays consumers are tech savvy and they do spend time online researching the best product or service available at the best price that is provided by respective manufacturers and



retailers. Digitization increases the touch points on the shopper journey, as many shoppers now seek information online or use coupon apps on their smartphones. Hence another challenge for manufacturers is the digitization, which changes the shopping behavior and requires shopper marketing programs to adapt to this new touch point (Desforges, 2013), (Egol et al., 2013), (Flint et al., 2014) and (Shankar et al., 2011). Google introduced the "First Moment of Truth" which is when a shopper decides to buy a product in front of the shelf. Google's "Zero Moment of Truth" is that moment when you grab your laptop, mobile phone or some other wired device and start learning about a product or service (or potential boyfriend) you're thinking about trying or buying." (Lecinski, 2011). "Know the shopper's total journey to purchase as holistically as possible. Brands will be able to tie that journey to the places where shoppers get to know and love brands well before purchase intent since this new path can move from anywhere to purchase instantly" (Kantar Retail, 2016). Thus, digital shopper marketing plays a key role for retailers and manufacturers as it aligns the shopper marketing programs to the brand objectives and creates an opportunity for the shoppers to engage with the brand at different touch points other than the store.

Booz and Company (2013) recommend that leading CPG companies are moving towards alignment of trade promotions and shopper marketing initiatives. It is important to note that shopper marketing programs may also overlap partially with trade marketing programs (Flint et al., 2014). Handrinos et al. (2008) suggested, "Therefore when marketing to shoppers, companies need to blend trade marketing with shopper marketing, or at least be very involved in what the trade marketing organization does with trade promotions." As shopper marketing programs need retailer collaboration, one of the challenges that manufacturers face is that retailers prefer a transactional relationship and may not share information with manufacturers. While this might have been true in earlier times today most retailers have a marketing team and hence shopper marketing is easier

to implement. A transactional relationship is still maintained but that is between the sales team and the buyer to manage the trade promotions.

While the alignment with the teams might sound quite seamless, there are a lot of challenges at store level that derails the process at the stage of execution. Retailers today make it difficult for manufacturers at the store level by banning promotion tactics and enforcing clean store policies. Displays were down by 4.4 percent in mid 2007 vs the year 2006 and by 9.1 percent vs the year 2005. Companies realize that the focus on in store marketing is crucial for a competitive advantage. Shopper insights and behaviors are an intricate part of the focus required to target messages to consumers and shoppers. These insights are also helping companies improve relations with retailers (Deloitte and GMA, 2007). The Path to Purchase Institute (2014) survey suggests the manufacturers and retailers need to design programs in a way that it optimizes the shopper marketing ROI. Manufacturers do not leverage consumer testing enough to design shopper marketing programs. The survey also suggests that there a big opportunity for companies to start building their capabilities on the data available. 65 percent said that their companies only use the national or account specific insights for planning investments but only 31 percent use cross-retailer insights and only 12 percent break it down to store cluster level. Data availability is a phenomenon that is relevant to big or medium size companies since the cost of access to data is very high. But the good news is that the companies now leverage the marketing teams at retailers to get access to data and plan the shopper marketing programs. This also gives access to campaign performance data which can then be utilized for other retailers.

The purpose of this study is to get more granular with our understanding of the effectiveness of trade marketing vs shopper marketing to increase sales. None of the research has studied specifically a particular category to arrive at a definitive effectiveness level of the various

in-store techniques. We will not only study one particular category, but we will look at a category which is driven by impulse purchase. This will be the acid test to study the effectiveness of the different tactics in the store since we would find very few loyal consumers. For categories where loyalty is high among consumers the effectiveness of the in-store techniques may be similar and will not showcase a jarring difference to prove or deny our research. Hence picking a category with low loyalty and high impulse behavior among consumers will help form a definitive conclusion. This study will also consider data that covers the performance of trade promotions and shopper marketing tactics over a period of 5 years to make it more robust and identify trends that are consistent across the 5 years of study. Given the large scope of the study, I hypothesize that shopper marketing techniques will give the brand sustainable increase in sales. The dependent variable for this study is Sales in Dollars and the independent variables are Product Demo, Digital Coupon, Shelf Banners, Price Offs and BOGO (Buy One Get One Free). Product Demo, Digital Coupon and Shelf Banners are Shopper Marketing tactics. Price Offs and BOGO are Trade Marketing tactics. Table 1 will help understand the variables and their roles.

## **Method**

### **Participants**

The participants of this research are from a syndicated source of data called Information Resources, Incorporated (IRI). They collect scan data from 35000 stores and 100,000 Households across United States. These households are a customized sample of consumers based on the zip code they live in. The consumers from these households may be male or female and any race or ethnicity. The household income range is from 15k to 100k. The generation range is from Younger Millennial (Born 1990+) to Retirees and Seniors (born before 1946). The household size range is 1 person to 5+ people.

## **Materials and Procedures**

IRI gets data from 3 sources which includes household-based scanner data (called Consumer Network), retail point-of-sale scanner data (called InfoScan), and product information and nutrition- and label-claims data linked by Universal Product Code (UPC). The Consumer Network data is retrieved by IRI from the National Consumer Panel (NCP). National Consumer Panel is a joint venture of IRI and The Nielsen Company (IRI, 2015) since 2009. NCP recruits households through various mechanisms and provides them with incentives to record all of their consumer product purchases that were UPC-based, regardless of the location they were purchased, using a mobile in-home scanning device (IRI, 2015). The Consumer Network dataset contains transactions data for each shopping trip done by the household. The transactions data has purchase information of food and alcohol, containing details like coupons, prices, quantities, and discounts. This purchase information can further be linked to a set of household demographic information like size of household, ethnicity, age of household head, income of household, race, and number of children present in the household.

Using the weekly point-of-sale data for the store chain or outlet types, IRI assigns the prices to each of these UPC-level transactions. If the households shop at a store that is not represented in the IRI point-of-sale data, then IRI uses the price that households input during the reporting process. Every record of the shopping trip can be linked to the retail chain and market in the InfoScan data. Since the panelists only identify the retail chain and not the location, it is not possible to link a shopping trip record to the specific store where the purchase was made. Households are picked based on their characteristics to balance the panel to be the representative of the U.S population in 48 States, in order to meet quotas for each type of household. The household head is the primary shopper for the household, in the household panel. The following demographic criteria

are used for choosing households: Household size (1, 2, 3-4, and 5+ persons), Age of household head (21-34, 35-44, 45-64, and 65+), Household annual income level (<\$35,000; \$35,000-\$59,999; \$60,000-\$99,999; and \$100,000+), Ethnicity of household head (Hispanic versus non-Hispanic), • Race of household head (Black versus non-Black), Education level of female head of household (five levels), Education level of male head of household (five levels), Occupation (blue collar/uniformed, service occupation, white collar), Presence of children (no children versus children), and Census division (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific).

Data products like PopStatsTM. PopStatsTM by NCP help derived U.S data from the U.S Census. These products are on population estimates provided by Synergos Technologies, Inc, which is a market research company. Households that meet the criteria of the target group are randomly selected and then registered for the NCP. Some recruitments is challenging like a household head under the age of 35yrs. Recruitment of Hispanic households is also difficult. Hence the NCP website targets recruitment of these difficult groups.

Households must have a valid mailing address like apartment number since the criteria is that in the selection process living accommodations are not a consideration but individuals staying in institutes like mental health and nursing home facilities are not allowed to participate. Recruitment is done by a third-party vendor and once the recruitment is done they are provided with the scanning instrument and instructions on usage and entering the data. The households are instructed to do their shopping as a they would regularly and scan purchase information on a weekly basis. Sometimes the quality and consistence of the data maybe affected due the way of reporting might be different between households. To avoid or minimize these quality issues IRI

applies certain rules whether or not the data must be included in the dataset or not. The criteria's are as follows.

Households are recruited to the panel through third-party vendors. After households are recruited, they are provided with scanning equipment and comprehensive instructions for scanning their purchases and transmitting their purchases on a weekly basis. Households are instructed to purchase all products as they normally would. Because the quality and consistency of data reporting by the panelists varies, both IRI and Nielsen apply specific rules to determine whether a household's data may be included in the static dataset prepared each calendar year. IRI uses the following criteria: The household must have reported its purchases at least once every 4 weeks for 80 percent of the time periods, or 11 of the 13 four-week reporting periods during the year. The household must have reported a minimum average level of spending as follows: \$25 per week for 1-person households, \$35 per week for 2-person households, and \$45 per week for 3-or-more person households (IRI, 2014). The Consumer Network dataset contains projection weights that weight the data to be same as the Census targets.

IRI also tracks the in-store promotions. The household is asked to enter if they brought a product on a deal or sale. They are also asked regarding the type of the promotion if it is a coupon then the household answers "yes", then they are asked from which source have they received it. It could be a manufacture coupon which is distributed by the product manufacturer or the retailer coupon which is store specific coupon. In both case the consumer is asked to enter the value of the coupon. Finally, at the end of all these questions the consumer is asked to enter the total amount of the trip to the store. If the consumer has entered any coupons, then the amount will be deducted from the total. The third source of data is all the information that is received from the manufacturer along with UPC of the products. The product images, product claims and the nutrition details is

added to the data dictionary. IRI adds approximately 3 million new items across all consumer-packaged goods, including food products, to its dictionary database on an annual basis (IRI, 2014). IRI applies the negative binomial distribution to adjust the data for bias due to under coverage or over coverage of the population. Each household in the Consumer Network data represents other households in the population, and the projection factor indicates how many households are represented by the household. IRI uses the Iterative Proportional Fitting (IPF) method to calculate the projection factors based on geographic and demographic variables for the households (IRI,2015)

The households are given the scanning equipment to scan their purchases in one week. They also have the options of downloading an application on their phone to enter the information. NCP also provides them with instructions to help them with the process of entering the information. They also have access to a support center and online support to answer their questions or address their problems. NCP also communicates with them regularly to address any concerns. Once the household scans its purchases information, they also must enter the location and the name of the store where they purchased the items. The households have 2 options to enters details of the products purchased, they can pick the products from a list of non-barcode products or scan the UPC. They should include all purchases like items brought for different shopping trips and items that were consumed on the go. If the household is using the mobile application, then all the members can enter products through their own phone device.

If InfoScan data is not available for a store that a household shops at then they are asked to enter the price they paid for the products. IRI also sets a dictionary price for products which is along term average for every UPC by the type of outlet at a national level. If none of the above

instructions work to get the data from the household then the final action is to use the dictionary price.

### **Measure**

The recruitment process of the households are done by a third-party agency. Households are recruited through advertising done online like social media, blogs, website and displays. The old method of recruitment was direct mail, but it is no longer used. They then need to register on the NCP's recruitment site. Once registered they need fill a detailed questionnaire that provides information about the demographics. Demographic data that is collected is as follows, Age of Household Heads, Martial Status, Income Level, Household Head Occupation, Household Head Education, Household Size, Presence/Age of Children, Number of television sets, Home ownership, Computer/Electronic equipment in home, Appliances in home, Internet Access availability, ownership of Pets. Households are given incentives to participate in the process of data collection. They receive sweepstakes entries or points and they can cash it for products from a catalogue in the form of rewards. After registration, households are selected for membership by a process that IRI refers to as "stratified quota random sampling" (IRI, 2014).

Agreements with retailers across the United States helps IRI to get access to sales data which includes revenue and quantity. These are products that have UPCs and perishable products. The stores that are part of this agreement are grocery, drug, convenience, mass merchandiser, club, dollar, and defense commissary stores. Demographics from households are integrated with NCP household purchase data to classify buyers and capture the following, number of Buyers?, number of Purchases?, How often do they purchase a product?, Dollars spent per Trip?, number of Trips?, Is this a Trier(buying a product for the 1<sup>st</sup> time) consumer?, Is this a Repeater(buying the product for the second time) consumers?, Is the consumer a Core or occasional buyer?, Is the consumer a



Heavy/Medium/Light Spender?, Is the consumer Brand Loyal?, Is the consumer a Store Loyal?, Is the consumer Exclusive(buys only a particular product)?, Is the consumer a Switcher(buys different products in a category)?, Is the consumer Converted(moved from one product to another product)?

The measures considered for this study are test Dollar sales which indicates the sales of the product in Dollars in a week. Other variables, which are the in-store tactics Product Demo, Digital Coupon, Shelf Banners and Price Offs. All these variables are categorical and will be indicated as yes or no. Yes, would mean the occurrence of the in-store tactic during the week in question. No would mean that the tactic has not occurred in that week.

### **Analysis**

The analysis of the data will start with exploratory data analysis. The initial study of the data will help understand relationships between the variables. The objective of the analysis is to understand the influence of each of the in-store promotion variables Product Demo, Digital Coupon, Shelf Banners and Price Offs on the Dollar Sales. They should show an increase in Dollar Sales in the weeks that they are implemented, that would help us understand which in-store tactic has a positive effect on Dollar sales. For this I will use Multiple Linear Regression, ANOVA and Decision Tree to understand the relationship and interactions between the dependent and the independent variables.

Initial exploratory data analysis of the dataset is done using the summary function. This function helps to understand the min, max and the quartile values of the Dollar Sales variable. It also gives a count of yes and no in the categorical variables. Table 2 is the summary of the dataset. The difference in the max and min values of the Dollar Sales variable indicated that there might be some outliers in the dataset which would need processing. In terms of the various

in-store marketing techniques, the brand has conducted the most number of price offs, followed shelf talk banners. Product Demos were the least used as a tactic, which is quite intuitive since it is the most expensive tactic.

While getting into the further exploratory data analysis, I found several interesting insights into the data. Figure 1 showcases a trend line of the 5 years of Dollar Sales. It clearly depicts that the sales have a lot of seasonality and is affected by the different shopper and trade marketing activities in-store. There a sharp drop in sales during September 2016-Oct 2016 which is due to a recall of the products from the retail outlets. This recall was because of product contamination. Next I did a series of boxplots to check the distributions of the independent variables on the dependent variable. The boxplot is a way to visualize a five-number summary. It starts with the minimum value, moving to the 1<sup>st</sup> quartile with the median in the center and the 3<sup>rd</sup> Quartile and the max value last. Figure 2 is the boxplot for BOGOs which shows that the data is more skewed towards the 3<sup>rd</sup> Quartile and the max value when BOGOs are conducted. While when they are not conducted there are a lot more outlier in the data. Figure 3 is a box plot for Product demos and Dollar Sales. The Product Demos are skewed to the higher sales and hence also indicated that the delivery of this technique is very high. When demos are not done the boxplot indicates that there are several outliers on both ends of the boxplot. Figure 4 shows the boxplot for Digital Coupons and Dollar Sales. When this tactic is executed the data looks like it is skewed towards the lower end of the boxplot and hence the performance of this technique may not have a positive impact on the Sales. Next Figure 5 shows the box plot of Price offs vs Dollar sales. One must note that price offs impact the Dollar Sales since they are price driven. Hence if not immediate but in the long term it does impact the Dollar Sales negatively. Figure 6 is a

histogram of the Dollar Sales which indicates that most of the weekly Dollar Sales are in the center of the curve and might have some outliers on either side of the data.

All the exploratory data analysis gave good insights into the data for an initial understanding of the variables. Let's build a few models to get a detailed understanding of the interactions and performance of the variables. The first model that I am building is the Multiple Linear Regression. Let's start this analysis by looking at the linear regression for Dollar Sales. Figure 7 shows that there are a lot of data points that are away from the linear line and hence the data has several outliers. The multiple linear regression should give a better insight on the relation between 2 or more variables. It will also help build the prediction Dollar Sales value with each of the marketing tactics. We will analyze the Multiple linear regression in 4 steps, 1<sup>st</sup> run the model on the entire dataset, 2<sup>nd</sup> process run a detection model for the outliers and rebuild the dataset without the outliers, 3<sup>rd</sup> run the model on variables that are specific to shopper marketing and trade marketing. Product Demo, Digital Coupon and Shelf Banners are shopper marketing techniques whereas Price Offs and BOGOs are Trade Marketing techniques.

Table 3 shows the multiple linear regression that was calculated to predict Dollar Sales based on marketing techniques like Product Demo, Digital Coupon, Shelftalk Banner, Price offs and BOGOs. A significant regression equation was found ( $F(5, 224) = 6.029, p < 2.948e-05$ ), with an R2 of .1186. Predicted Dollar Sales is equal to  $2114008 + 435559(\text{Product Demo}) + 42877 (\text{Digital Coupon}) - 249836(\text{Shelftalk Banner}) - 129083(\text{Price offs}) + 50108(\text{BOGOs})$ , where the DVs are coded as Yes, No, and Dollar Sales is measured in Dollars(USD). Dollar Sales increased by \$2114008 for each activity of Product Demo by \$435559, Digital Coupon by \$42877 and BOGOs by \$50108 vs a loss of \$249836 for Shelftalk Banner and a loss of \$129083

for Price offs. Product Demo, Digital Coupon and BOGOs were significant predictors of Dollar Sales. (Cronk, B. C. 2012)

Based on the above model, I needed to do some more investigation on the performance of the data points and hence ran the diagnostic plots. Figure 8 shows the diagnostic plot for the regression model. The 1<sup>st</sup> of the 4 plots is of the residual vs fitted, the graph shows that the data points are forming cluster around a particular point and there are several that are scattered around the horizontal line. While the scattered plot show that there a non-linear relation but the clusters do indicate linear relation. Hence it does not meet the assumption of non-linearity. The 2<sup>nd</sup> of the 4 plots is the Normal Q-Q which is an indicator if the residuals are normally distributed. If the points are lined straight on the dotted line that's a good indicator. The plot shows that the 2 ends of the data points do not line up well on the dotted line while the center of the data is well aligned. The 3<sup>rd</sup> plot is of scale and location which is also know as Spread-Location plot. It shows if residuals are spread equally along the range of the predictors. It is used to check the assumption of equal variance or also known as homoscedasticity. If the points are randomly spread around the horizontal line, that is good. The plot is forming clusters and hence not randomly spread. The 4<sup>th</sup> plot is of residual and leverage which indicated the cook's distance. It helps to find influential data point in the dataset. The cook's distance dashed line is hardly visible which indicated that most of the point are within the distance. But we also see some outliers on the top and bottom right.

The above diagnostic plots indicate that we need to do processing with the outliers to eliminate them from the model. Hence, we use the outlier package to find and eliminate the outliers from the data set. Next, I run multiple linear regression on the new dataset. The

exclusion of the outliers did not have a major impact on the new dataset the R square has some minor change but rest of the indicators remained the same. Going back to the objective of the project I need to understand the performance of the shopper marketing and the trade marketing tactics. I spilt the variables on the basis of shopper and trade marketing and then run the model again. The variable for shopper marketing are like Product Demo, Digital Coupon and Shelftalk Banner whereas Price offs and BOGOs are trade marketing techniques.

Table 5 shows the multiple linear regression that was calculated to predict Dollar Sales based on shopper marketing techniques like Product Demo, Digital Coupon and Shelftalk Banner. A significant regression equation was found ( $F(3, 2245) = 8.745, p < 1.645e-05$ ), with an  $R^2$  of .1044. Predicted Dollar Sales is equal to  $2071585 + 476734(\text{Product Demo}) - 43494(\text{Digital Coupon}) - 238614(\text{Shelftalk Banner})$ , where the DVs are coded as Yes, No, and Dollar Sales is measured in Dollars(USD). Dollar Sales increased by \$2071585 for each activity of Product Demo by \$476734 vs a loss of \$238614 for Shelftalk Banner and a loss of \$43494 for Digital Coupon. Product Demo was a significant predictor of Dollar Sales. (Cronk, B. C. 2012).

Table 6 shows the multiple linear regression that was calculated to predict Dollar Sales based on trade marketing techniques like Price offs and BOGOs. A significant regression equation was found ( $F(2,226) = 2.849, p < 0.05997$ ), with an  $R^2$  of .02459. Predicted Dollar Sales is equal to  $2105551 - 126752(\text{Price offs}) + 3097(\text{BOGOs})$ , where the DVs are coded as Yes, No, and Dollar Sales is measured in Dollars(USD). Dollar Sales increased by \$2105551 for BOGOs by \$3097 vs a loss of \$126752 for Price offs. BOGOs were significant predictors of Dollar Sales. (Cronk, B. C. 2012)

The next model that I tried was Decision Tree. The objective of doing a decision tree was to understand the impact of each of the variables on Dollar Sales. In Figure 10 we see the decision tree has a split of the data based on a range of Dollar Sales. The 3 ranges are  $<2.2\text{Mn}$ ,  $\text{Sales} < 1.8\text{Mn}$  and  $\text{Sales} > 2.2\text{Mn}$ . The decision tree states that when Product Demos are not executed 5% of the time the Sales is  $\text{Sales} > 2.2\text{Mn}$  and 95% of the times when it is executed it is between  $<1.8\text{Mn}$  and  $2.2\text{Mn}$ , whereas when prices offs are done it is mostly between  $<1.8\text{Mn}$  and  $2.2\text{Mn}$ . The performance of the Shelftalk banners suggests that 45% of the times its executed the sales between  $<1.8\text{Mn}$  and  $2.2\text{Mn}$  vs when it is not executed it can drop to less than  $\$1.8\text{Mn}$ .

The 3<sup>rd</sup> model is ANOVA that is used to the analyze dependencies. It is used to prove a cause and effect of a relationships between variables. In more statistical terms it tests the effect of one or more independent variables on one or more dependent variables. It assumes an effect of  $Y = f(x_1, x_2, x_3, \dots x_n)$ . A high F value means that the data does not well support your hypothesis. Table 7 shows the ANOVA conducted on the shopper marketing variables which is Product Demo, Shelftalk Banners and Digital coupons. The P value is  $< 0.05$  for product demo and shelftalk banner which means we reject the null hypothesis that there is impact of both of these variables on Dollar Sales whereas P value is  $> 0.05$  for Digital Coupons hence we approve the Null hypothesis that this variable does not have a significant impact on Dollar Sales.

Similarly, the ANOVA for Trade Marketing is shown in Table 8. The trade marketing variables are Price offs and BOGOs. The p value for Price off is  $< 0.05$  which means we reject the null hypothesis that there is impact of this variables on Dollar Sales whereas P value is  $> 0.05$  for BOGOs hence we approve the Null hypothesis that this variable does not have a significant impact on Dollar Sales. But it can be noticed the F value for Price off is significantly like vs

BOGOs and as we have seen in our previous models that BOGOs have a minimum impact on the sales.

## **Discussion**

The multiple linear models indicate that while all the techniques of shopper or trade marketing might not deliver incremental sales, Product demos and BOGOs do provide a positive impact on the Dollar Sales. The product demos deliver when the consumers are liking the product and hence come back to the brand in spite of the demo being only a 1-day activity. It provides the brand a sustained lift and hence generates brand loyalty. BOGOs on the other hand are for price sensitive consumers and it helps induce trial which again is critical for the growth of the brand. It is noticed that when the brand gains new distribution at a retailer it has not been in before, a combination of Demo from shopper marketing and a BOGO in trade marketing helps deliver excellent incremental sales. It makes it possible for the consumers to try the product and then buy it on a BOGO which not only moves more packs but also gives a chance for the consumer to try different flavors. Also, we learn from the Decision tree that Product Demos have an incremental impact on Dollar Sales. ANOVA also indicates that Product Demos have an impact on Sales. My hypothesis that shopper marketing gives a sustained growth to the Sales cannot be completely justified since only one of the shopper marketing tactics deliver incremental growth which is Product Demos and the other one is from Trade Marketing which is BOGOs. While the incremental benefit from BOGOs is not as significant as Product Demos it is better than the rest of the tactics. The combination of both Product Demos and the BOGOs would also provide incremental growth. The other 3 tactics seem to have a negative effect on the Dollar Sales as indicated in the multiple linear regression estimation.

**Future Study:**

For future study it would be relevant to add in weight to time periods where the brand gains new distribution. The data gets skew if for example the brand gets new distribution in a 2000 stores chain and that creates a lot of outliers. The Dollar Sales will see a shar spike and a sustained growth after that. The other factors to consider that shelf banners are only communication led and do not have an incentive to purchase that should impact the delivery of the tactic. All other tactics have an incentive like a coupon or price off associated with the campaign whereas Shelf Banner is only a communication on the shelf for the consumer. This is a key point of consideration for future study. While Product Demos have a combination of both, where there are banners placed during demo and also coupons are given out, the other have only price related incentives. Products demos sometimes also have giveaways for consumers. This could also be the probable success of the tactic. But product demos are expensive to do and hence not done as often in the year but yet is effective. The future study should also include the cost of the tactics to factor in the return on investments of these tactics. Like price offs ultimately affect the sales since it's a discount on the product which eats into the sales.



## References

- Cespedes, F. V. (1993). Co-ordinating sales and marketing in consumer goods firms. *Journal of Consumer Marketing*, 10(2),37-55.
- Booz & Company. (2013). Improving returns through shopper marketing and trade promotion alignment.
- Deloitte consulting., & GMA. (2007). Shopper Marketing: Capturing a Shopper's Mind, Heart, and Wallet.
- Cortsjens, J., & Corsthens, M. (2007). Store wars: the battle for mindspace and shelf space. *John Wiley and Sons*.
- Desforges., & Anthony (2013). The shopper marketing resolution: consumer shopper retailer: how marketing must reinvent itself in the age of the shopper. *Writers Of The Round Tabl. 1965 ed.*
- Desforges, T. (2013). What is the difference between trade marketing and shopper marketing?
- Dewsnap, B., & Jobber, D. (2002). A social psychological model of relations between marketing and sales. *European Journal of Marketing*, 36(7/8),874-894.
- Egol, M., Sarma, R., & Sayali, N. (2013). Reimagining shopper marketing: building brands through omnichannel experiences.
- Flint, D. J., Swift, N., & Hoyt, C. (2014). Shopper Marketing: Profiting from the Place Where Suppliers, Brand Manufacturers, and Retailers Connect. *Pearson FT Press*.
- Frey, U. D., Hunstiger, G., & Peter, D. (2011). Shopper Marketing: With buyer's insights into effective Marketing to the POS. *Gabler*

- GMA., & Deloitte (2007). Delivering the Promise of Shopper Marketing: Mastering Execution for Competitive Advantage.
- Harvard Business Review. (1983). Better Marketing at the Point of Purchase.
- Hui, S. K., Je rey, I. J., Yanliu, H., and Jacob, S. (2013). The effect of in-store travel distance on unplanned spending: Applications to mobile promotion strategies. *Journal of Marketing*, 77(2),1-16.
- IRI. (2014). "Information Resources, Inc. Documentation: ERS Data Extract Project." *Internal document provided to ERS*.
- IRI. (2015). "Consumer Network Methodologies: Prepared for USDA and RTI."
- Kantar Retail. (2016). Trade Promotion Study.
- Kotzab, H. (2013). New concepts of distribution logistics for Handelsun companies. Logistics and transport. *German University*
- Lecinski, J. (2011). Winning the zero moment of truth: ZMOT. *Vook*.
- Markus, S., & Ville, M. (2012). Shopper marketing: how to increase purchase decisions at the point of sale. *Kogan Page*.
- Marreiros, S. (2014). Exploring shopper marketing approach implications on brand communication at the point-of-purchase: An Experts Opinion Qualitative Study. *Journal of Applied Business Research (JABR)*, 30,1329.
- Path to Purchase Institute. (2014) In-Store Marketing Effectiveness: Allocating Investments and Managing Insights for Improved Performance.
- Randall, G. (1994). Trade Marketing Strategies: The Partnership Between Manufacturers, Brands, and Retailers. Marketing Series: Professional Development. *Butterworth-Heinemann*.
- Promotion Optimization Institute (2015). Quantifying and Achieving Shopper Marketing ROI.

- Schmutzler, A. R., Jensen, O., & Fassnacht, M. (2015). FMCG marketing and sales organizing trade marketing, category management, and shopper marketing. *Ph.D. thesis*.
- Shankar, V., Inman, J. J., Mantrala, M., Kelley, E., & Rizley, R. (2011). Innovations in shopper marketing: Current insights and future research issues. *Journal of Retailing*, 87.
- Sommer, D. (2010). AIDCO Marketing - 5 Steps to Business Success. *Lulu Enterprises Incorporated*.
- Thain, G., & Bradley, J. (2014). FMCG: The Power of Fast-Moving Consumer Goods. *First Edition Design Publishing*.
- Uniyal, D. P., & Sinha, P. K. (2009). Point of Purchase Communication: Role of Information Search, Store Benefit, and Shopping Involvement. *Indian Institute of Management*

Table 1.

*Description of Independent and dependent variables*

<b>Name of the Variable</b>	<b>Data Type</b>	<b>Role</b>	<b>Time Period</b>	<b>Description</b>
Dollar Sales	Numeric	Dependent Variable	Per week	Test Dollar Sales for positive relationship with the independent variables
Product Demo	Categorical	Independent Variable	Per week	Yes or No if a Product Demo happened or not in store
Digital Coupon	Categorical	Independent Variable	Per week	Yes or No if a Digital Coupon was run or not in store
Shelf Banners	Categorical	Independent Variable	Per week	Yes or No if a Shelf Banners happened or not in store
Price Offs	Categorical	Independent Variable	Per week	Yes or No if a Price Offs happened in store or not
BOGO	Categorical	Independent Variable	Per week	Yes or No if a BOGO happened in store or not

*Note:* Performance of a variable will be determined by the Dollar Sales generated.

Table 2

*Summary of the Dataset*

<b>Time</b>	<b>Dollar.Sales</b>	<b>Product.Demo</b>	<b>Digital. Coupon</b>	<b>Shelf.talk. Banner</b>	<b>Price.off</b>	<b>BOGOs</b>
1/1/2017 : 1	Min:415701	no:221	no :212	no :194	no :127	no :208
1/10/2016: 1	1st Qu.:1821923	yes: 9	yes: 18	yes: 36	yes:103	yes: 22
1/11/2015: 1	Median :1979301					
1/12/2014: 1	Mean :2042288					
1/14/2018: 1	3rd Qu.:2207744					
1/15/2017: 1	Max. :3487173					
(Other) :224						

*Note:* Min and Max details of dataset

Table 3

*Multiple Linear Regression on the full Data set*

Residuals:				
Min	1Q	Median	3Q	Max
-1569223	-213912	-36007	173491	1310514
Coefficients:				
	Estimate Std	Error	t value	Pr(> t )
(Intercept)	2114008	40471	52.236	< 2e-16 ***
Product.Demoyes	435559	137365	3.171	0.001733 **
Digital.Couponyes	42877	102944	0.417	0.677440
Shelf.talk.Banneryes	-249836	72359	-3.453	0.000663 ***
Price.offsyses	-129083	56937	-2.267	0.024337 *
BOGOsyes	50108	89713	0.559	0.577040
---				
Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1				
Residual standard error: 395400 on 224 degrees of freedom				
Multiple R-squared: 0.1186, Adjusted R-squared: 0.09894				
F-statistic: 6.029 on 5 and 224 DF, p-value: 2.948e-05				

*Note:* Impact of variables on Dollar Sales

Table 4

*Multiple Linear Regression on the new dataset post processing on outliers*

Residuals:				
Min	1Q	Median	3Q	Max
-1103027	-218624	-45034	169516	1318774
Coefficients:				
	Estimate Std	Error	t value	Pr(> t )
(Intercept)	2115623	39093	54.118	< 2e-16 ***
Product.Demoyes	434547	132683	3.275	0.001225 **
Digital.Couponyes	24803	99531	0.249	0.803439
Shelf.talk.Banneryes	-255265	69905	-3.652	0.000325 ***
Price.offsyses	-111171	55167	-2.015	0.045085 *
BOGOsyses	45663	86662	0.527	0.598779
---				
Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1				
Residual standard error: 381900 on 223 degrees of freedom				
Multiple R-squared: 0.1227, Adjusted R-squared: 0.103				
F-statistic: 6.237 on 5 and 223 DF, p-value: 1.952e-05				

*Note: Impact of variables on Dollar Sales post processing of outliers*

Table 5

*Multiple Linear Regression on Shopper Marketing Variables*

Residuals:				
Min	1Q	Median	3Q	Max
-1186811	-216128	-53258	141502	1391823
Coefficients:				
	Estimate Std	Error	t value	Pr(> t )
(Intercept)	2071585	29079	71.239	< 2e-16 ***
Product.Demoyes	476734	130915	3.642	0.000336 ***
Digital.Couponyes	-43494	94623	-0.460	0.646205
Shelf.talk.Banneryes	-238614	69860	-3.416	0.000755 ***
---				
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				
Residual standard error: 384200 on 225 degrees of freedom				
Multiple R-squared: 0.1044, Adjusted R-squared: 0.09248				
F-statistic: 8.745 on 3 and 225 DF, p-value: 1.645e-05				

*Note:* Impact of shopper marketing variables on Dollar Sales



Table 6

*Multiple Linear Regression on Trade Marketing Variables*

Residuals:				
Min	1Q	Median	3Q	Max
-1332639	-245196	-78530	181167	1381622
Coefficients:				
	Estimate Std	Error	t value	Pr(> t )
(Intercept)	2105551	37277	56.485	<2e-16 ***
Price.offsyes	-126752	53534	-2.368	0.0187 *
BOGOsyes	3097	90290	0.034	0.9727
---				
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				
Residual standard error: 4e+05 on 226 degrees of freedom				
Multiple R-squared: 0.02459, Adjusted R-squared: 0.01596				
F-statistic: 2.849 on 2 and 226 DF, p-value: 0.05997				

*Note:* Impact of trade marketing variables on Dollar Sales

Table 7

*ANOVA on Shopper Marketing Variables*

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
data_new\$Product.Demo	1	2.091e+12	2.091e+12	14.166	0.000214 ***
data_new\$Shelf.talk.Banner	1	1.750e+12	1.750e+12	11.857	0.000685 ***
data_new\$Digital.Coupon	1	3.118e+10	3.118e+10	0.211	0.646205
Residuals	225	3.321e+13	1.476e+11		
---					
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					

*Note:* Analysis of variance shopper marketing variables on Dollar Sales

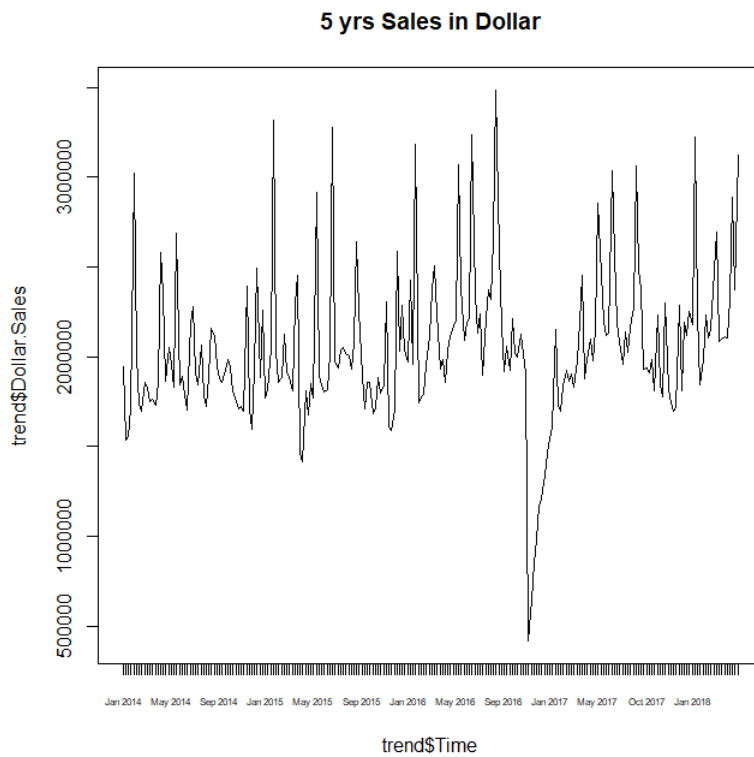
Table 8

*ANOVA on Trade Marketing Variables*

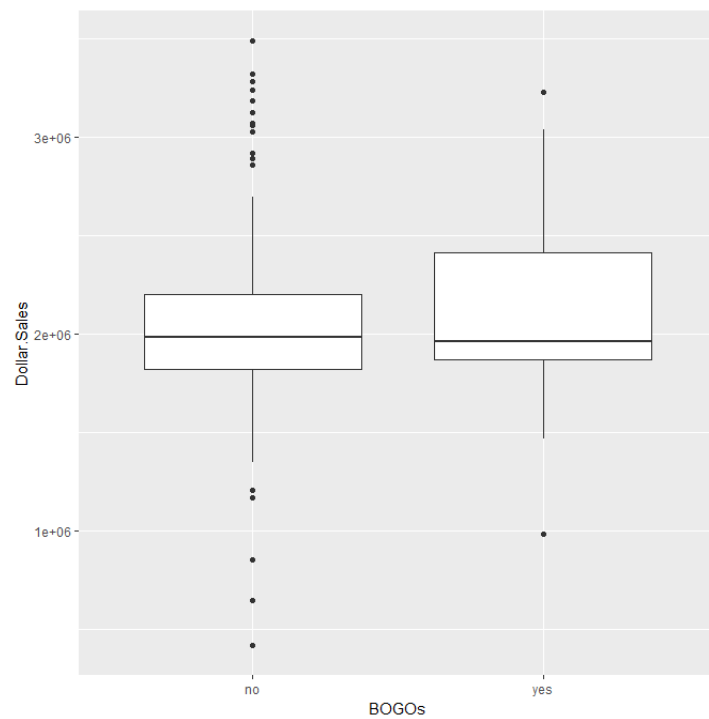
	Df	Sum Sq	Mean Sq	F value	Pr(>F)
data_new\$Price.offers	1	9.118e+11	9.118e+11	5.697	0.0178 *
data_new\$BOGOs	1	1.882e+08	1.882e+08	0.001	0.9727
Residuals	226	3.617e+13	1.600e+11		
---					
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					

*Note:* Analysis of variance trade marketing variables on Dollar Sales

*Figure 1: 5-year Sales trend (in Dollars)*

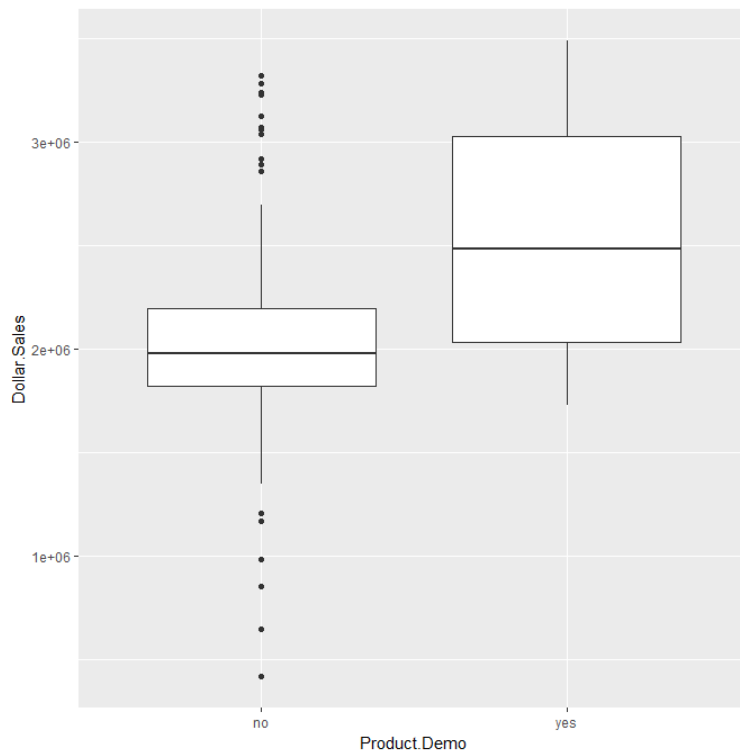


This trend showcases the seasonality and the impact of the various shopper and trade marketing tactics in store.

*Figure 2: Boxplot of BOGOs vs Dollar Sales*

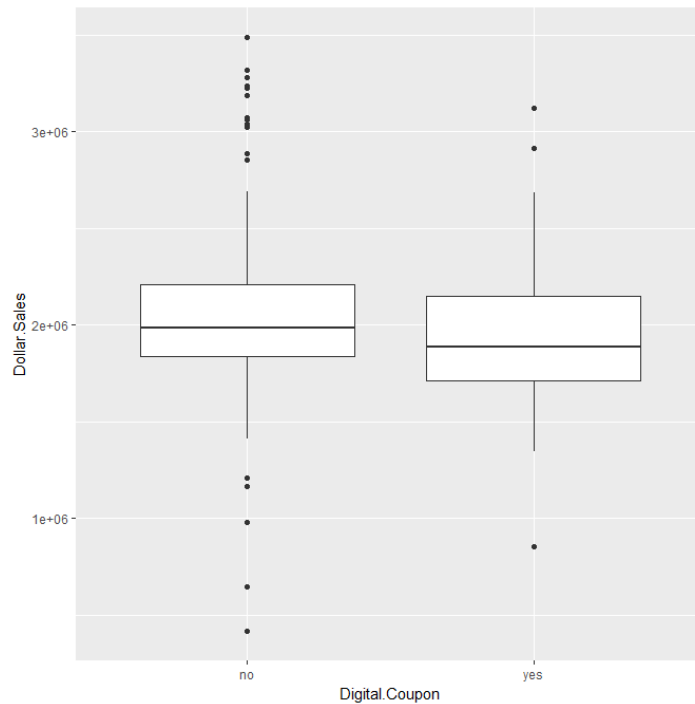
The boxplot shows that the data gets more skewed when BOGOs are executed vs when they are not. But the number of outliers are more when the BOGO is not executed.

Figure 3: Boxplot of Product Demo vs Dollar Sales



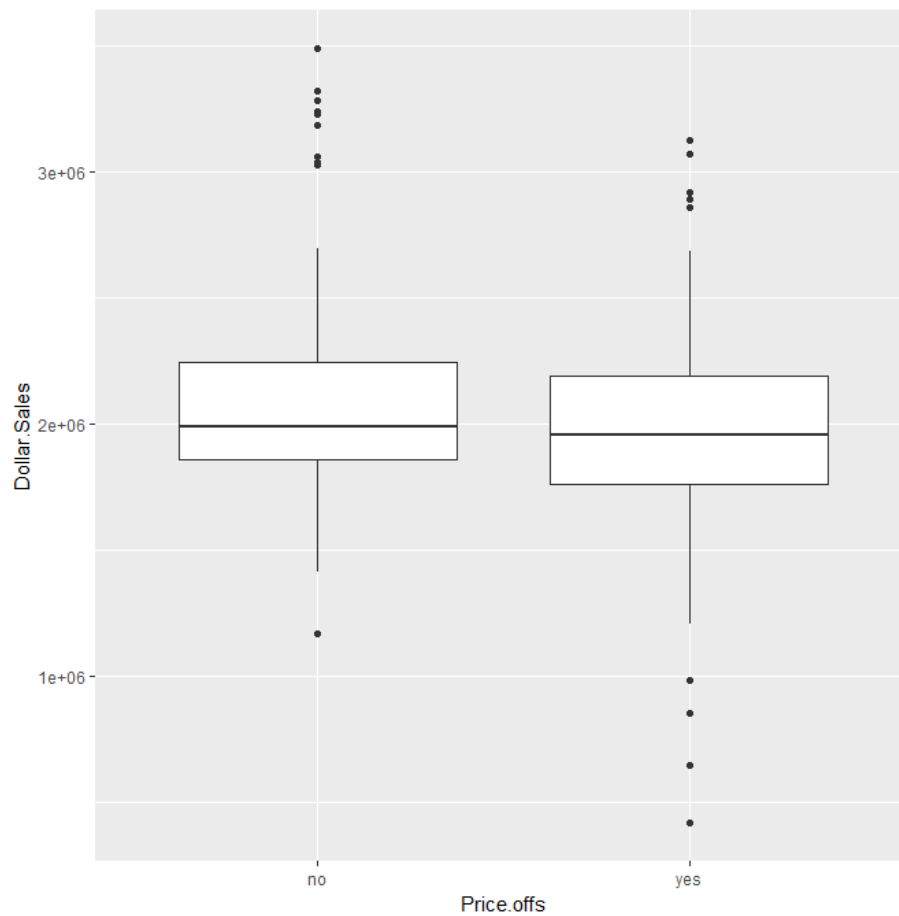
The boxplot shows that the data gets more skewed to the upper side of the boxplot when Demos are executed vs when they are not. But the number of outliers is more when the Demo is not executed.

*Figure 4: Boxplot of Digital Coupons vs Dollar Sales*



The boxplot shows that the data gets more skewed to the lower side of the boxplot when Digital Coupons are executed vs when they are not. But the number of outliers is more when the Digital Coupons are not executed.

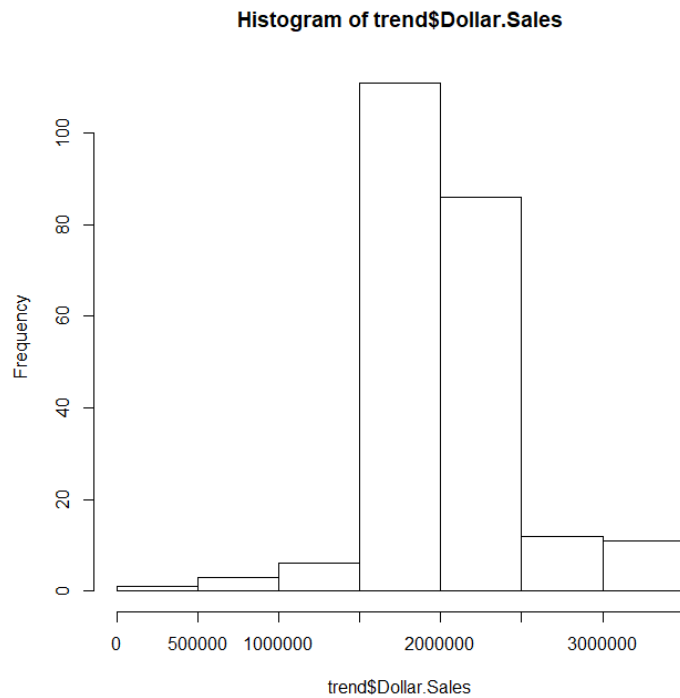
Figure 5: Boxplot of Price offs vs Dollar Sales



The boxplot shows that the data gets more skewed to the lower side of the boxplot when Price offs are executed vs when they are not. But the number of outliers is more when the Price offs are not executed.

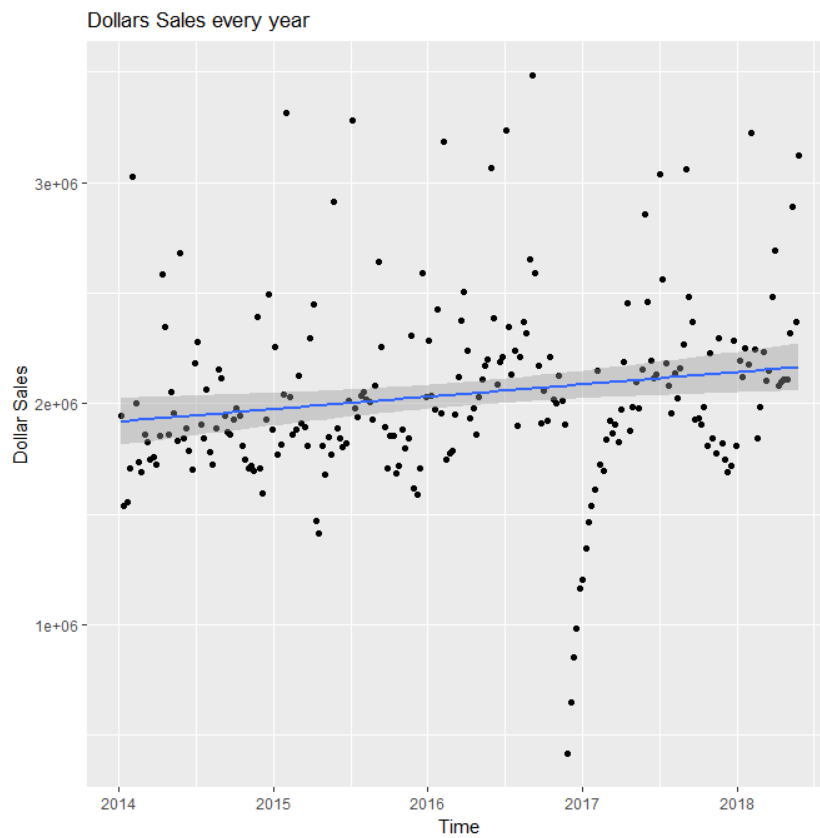


Figure 6: Histogram of Dollar Sales



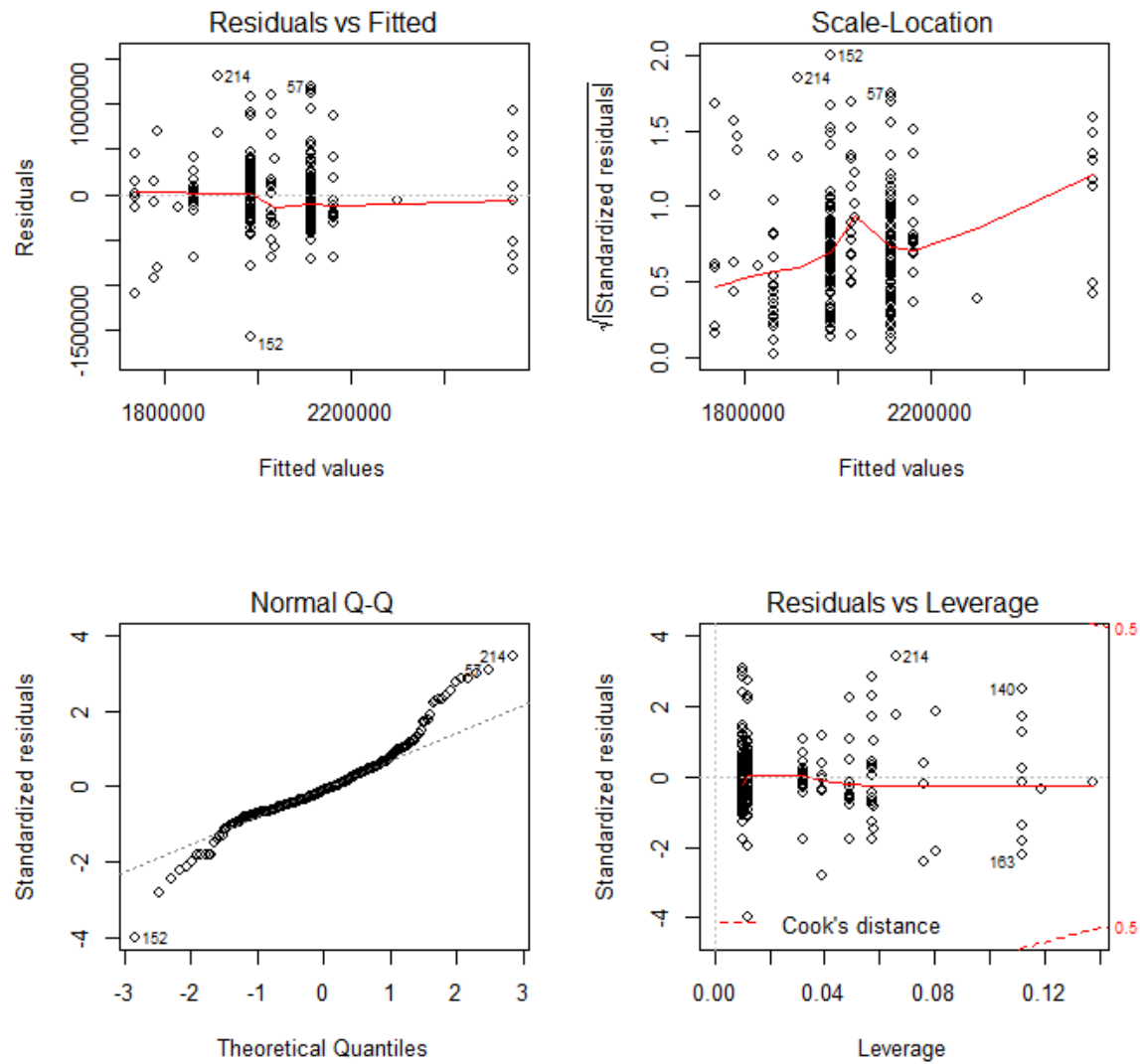
The Histogram shows that the large part of the data is concentrated in the center of the graph and the lower end of the data might have outliers.

Figure 7: ggplot of Dollar Sales over 5 years



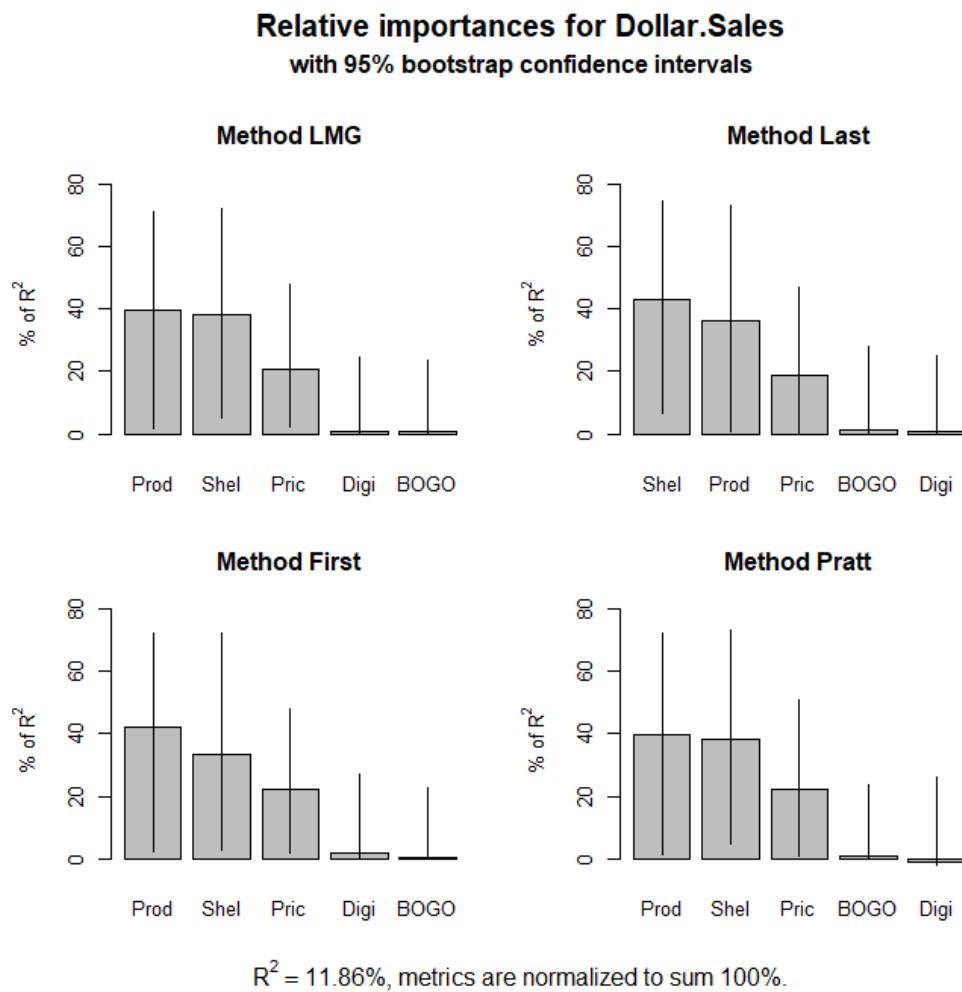
The scatter plot of the Dollar Sales over 5 years' time shows a lot of fluctuations in the data points. There are several outliers that will need to be processed.

Figure 8: Diagnostic plot for regression



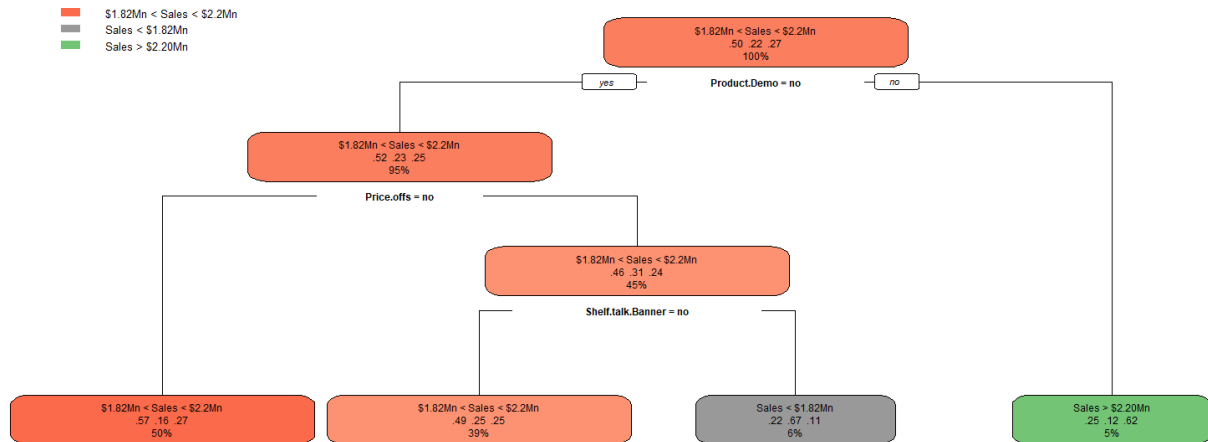
These 4 plots show residuals in 4 different ways, it helps understand the outliers and the performance of the model.

Figure 9: Bootstrap Analysis



This plot shows the relative importance for Dollar Sales on each of the independent variables using different methods.

Figure 9: Decision Tree



The Decision Tree provides insights into the impact of the variables on the Dollar Sales.