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Master Thesis Marketing

**Stock Market Response to New Product Launch and the
Respective Advertising Strategy**

An Event Study Analysis

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Abstract

The study examines the impact of new product launch and the respective advertising strategy for innovative products on the stock price of the company. An event study is used to investigate whether abnormal returns (i.e. stock returns that differ from what the market model predicts) accumulate a few days after the product launch and whether the advertising strategy plays a role in the process of incurring them. The overall sample used throughout the thesis is made out of companies from the Telecommunications & Technology and Consumer & Retail industries and comprises of 91 observations of events (i.e. new product launches) that took place between 2012 and 2016. The results indicate that the cumulative abnormal returns the companies incur around the product launch are not statistically significant in the majority of cases, regardless of the advertising strategy used. However, the abnormal return for products that use emotional advertising are positive and significantly different from zero on the first day after the event (albeit within 90% confidence interval), while functional ads do not have the same effect. Additionally, when the cumulative abnormal returns accumulated on the third day after the event for emotional ads are compared to those of functional, the result is also significant within the 90% confidence interval. This indicates that emotional advertising seems more effective when launching innovations.

Key words: New Product Development (NPD), innovation, product launch, advertising strategy, event study, Cumulative Abnormal Return (CAR), emotional, functional

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1. Introduction

Many studies in the academic literature have investigated the role of bringing innovations to life by developing new products for the success of the company. This success is believed to be a function of the success of the new products that ultimately leads to promoting competitiveness, sustaining incumbents and even creating new markets (Tellis and Sood, 2009). Given that new products can be so crucial for a company's success, the first impression they make is a key determinant of whether they will thrive in the market or fail. Lee and O'Connor point out that the success of innovative products does not only depend on the level of innovativeness but also on how easy it is for customers to comprehend it. Therefore, a product's introduction strategy is of crucial importance for the way the product would be perceived. A new product is as likely to be considered as bringing benefits and value, as well as being risky and uncertain (Lee and O'Connor, 2003). Thus, the positioning for a new product depends to a large extent on the initial message it sends.

However, it is not only the consumer's response that matters when positioning new products. Companies invest huge sums of money to market their innovations and signal to the market their innovative power and competitive advantage. In return, they expect investors to respond with a premium in valuation. A relevant question that follows is – is the stock price affected by the course a company takes in terms of advertising its new product really defining for the way an innovation will be accepted?

Studies have shown that companies do generate abnormal returns when launching new innovative products in the automobile industry (Pauwels et. al, 2004). However, does this hold true for other industries which also release new products frequently and depend on innovations to sustain a competitive advantage and, more specifically, what advertising strategy is more effective in securing premiums in valuation?

As mentioned earlier, researchers examining the nature of developing and commercializing innovations argue that innovative products should be carefully marketed to avoid confusing the customers if valuation gains are to be made. These studies differentiate between two main ways for innovations to be presented (Lee and O'Connor, 2003):

- (1) The company may choose to list its new functionalities and innovative attributes

(2) The company may showcase the benefits that result from the usage of the product

The current study will attempt to investigate whether launching new products have a positive market response and lift the firm's stock price and whether the types of advertising strategy elicit different response. To this end, an event study that strives to examine the effect a certain event induces on the stock price of the company is used in this paper.

Event studies are widely used in the academic fields for measuring such effects (MacKinlay, 1997) as they compare the expected value of a stock price to the actual one on the day a particular event takes place and calculate the difference between the two. If it is positive – one can conclude that there is an abnormal return and investors indeed give premiums for innovation efforts. In addition, to determine the type of advertising used by a company when launching new products, the respective ads are coded using a framework used by (Gopinath, Thomas and Krishnamurthi, 2014) that divides the types of ads into two categories – emotional and functional (attribute-focused).

2. Theoretical Framework

A. Literature Review

New product innovations have been of great interest to an extensive body of research, concentrating on drivers of firm value creation, and more specifically, how investors respond to the company's innovative efforts. Chaney and Devinney (1992) explores whether the announcements, with which companies signal to the market what their innovative efforts are, would materialize in higher returns; Kelm, Narayanan and Pinches (1995), Pauwels et.al (2004), Tellis and Sood (2009) delve into new product introductions, where the innovative product is made available to the market; (Pauwels et.al, 2009), (Hanssens and Joshi, 2010) focus on the importance of the advertising efforts for the new product innovations.

Firm innovativeness is yet another point of interest for the academic marketing field as it is considered that innovations bring positive consequences to various company performance measures – (1) market performance (i.e. sales, revenue), (2) financial position (profitability, Return on Investment (ROI), Return on Equity (ROE), etc.) and (3) firm value (the firm performance in the stock market, including future and current gains) (Kirca and Rubera, 2012). As pointed out by Kirca and Rubera in their meta-analytical review of the innovativeness and firm value relationship,

the classical theoretical explanation lies with the theory of profit extraction, according to which innovations help companies to gain a “quasi-monopoly” position and earn rents above the normal level (Schumpeter, 1942). One way for the companies to maintain these “above-the-normal” return levels is to keep a stable level of innovations, materialized into multiple product introductions (Kirca and Rubera, 2012).

As shown by Pauwels and colleagues (2004), new product introductions are an effective marketing activity that helps firms to maintain better value position (Pauwels, 2004). In their study they compare two marketing activities – new product introductions and sales promotions, and investigate how each of them influences the bottom-line (i.e. profit), top-line (i.e. sales, revenue) and investor performance. As noted by the authors, the new product introductions may be expected to have a continuous impact on revenues and to reward the bottom-line performance by incurring higher demand rates and profit margins and by lowering the costs related to customer acquisition and retention.

What is more notable, however, is the way these introductions actually affect the firm value. Since the Efficient Market Hypothesis states that all the information already available to the market is contained in the stock price (Fama and French, 1992), the authors highlight that information related to the innovation has already been disposed to the investors during the product announcement and, therefore, the stock reaction to the introduction is more or less an “upgrade” of their expectation – the market reacts because the introduction updates their expectation on what level of discounted future cash flows the product would bring. It is considered an upgrade because with new products investors are not likely to be able to fully predict what the worth of the innovation is and, therefore, they form only expectations, which are later on updated.

Thus, studying the automobile industry, Pauwels and colleagues make several important findings for the success and effectiveness of new product introduction as a marketing action. First of all, new product introductions have a significant and progressively increasing influence on firm value above the impact of the earnings of the firm and the general business climate. Secondly, as the market’s attitude towards new products is expected to evolve through time, the acceptance of the product is an important component of its following success and worth further examination. Investors reward companies for their innovations with premium in valuation.

The same topic of excess returns accumulation during a new product launch was also analysed by Kelm, Narayanan and Pinches. The purpose of their study is to investigate how the firm stock reacts to the different types of announcements during a R&D project (Kelm, Narayanan and Pinches, 1995). When it comes to project announcements, two major stages of the R&D project are outlined – innovation and commercialization (with the new product introduction set to mark the beginning of the commercialization stage).

The differentiation of the two stages stems from the fact that investors are believed to value them differently for three major reasons – (1) while the innovation stage leads to positive/negative evaluation of the future cash flow the company could incur, the commercialization provides the investors with grounds to revise the way they evaluate the innovation, (2) different information contexts are faced during the two stages and (3) different evaluation contexts. With regard to the latter, it should be noted that investors focus primarily on how acceptable for the market an innovation project would be in their evaluation during the innovation stage, whereas the commercialization stage assessment depends mainly on how the product is marketed and whether this would help the firm succeed.

All these studies raise interesting questions, such as in what way and to what extent investors react differently during the different type of announcements; are these announcements separate events or should they be considered as integrated, incremental parts (Tellis and Joshi, 2009); how can the firms ensure their project would be considered feasible or what communication strategies would secure successful on the market. Advertising can prove to be an important marketing action in the context of new product innovations, as the communication strategy is not only a method of informing the public of the company's latest creation, but is also what helps companies shape the customer's perception and expectation about the new product (Erickson and Jacobson, 1992), (Cooper and Calantone, 1981), (Parry and Song, 1997).

Advertising spending, itself is yet another factor considered to affect firm value, not only directly, but also indirectly (Hanssens and Joshi, 2010). The indirect effect takes place through an increase in both profits and sales, while the direct one results from the accumulation of brand-related intangible assets. These intangible assets may be varied in nature, but three major categories can be outlined – (1) regulations leading to imperfect competition, (2) Research & Development (R&D) spending and patents and (3) brand equity (Hanssens and Joshi, 2010). On the grounds of the

results of prior research that has investigated what the impact of these brand-related intangible assets is on the firm's value, Hanssens and Joshi expect that advertising affects directly stock returns through two distinctive sources – spillover and signaling.

Spillover is the notion that the brand equity created through advertising (Aaker, 1991) can spill over to the investment behavior, albeit being mainly directed to the customers. This assumption has been backed up by prior research in both the finance and behavioural fields. For example, Frieder and Subrahmanyam argue that since perceived brand quality and brand awareness can increase the demand for a particular stock, it can be concluded that investors tend to prefer stocks with strong brand names (Frieder and Subrahmanyam, 2005). In addition, since people are considered to generally prefer to bet when they have sufficient knowledge on the subject of betting (Tversky and Heath, 1990), investors may tend to choose to hold branded stocks, for which the level of publicly available information is higher (Huberman, 2001).

The other source of impact on advertising– signaling, poses that advertising serves as a signal for the firm's financial health and competitive advantage. As indicated in the article, there is an extensive list of prior research that has found the same effect ((Joshi and Hanssens, 2009), (Gifford, 1997), (Mizik and Jacobson, 2003), (Chauvin and Hirschey, 1993), (Simpson, 2008)).

Hanssens and Joshi's article shows a positive impact of advertising on the firm value due to both spillover and signaling. More importantly the impact is not only indirect – through boosted revenues and sales, that positively affect the stock price, but also direct - by accruing intangible assets, such as brand equity. Thus, the authors give a strong justification for spending on advertising – not only because of the dual effect on the stock price but also because advertising may bring about fruitful results when it comes to investor's impact, even if there is no sufficient consumer impact (Joshi and Hanssens, 2010).

Given that advertising may be such an impactful activity, it is worth carefully considering what advertising strategy the marketing managers are going to implement when launching new products. Consistent with the psychology literature, Lee and O'Connor propose two advertising strategies for new product innovations based on the appeal they convey – functional and emotional (Lee and O'Connor, 2003).

Functional ads are defined as those that display a product's attributes through rational appeals, while the emotional articulate the symbolic benefits the product brings. This distinction has been developed on the basis of Petty and Cacioppo's elaboration likelihood model (ELM), according to which there are two routes of persuasion. On the one side is the central one when a person elaborates a message through extensive cognition. On the other side is the peripheral route that takes place when the individual lacks the ability to process the information and forms their opinion on the basis of message cues that are not relevant for developing a rational stance (Petty and Cacioppo, 1986).

The same bifurcation is also used in the branding literature under the brand concept management (BCM) framework that states that each brand image should be based on a specific brand concept that can be either symbolic (i.e. appeal on an emotional level) or functional (i.e. satisfy practical needs) (Park, Jaworski and MacInnis, 1986), (Reddy and Bhat, 1998). One can, therefore, assume that the advertising strategy for the new innovative product will set the future positioning and brand image of the product – yet, another factor outlining why studying advertising strategy during the launch of new innovative products matters. This assumption is also supported by prior research which states that brand image is associated with the marketing imagery on the product level which is developed by advertising a product (Meenaghan, 1995), and that brand positioning aligns with product promotion (Edema and Fortune, 2014).

As Lee and O'Connor note, it is crucial to identify between these two advertising strategies when communicating innovative products. While the managers' decisions might depend to a large extent on the consumer segment they target and the positioning they strive to achieve (Park, Jaworski and MacInnis, 1986), (Meenaghan, 1995), as well as the type of innovation (Lee and O'Connor, 2003), it is worthwhile investigating how effective the strategies are when it comes to influencing investors.

B. Conceptual Framework and Hypotheses Development

As shown by Pauwels and colleagues new product introductions do increase firm value (Pauwels et.al, 2004). The rationale is that the introduction of the new product updates investor's expectations about it (e.g. after the preannouncement) and, if positive, they respond by giving

premiums in valuation. This is expected to happen as long as there is new information presented (Pauwels et.al, 2004). In addition, product innovations and associated marketing actions also lift the investors' response and are expected to bring higher returns (Pauwels et.al, 2009). Firstly, Pauwels, Srinivasan and colleagues find that innovations positively affect firm value due to the fact that they enhance, accelerate and reduce risk in the firm's cash flows, and raise the residual value, which in return affects the stock price. Secondly, they argue that advertising new product innovations also enhances the cash flows of the company by helping it to set higher prices, build customer loyalty and gain a larger market share. In addition, advertising helps building brand awareness, which is of great importance for innovative products (Pauwels et.al, 2009).

Given the positive and significant effects the authors obtained from their studies (Pauwels and colleagues 2004 and 2009) of the automobile industry, there are still two topics worth considering. Firstly, would the launch of new products bring higher returns in other industries apart from the automobile one that is usually associated with high levels of innovations and R&D spending (Pauwels et.al, 2004)? Secondly, given the importance of advertising when it comes to new innovative products validated in the above studies, what advertising strategy would be more effective during the product launch to position the product?

The current paper attempts to examine the above two questions. To this end, it examines the following:

Firstly, it tests if new product innovations affect the stock price of the company during the product launch. Similar to Pauwels and colleagues, this paper assumes that as long as there is new information presented to the market (i.e. update on the investor's expectations about the product) during the launch, the firm value would change. This expectation is built upon Fama's Efficient Market Hypothesis (EMH) according to which every new information reaching the market exerts an impact on the stock price (Fama, 1969).

In the context of innovation's launches, prior research has found that the launch effect is expected to be positive and to lift firm value due to the fact that investors are now able to predict the net sum of discounted future cash flow based on the innovative product (Pauwels et.al, 2004). This positive expectation is also supported by Srinivasan and colleagues who find that innovations help enhance and accelerate cash flows, as well as reduce risk and, therefore, they lead to a stock price increase (Pauwels et.al, 2009). They also point out that a measure for firm value is the company's

market capitalization which is the product of the number of shares outstanding multiplied by the company's stock price, thereby linking the concepts of abnormal return and firm value. Based on the above it could be concluded that the process is as follows:

The company releases a new innovation, it signals to the market its innovative behavior and potential future positive cash flows, and performance growth expectations are formed. Investors react by giving companies premiums in valuation (i.e. the stock price increases and, consequently, incurs above the normal (expected) returns).

Based on this, the following hypothesis is developed for the purpose of this study:

Hypothesis 1: new product innovations' launch is expected to help the company incur positive abnormal returns and, hence, positively impact firm value.

The current study uses the stock price and measures unexpected changes in its value to identify whether an increase in valuation has occurred. To this end, an event study is conducted to see if there is an abnormal return during the launch of the product, where the abnormal return is the difference between the actual return and the expected return on the stock price of the company (using Fama and French three-factor model as a proxy for what the stock price level should be).

To test the effect of launching new innovative products on the firm value, two industries were selected – (a) Technology and Telecommunication and (b) Consumer and Retail. Similar to the automobile industry, both of these sectors rely on frequent product introductions to maintain a competitive position and, consequently, invest in R&D (PWC, n.d.) In addition, together with the automobile industry they issue the top 10 most innovative companies for the past 10 years and represent the majority of the 50 most innovative companies for 2015 (Boston Consulting Group, 2017).

Secondly, the study examines if advertising new product innovations is important for the company to help it increase its firm value – either directly or indirectly (Hanssens and Joshi, 2010), (Pauwels et.al, 2009), and if it helps not only for shaping consumer, but also investor's expectations, then what advertising strategy will prove to be more effective during the launch of the product?

To answer this question this paper uses the advertising strategy division discussed earlier in the context of new product performance and applies it to the current problem. As mentioned, the same

bifurcation of functional and emotional ads is used also in the branding literature to outline the importance of positioning ads for creating a brand image (Reddy and Bhat, 1998), as well as in other studies focusing on online worth of mouth (WoM) (Gopinath, Thomas and Krishnamurthi, 2014) or green brand positioning strategies (Hartmann, Ibanez and Sainz, 2005).

Lee and O'Connor propose that emotional ads have a stronger positive impact than functional ads on the new product performance. They form this expectation stepping on the Elaboration Likelihood Model (ELM) that states that there are two routes of persuasion when a message is presented – central (issue-relevant thinking) and peripheral (when there is lack of ability to process the information) (Petty and Cacioppo, 1986). Put simply, it is believed that while functional ads focus on the product's superior features and technicalities, emotional ads strive to communicate the benefits and positive feelings a product would bring and the needs it would meet (Lee and O'Connor, 2003). Lee and O'Connor find that the more innovative a product is, the more positive the impact of an emotional advertising strategy is on the product performance. This study adopts the same rationale that it is easier to process (through the peripheral route) and form a positive expectation towards an innovative product during its launch if it communicates the positive feelings it elicits and applies it to the context of the impact on the stock price.

That is, as innovations might easily be misunderstood, it is more effective to advertise the emotional benefits they create during the product launch rather than the functional specifications of the product and this information is important not only for the end-consumer but also for the investor investing in the company as they also form expectations for the success of the product when it is launched (Pauwels et. al, 2004), (Kelm, Narayanan and Pinches, 1995), (Tellis and Joshi, 2009).

Hypothesis 2: Emotional ads during the product launch are expected to lead to higher returns.

1. Data Collection and Methodology

A. Independent Variables

For the purpose of this thesis, I focused on the Technology and Telecommunication and the Consumer and Retail industries. The companies included in the sample were extracted from the lists of "Most Innovative Companies" for the past five years prepared by the Boston Consulting

Group (BCG). The agency is a leading worldwide management consultancy provider that each year prepares a report covering the major innovation trends over the past 12 months and the top 50 most innovative companies. For instance, the group identified four major innovation trends for 2015 – innovation speed, lean innovation, technology-enabled innovation and search for adjacent growth. These are the four common interrelated trends that were used as a benchmark for identifying the most innovative companies for 2015.

The rank is developed on the basis of a survey conducted among innovation executives who respond to questions related to both the breadth and depth of innovation within a company (Boston Consulting Group, 2016). However, innovation is based mainly upon the extent to which companies create and deliver value to their customers through their innovative products. Prominent examples for innovation leaders from the Technology and Telecommunication industry are Apple, Google and Microsoft, while from the Consumer and Retail – Nike and Amazon. All of these companies were included in the BCG rank list of innovation for the past ten years, which indicates strong focus on research and development and other innovation practices among them. As a Fortune poll also concluded that innovative companies incur the highest shareholder returns (Jonash and Sommerlatte, 1999), a set of some of the most innovative companies is used in the current study to form the sample of product launches to be examined and to test their effect.

The requirement for each product to be included in the list was that the product was released in the past five years and was innovative and significant enough, so that an effect on the stock price could be expected (in line with previous studies - (Pauwels et. al, 2004), (Pauwels, et. al, 2009), (Spanjol and Sorescu, 2008). Using the group's rank lists from the past five years – from 2012 to May 2016 (thus avoiding selection cut-off), a set of firms was extracted from the aforementioned industries and an inventory of flagship products was created. Another reason for choosing this time frame is that the availability of public ad data is limited for prior periods.

In cases where the company included in the sample is a house of brands and the product is from one of its sub-brands, the latter was chosen to be a leading brand and the product it presents - a flagship one. For instance, the L'Oreal Group owns a big portfolio of cosmetic brands and is one of the biggest companies in the world. One of its most important brands (i.e. representing a large chunk of the company's profits) with regular innovations is L'Oreal Professional (L'Oreal Group, 2015). Therefore, including new innovative products of this brand that were advertised for their

innovation (such as L'Oréal Professionnel Pro Fiber) is relevant given that they are conforming to the selection criteria.

After creating the inventory of products, release dates for each of them was found together with their accompanying marketing campaigns during or around the launch. The release dates were mainly gathered from the corporate brand's newsrooms, where press releases for the specific products with exact release dates were extracted. In cases, where no exact dates were available in the press releases, other sources of information were used, such as review websites or blogs. To find data for the marketing campaign variable, a collection of videos was taken from the company's official YouTube channels. The requirements for each video to be included in the sample were that the channel is official and maintained by the company itself, the video was published around the launch date and the advertisement clearly presented what the advertising strategy around the launch was. Thus, credibility was ensured with regard to the results found.

Ads Coding

Following the categorization proposed by Gopinath and colleagues, the advertisements of new products were categorized as either attribution-oriented or emotion-oriented (Gopinath, Thomas and Krishnamurthi, 2014). The distinction is made on the basis of the message sent by the commercial. That is, if the advertisement has a rational appeal and, consequently, its emphasis is on attributes, it is considered attribute-oriented and if it focuses on emotional appeals that strive to elicit customer response, it is considered emotion-oriented. To further clarify the distinction between the two, the authors present two separate types of commercials – the attribute-focused one that lists all the features and characteristics of a product, and the emotional one that does not explicitly provide any such information.

This classification was also used by Lee and O'Connor when testing the impact advertising strategies have during new product launches on new product performance. The advertising strategy is defined as the advertising campaign during the product launch and is also distinguished to be based on either emotional or functional appeals. As mentioned earlier that differentiation is made on the basis of the Petty's & Cacioppo's Elaboration Likelihood Model (Lee and O'Connor, 2003). Thus, elaborating further on this model, the authors define two types of ads depending on

the content message – functional and emotional. While the former strives to represent objectively the product’s attributes and features, and thus correspond to the central route, the latter demonstrates symbolic and emotional benefits associated with the product, and thus take the peripheral route.

Unlike Gopinath and colleagues in their study on the relation between the content of online word of mouth, advertising and brand performance, no printed ads are examined, but video ads are collated and categorized into either functional (attribute focused; rational appeal) or emotional (emotion focused; emotional appeal) (Gopinath, Thomas and Krishnamurthi, 2014) – see Appendix 2 for the full list of products, launch dates and ads.

B. Control and Dependent Variables

To control for other factors that may exert an impact on the company’s stock price during the launch of the innovative product, a set of control variables is included in the model in line with prior research. The variables selected to control for other factors that may exert an impact on the stock price are:

- (1) Firm size
- (2) Research & Development (R&D) spending
- (3) Advertising intensity

Firstly, small firms are expected to outperform big firms when it comes to big stock market leaps as the investors expect them to be less innovative than the big ones (Chaney and Devinney, 1992). Innovativeness is also more critical for small firms as it signals to the investors that they have the potential to grow and the stock returns incurred are expected to be higher because each event (e.g. product launch) is considered to be more prominent for the small firm (Kirca and Rubera, 2012).

Secondly, companies that invest more in R&D are also expected to give more innovative results and, thus, the investor response may be lower as the company is expected to be innovative (Chaney and Devinney, 1992).

Finally, the third control variable (Advertising Intensity) is selected to control for the level of advertising of a product and is defined formally as ‘level of advertising targeted to at a consumer

audience' (Tellis, 2004), (Kirca and Rubera, 2012). Prior research indicates that advertising intensity helps companies broaden the gap between sales and costs as it helps companies develop a 'reputation premium' which gives them the opportunity to set higher prices than competitors (Erickson and Jacobson, 1992). This, in turn, increases the chance that the stock price of the company will be higher given the higher margins the company is enabled to gain.

To collect the control variables, Yahoo Finance and Ycharts are used as they provide a summarized presentation on:

- (a) the annual level of the size of the firm measured by the number of employees the company employs
- (b) the annual R&D spending level
- (c) the annual Marketing and Sales Expenditures¹

Where information gaps exist, more extensive research is conducted and the annual reports of the companies are examined in order to find the needed data.

With regard to the dependent variables Kenneth French's website at Dartmouth is the information source for the Fama and French 3-factor model, which is used to calculate proxy levels for what the level of the stock price during the launch should be depending on the market fundamentals. This data is used to conduct an event study to test the effect of an event (the launch of new innovative products) on firms' returns.

It should be noted that for companies that are not listed on the stock exchanges - AMEX, NASDAQ or NYSE, Fama and French also provide historical data for European, Japanese and Asian Pacific stock markets. In this study's sample these companies are Samsung Electronics and Sony Corp.

C. Methodology

To capture the effect of the new product launch, an event study is employed, similar to the one used by Chaney and Devinney who explore the value gains brought by product and service

¹Some companies choose to reveal their overall General and Administrative Expenses, which cover the amount spent on Sales & Marketing. When such is the case, the former was selected as a proxy of the Sales & Marketing expenses.

innovations as measured by the excess return accumulated after such announcements. They use daily stock returns to grasp the single event's effect, as the use of monthly returns is one of the major limitations of previous research focusing on new products (Chaney and Devinney, 1992). It is considered a limitation because the event window created with monthly stock returns is too broad to study the effect of a single event on the company's performance, independently of other stock return drivers (Chaney and Devinney, 1992).

An event study could be defined as a method that strives to measure the effect of a single event on the value of the firm (MacKinlay, 1997). It is based on the Efficient Market Hypothesis (EMH) which poses that all the information that is publicly available about a company is already reflected in the stock price (Fama, 1998). Consequently, all security price changes should reflect new information. Thus, the event study is able to capture and measure the immediate response of the market after new information is released and the economic impact of the event is assimilated (MacKinlay, 1997).

The event study methodology has a long history (MacKinlay, 1997) and has been used in a variety of cases and marketing- and non-marketing-related studies, including (Chaney and Devinney, 1992), (Eddy and Saunders, 1980), (Swyngedouw and Horsky, 1987), (Lane and Jacobson, 1995). In the current paper, this research method is chosen despite the critique noted by Pauwels and colleagues (2004) that some marketing activities, such as product introductions, take several weeks to be fully assimilated by the market (Hanssens and Joshi, 2010).

The reasons for selecting this methodology are two. Firstly, the purpose of the paper is to investigate the differences in the immediate response that a specific marketing campaign elicits once a new product is released (that is, to what extent investors respond immediately to information related to new product launches and the magnitude of the response). Secondly, as the products released are usually preannounced, which is information that has already been given to the market regarding the product (Pauwels et. al, 2004), it is assumed that information regarding the launch date is already incorporated in the firm value due to the preannouncements and the market's new response would be a reflection of the update of the market's forecast related to the firm's future cash flows (Pauwels et. al, 2004). The short-term reaction, its valence and magnitude, is what the current study tries to investigate.

For the purposes of this paper, daily stock returns are used to study the differences in the effect of the new product release depending on the type of advertising campaign employed. To ensure robustness, two industries are included in the sample. This approach deals with the limitations of studying only one industry, such as lack of validation into other industries (Pauwels et. al, 2004). The study also uses three event-window periods: (1) one-day-event window ($t = -1, 0, +1$), (2) three-day-event window around the release date of the new product ($t = -3, 0, +3$) and (3) five-day-event window ($t = -5, 0, +5$) to examine both pre-event and post-event returns that may result from the leakage of information prior to the event and the market's inability to immediately react to the event (MacKinlay, 1997).

The procedure used in the current paper to conduct the event study is the one set out by (MacKinlay, 1997). In his framework, the author outlines a step-by-step procedure and provides guidelines towards the successful execution of the study. This procedure commences with the selection of the event of interest and the estimation of an event window period.

Then, a selection criteria for the inclusion of a particular firm in the study should be developed. For the purposes of this study, the selection criteria include industry membership, listing on a stock exchange (so that the Fama and French three-factor model can be used) and innovativeness of the company (in this case this is the inclusion in the BCG's list of "Most Innovative Companies").

After the events, the required event windows and the firms constituting the study were selected, the abnormal returns were measured to facilitate the appraisal of the effect of the event on the firm value. The abnormal returns can be defined as the extent to which security returns differ from the expected amount, assuming the event had not taken place (Brown, 1980). Thus, for firm i the abnormal return at event date t would be equal to

$$AR_{it} = R_{it} - E(R_{it}|X_t)$$

Where AR_{it} denotes the abnormal return of security i at period t , R_{it} is the actual return the security reached and $E(R_{it}|X_t)$ is the normal (expected) return, containing conditioning information X_t that determines the value of the normal return (MacKinlay, 1997). There are two major methods for modeling the normal return – (1) Constant Mean Return Model, according to which the mean return of a given security remains constant over a certain period of time and (2) market model that assumes that the market return and the security return are related linearly (MacKinlay, 1997). The

latter builds upon the Constant Mean Return Model, as it can improve the chance of detecting abnormal returns by limiting that part of the return that is connected to market return variation (MacKinlay, 1997) and, therefore, it is generally considered more precise and is more commonly used (Brown, 1985). It is also the one used in the current study, similarly to Devinney and Chaney.

When the market model is selected, the next step is to estimate the market model parameters for a period prior the event window, called estimation period, so that the expected return can be calculated by plugging them into the equation used to calculate the normal return for the event period (MacKinlay, 1997). The formula for every security within the model is

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

Where R_{it} and R_{mt} are the security return and the market return, respectively, for period t , α_i and β_i , are the market model parameters and ε_{it} is the error term that reflects the abnormal return (MacKinlay, 1997).

In the current paper the market model is selected for the aforementioned reasons and an estimation period of 400 days prior the event window is chosen. This estimation period is assumed to be large enough given that shorter periods are used by other research that also rely on daily stock returns such as (Brown, 1980), (Dyckman, Philbick and Stephen, 1984) and (Brown, 1985) and at the same time the problem with the additional variation in the return is tackled as proposed by (MacKinlay, 1997). To calculate the market model parameters and to create a time series of expected returns, the Fama and French Three Factor model is incorporated, similar to (Tellis and Sood, 2009), who also seek to estimate the value innovative projects create and use an event study for that purpose.

Once the abnormal returns are calculated, the next step described by (MacKinlay, 1997) is to design the testing framework for the abnormal returns, which involves defining the null hypothesis and defining procedures for aggregating the abnormal returns, so that conclusions in relation to event can be made. As pointed out by (MacKinlay, 1997), there are two dimensions of aggregation – through time and across securities. The former is used to find the aggregate effect of an event over a period comprising multiple days that is the aggregate effect on the stock return over the event window period, while the latter allows for aggregation across observations of the event (MacKinlay, 1997).

The aggregation through time is conducted by calculating cumulative abnormal returns, which is the sum of all abnormal returns over the event window and is done using the formula:

$$CAR_i(t1, t2) = \sum AR_{it}$$

The aggregation through securities, on the other hand, is the average of all securities across an observation and can be found using the formula:

$$AAR_t = 1/N \sum AR_{it}$$

Finally, cumulative average abnormal return (CAAR) can be calculated as the average of all the CAR to provide a better idea over the aggregation effect of abnormal returns, which may be very beneficial in situations when the impact of the event does not materialize on the event date precisely (Fama, 1969). The final results should also be used to understand the presence or lack of presence of event impact on the security in question (MacKinlay, 1997). Table 1 presents a more detailed explanation of each measure of the abnormal return and how it is used in the event study analysis following the framework proposed by MacKinlay:

Table 1: Measures of Abnormal Return and their role in the analyses

Measure	Description	Role	Analysis/Usage in the study
Abnormal Return (AR)	The difference between the actual return and the expected return (expectation based on market parameters) at the event day $AR_{it} = R_{it} - E(R_{it} X_t)$	Identifies whether the company return deviates from the one predicted by the market on the day of the event and on each day of the event window	Used to calculate AAR and CAR
Average Abnormal Return (AAR)	The average of all ARs across observations for each day of the event window $AAR_t = 1/N \sum AR_{it}$	Used to analyse the overall effect across observations of an event on each day separately	Univariate analysis – t-test; Displayed on a chart to showcase aggregation through securities
Cumulative Abnormal Return (CAR)	The accumulation of the ARs on each day of the event window; for example when CAR (-5/0/+5) is used, the CAR on the fifth day after the	Used to draw inferences about what the aggregate effect of an event is over time (i.e. prior and after the event) in order to account for both information	Univariate analysis – t-test; Multivariate Analysis –

	event contains the sum of all AR from the previous 10 days plus current day $CAR_i(t1, t2) = \sum AR_{it}$	leakage and information assimilation	regression analysis;
Cumulative Average Abnormal Return (CAAR)	The average of all CARs for each day of the even window for all observations. Equivalently, the aggregation over the event window of AAR $CAAR_i(t1, t2) = 1/N \sum_{i=1}^N CAR_i(t1, t2)$	Allows for inferences to be made on the general effect of an event across observations and how it accumulates over time	Displayed on a chart to showcase aggregation through both securities and time and supplement making inferences for an event's overall effect

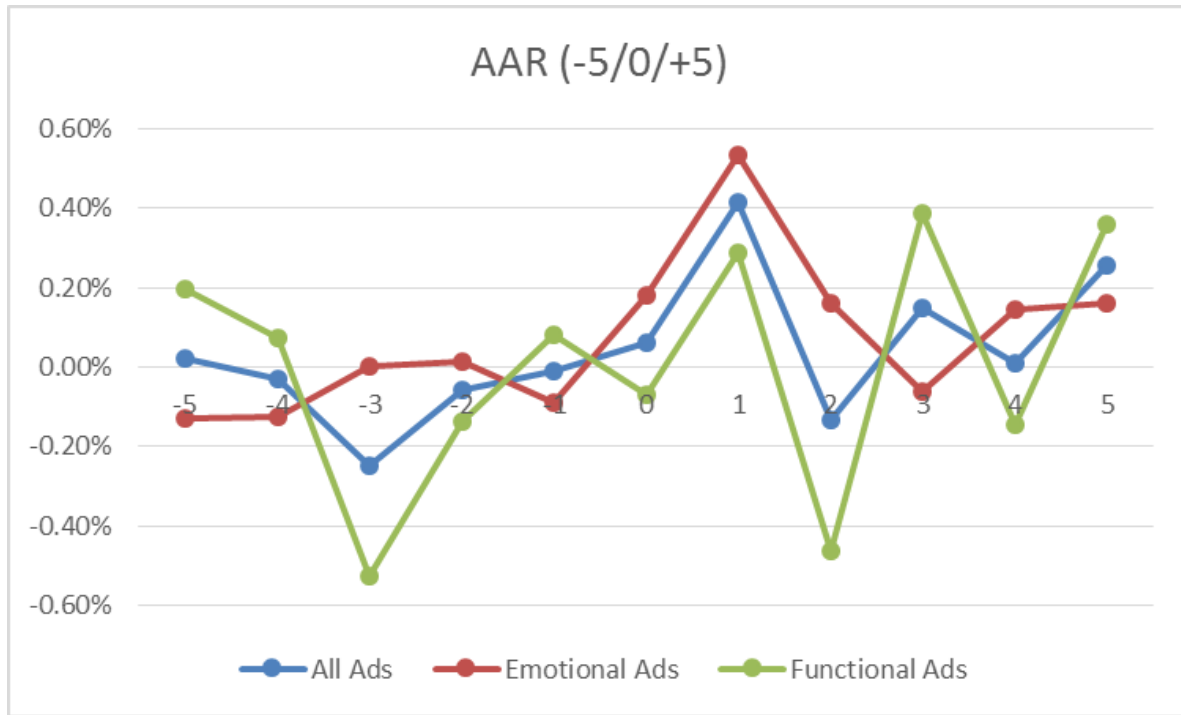
To find which advertising strategy is more effective in the context of new product introductions, i.e. more prone to lead to higher excess returns, the abnormal and cumulative return levels of the emotional vs functional ads are compared and examined. The cumulative returns are selected for the cross-sectional analysis as they provide more inference about the effect of an event, while the abnormal returns are observed on a day-by-day basis in a univariate analysis to investigate the effect on particular days.

2. Empirical Results

A. Univariate Analysis

The Average Abnormal Return (AAR) of all the firms included in the sample, as well as the averages of those firms from the sample that employed an emotional and a functional advertising strategy for the new product, is calculated to showcase the aggregate effect across securities. Figure 1 showcases the average abnormal returns of 11 days around the launch day.

Figure 1: Average Abnormal Return of New Product Launches from day -5 to day +5



The total number of observations (i.e. ‘All Ads’) is 91, while the two samples of the abnormal returns of emotional and functional ads is made up of 48 and 43 observations, respectively.

As the graph above illustrates aggregation across securities, it could be concluded that, on average, the products with functional ads do not produce any abnormal return on the launch date of the new product, while the emotional ads reach 0.2% abnormal return. There is no real increase before the launch date, while one day after the launch (when the information has already been made available to the market) all the products face their highest abnormal return levels for that particular window. The reason for this can be related to the fact that some firms may release their advertisements after the market has been closed (i.e. the market did not have time to react on the same day). Again, the products for which an emotional ad strategy has been employed outperform the functional ad products with 0.53% vs 0.29% abnormal return. The returns decline rapidly on the very next day (functional ads drop to -0.46% abnormal return, while the emotional ads remain positive but just slightly above 0 at 0.16%). Interestingly, the abnormal return for functional ads drops down just before the launch date on day -3. This would have been an interesting research questions had the results been significant.

According to the Efficient Market Hypothesis (EMH) when new information reaches the market place, this is immediately reflected in the stock price (Fama, 1969). In the current study, the product launch and the accompanying product advertisement that is used to market the new product and communicate its benefits is the new information. It is visible, however, that on the very launch date, it is only the products with emotional type of ads that manage to incur any excess return (albeit minor), while the functional ads do not cause any disruption of the market and the price stays the same as the level predicted by the 3-factor market model. As the product launch date is considered new information, to the extent it updates investor's expectations about the product, incurring abnormal return would be an anticipated outcome (Chaney and Devinney, 1992).

The reason for the lack of such effect in the case of the products with functional types of ads on the launch date might be attributed to the fact that the preannouncement ad and the launch ad may not differ in the type of information that they deliver to the market, i.e. there is no update on the information about the product. At the same time, emotional ads strive to trigger specific emotions towards a new product (Gopinath, Thomas and Krishnamurthi, 2014), being innovative or not, so they deliver new expectations to the investors about the product and how it will be positioned.

To test whether the abnormal return percentages achieved by the different types of ads and by all ads combined are statistically significant and differ from 0 (as the EMH would propose, hence $H_0=0$), a one-sample t-test is the deployed.

Table 2 showcases the results from the one sample t-test. It is evident that on the launch date the abnormal returns are too close to 0 and do not differ significantly, as indicated by the t value. On the first day after the product launch, however, the products with emotional types of ads manage to incur an abnormal return that differs from 0 significantly at a 90% confidence interval.

Table 2: One Sample T-Test – Abnormal Return on Day 0 and Day 1

Launch day					
	t	Sig. (2-tailed)	N	Mean	Std. Dev
All ads	0.331	0.742	91	0.061782	1.78196
Emotional	0.555	0.582	48	0.179346	2.23901
Functional	-0.423	0.675	43	-0.06945	1.0775
Day 1					
	t	Sig. (2-tailed)	N	Mean	Std. Dev
All ads	-0.074	0.941	91	-0.00943	1.21345
Emotional	1.908	0.063*	48	0.532563	1.93383
Functional	1.552	0.128	43	0.286717	1.21133

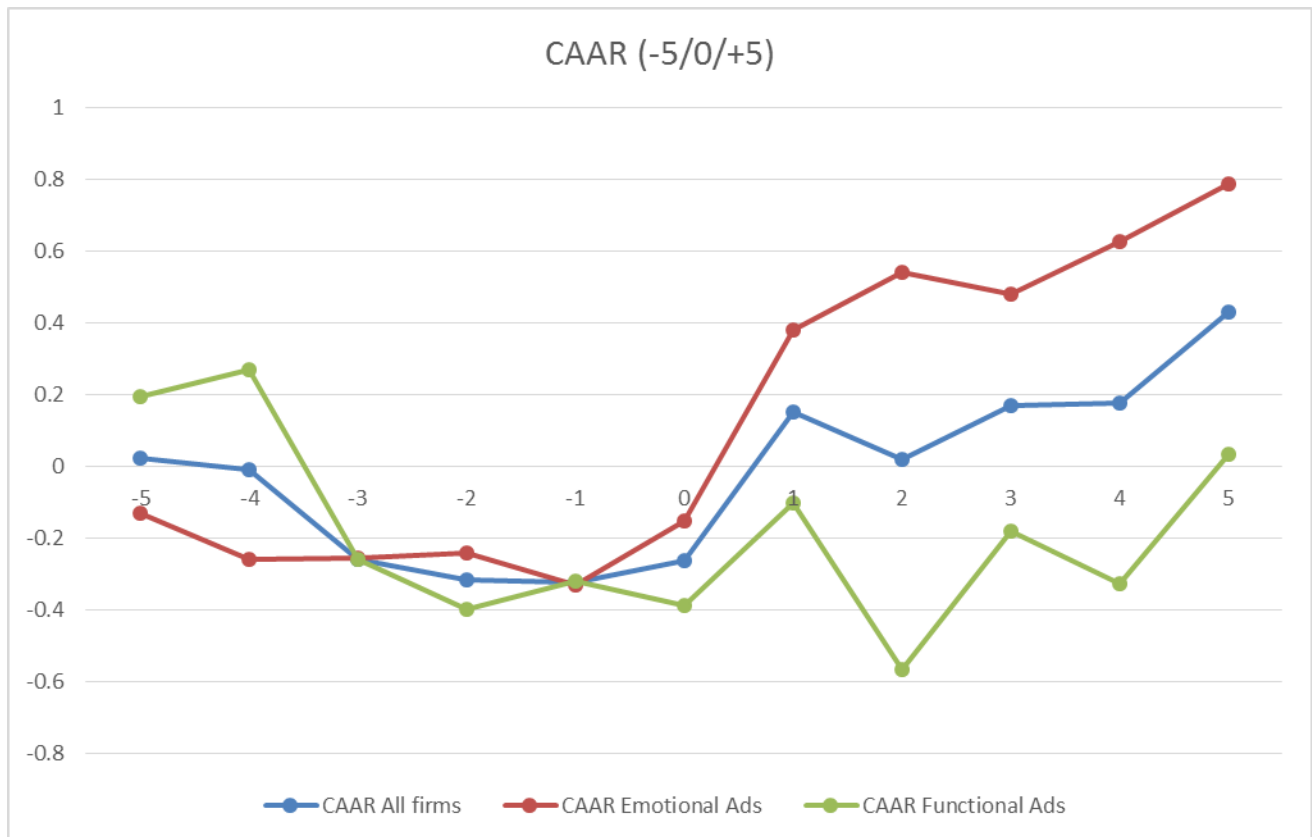
**Significant when the confidence interval is 90%*

It is an interesting observation that even the emotional ads do not lead to significant results on the launch date and affect the market on the next day. As previously mentioned, this can be due to the fact that the ads are first aired at a time after the market is closed, hence the update of the information takes place not when the product is launched (this information has already been made available on the preannouncement date), but when the advertisement was aired. This supports the observation that emotional advertisements do affect stock prices (albeit slightly). This observation partially supports hypothesis 2. However, it does not support the hypothesis that the new product innovation launch itself has an impact on the stock price and the null hypothesis cannot be rejected.

As the AAR provides a measure of the average event effect only across observations, observing how returns accumulate through time is also needed. This is executed by calculating the Cumulative Abnormal Return (CAR) security by security and then taking the average of each observation. The product gives us the Cumulative Average Abnormal Return (CAAR) and is considered more useful when making inferences about a particular effect as this approach aggregates both through observations and through time (McKinley, 1997).

Figure 2 displays the CAAR of all the observations in the sample for 11 days around the launch day, as well as for the products employing an emotional ad strategy and functional ad strategy.

Figure 2: Cumulative Average Abnormal Return of New Product Launches from day -5 to day +5



One can observe that CAR of all ads become positive on the first day after the announcement when it reaches 0.15%, while the CAR of emotional ads is 0.38%. The emotional ads continue to increase until they reach their peak on the fifth day after the launch with 0.79%. At the same time, the CAR of functional ads has hardly any positive cumulative abnormal return value on the fifth day and remains either negative or around 0 for the rest of the days. On the second day it even drops down to $-0,56\%$.

The above results are in line with what the abnormal return tests showed and indicate that the product launch does lead to abnormal return that aggregate through time, but very slightly. In addition, only the emotional type of ads remain stable and follow an upward trend that reaches its peak on the fifth day.

To understand whether these results are significant and whether the null hypothesis that the product launch date does not affect the stock price and that the emotional ad effect does not differ from

functional ad effect, a one-sample t-test is used to see if the observation means are statistically significant from 0. For more robust analysis to check whether the launch and the ad have an immediate or delayed impact, three event windows are considered (-5/0/+5), (-3/0/+3) and (-1/0/+1). Table 3 presents the results.

Table 3: One Sample T-Test – Cumulative Abnormal Return

		All Ads	Emotional	Functional
CAR (-5/0/+5)	T value	0.777766	0.991850789	0.045810311
	Sig.	0.438747	0.326349397	0.963678568
	N	91	48	43
	Mean	0.432813	0.788551622	0.03570983
	St. Dev	5.308502	5.508132831	5.111622513
CAR (-3/0/+3)	T value	1.012734	0.046888348	0.786360772
	Sig.	0.316265	0.96281931	0.433699143
	N	91	48	43
	Mean	0.193081	0.738750183	-0.416038667
	St. Dev	4.533264	4.5775907	4.457318838
CAR (-1/0/+1)	T value	1.644564	1.41125595	0.843514417
	Sig.	0.103548	0.164754867	0.403719468
	N	91	48	43
	Mean	0.468747	0.622702322	0.296890397
	St. Dev	2.718996	3.056999149	2.30801097

As is visible, none of the values are significant and the null hypotheses that the product launch of innovative products does not affect the stock price and leads to premiums in valuation cannot be rejected.

Even though insignificant, it is worth testing whether the values reached by the emotional ad products are higher and differ significantly from the functional. To this end, another t-test analysis is performed with the three types of event windows, comparing the mean of the emotional ads to the functional one (Table 4).

Table 4: One Sample T-Test – Cumulative Abnormal Return – Emotional Ads vs Functional Ads

CAR_emotional - CAR_functional		
	T value	Sig.
CAR(-5/0/+5)	0.947	0.349
CAR(-3/0/+3)	1.748	0.087*
CAR(-1/0/+1)	0.738	0.464

* Significant when the confidence interval is 90%

The table above indicates that the CAR (-3/0/+3) for products with emotional ads is the only one that differs from the CAR of the functional-ad products, given that the confidence interval is 90%. This result is in line with the rationale mentioned earlier that the emotional ads are those that actually deliver updated information. The results indicate that this information builds on up until the third day after the launch date. This also provides a partial explanation of hypothesis 2 because the level of cumulative abnormal return incurred on the third day by emotional ads is significantly different from the one reached by functional ads and it is also positive. However, since the return itself is not significant and, therefore, it could not be concluded that the cumulative abnormal returns are significantly different from 0, neither the emotional type of ad, nor the functional help the company gain a premium.

These results lead to the conclusion that there are other factors that affect the stock price and their effect is worth examining.

B. Multivariate Analysis

Summary Statistics of Control Variables

Due to data availability issues, the amount of control variables collected does not coincide with the number of observations gathered. That is, for the observations initially included in the sample (91) there isn't a sufficient number of corresponding control variables, meaning that for tests that require the inclusion of all of the variables together, the sample decreases to 50 observations. The reason for this is that some of the control variables, i.e. Sales & Marketing Expenditures and Research & Development, represent information that some companies might prefer to not disclose

since they want to keep their competitive advantage in a specific area or they try to prevent competitors from inferring where they try to direct their marketing efforts.

Table 5 presents descriptive statistics for the three control variables used in the multivariate analysis for all the observations in the samples 'All ads', 'Emotional ads' and 'Functional ads'. As explained by (Chaney and Devinney, 1992) and (Kirca and Rubera, 2012) 'Firm size' is used to control for the factor that smaller firms are expected to outperform larger firms as investors are less likely to predict that their marketing endeavors would be successful and as they are more prone to risk. One should note, however, that all of the firms included in the current sample are considered big in accordance to the definition standard stating that the number of employees must be (i.e. firm that employ more than 500 employees are considered big (Beck, Demiruguc-Kunt and Maksimovic, 2005)). However, table 4 showcases that the sample is varied enough and a size effect still could be measured given the variable is significant.

Another interesting observation is that companies that employ emotional type of advertising strategy tend to spend more on R&D and Sales & Marketing than those that choose a functional advertising strategy. In accordance with prior research the former are expected to be more successful on the stock market because when companies spend more on R&D and Sales & Marketing they signal to investors that they are innovative and competitive and can, consequently, incur higher returns (Chaney and Devinney, 1992), (Tellis, 2004), (Erickson and Jacobson, 1992).

Finally, it should be taken into account that the 'Emotional ad' sample is right-skewed when it comes to R&D and Sales & Marketing, as the median value is bigger than the mean one. This means that there could be a particular company that spends more on these and also prefers an emotional advertising strategy for its new products.

Table 5: Descriptive Statistics of Control Variables

ALL ADS			
	Size <i>No employees (thsd)</i>	R&D <i>mln \$</i>	Sales&Marketing <i>mln \$</i>
Mean	137	5,218	7,480
Median	105	4,564	6,010
St. Dev	89	4,037	4,734
EMOTIONAL ADS			
	Size <i>No employees (thsd)</i>	R&D <i>mln \$</i>	Sales&Marketing <i>mln \$</i>
Mean	100	7,102	9,657
Median	98	8,067	10,435
St. Dev	40	3,436	4,570
FUNCTIONAL ADS			
	Size <i>No employees (thsd)</i>	R&D <i>mln \$</i>	Sales&Marketing <i>mln \$</i>
Mean	171	3,478	5,471
Median	136	1,254	4,720
St. Dev	107	3,811	3,996

A correlation analysis is conducted to find if the control variables are correlated among each other and whether multicollinearity is present – Table 6. One can observe that the collinearity between the variables is not very high and it does not represent a multicollinearity problem that would violate one of the regression analysis assumptions. It does not come as a surprise, however, that ‘R&D expenses’ and ‘Marketing and Sales expenses’ are more heavily correlated to each other than to the third control variable – ‘Size’: companies that invest more in R&D are expected to come up with more innovative products and advertise them more to showcase the outcomes of their research and innovation endeavours.

Interestingly, the variable ‘Size’ is negatively correlated to the other two variable, which means that the smaller companies in the sample have invested more in R&D and have spent more on marketing and advertising. However, as mentioned earlier, none of the companies in the sample is considered small in accordance with the requirement based on number of employees.

Table 6: Correlation Matrix of Control Variables

	Size	R&D	Sales&Marketing
Size	1		
R&D	-0.25639	1	
Sales&Marketing	-0.16804	0.526815	1

Cross-Sectional Analysis

I use the following regression model for the purposes of this thesis:

$$CAR_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_N X_4 + \varepsilon$$

Where X1 is a dummy variable outlining whether the ad used during the product launch is ‘functional’ or ‘emotional’. Emotional ads are used as reference category, thereby 1 = Emotional Ad, 0 = Functional Ad. X2 represents “Size”, X3 – Research & Development expenditures and X4 - Sales & Marketing expenses.

Eight regression analyses are performed in total. The first four models use a five-day-event window - CAR (-5/0/+5), while the other four models use a three-day-event window - CAR (-3/0/+3). The reason for this is that the paper strives to investigate whether there is an impact and how timely (if at all) the impact of product launch is, as aligned to previous research (MacKinlay, 1997). A one-day-event window is not included in the study as the CAAR chart indicates that all of the observations (emotional and functional) follow the same trend up until the first day after the launch. It is the second day when the functional type of ads face a decline. Therefore, it would be more interesting and useful to observe what the accumulation of the securities is afterwards.

The first model uses CAR (-5/0/+5) as a dependent variable and regresses the dummy variable “Emotional”. This model employs 91 observations – Table 7. Although the beta coefficient is positive which indicates that emotional ads have a positive relationship with abnormal returns, the p-value is highly insignificant. This result is not surprising given the results from the t-test and could be the outcome of the following:

- There are other missing variables in the equation
- There is no causality

The second model builds on the first by adding the control variable 'Size'; the number of observations stays the same. The results remain highly insignificant with the coefficient for 'Size' being negative. If the result was significant, this would mean that as the size of the company increases by one unit, the CAR will decrease by 0.49, which is in line with previous research that states that smaller firms are expected to generate higher abnormal returns (Chaney and Devinney, 1992).

Both model 3 and 4 build on the preceding model by adding an additional control variable into the equation – model 3 – 'Sales and Marketing Expenses' and model 4 – 'Research & Development Expenditures'. However, it should be noted that while Model 3 includes 72 observations, model 5 includes only 50. The discrepancy between the number of observations stems from the fact that some of the aforementioned companies do not publish data related to these variables. The current study assumes that the decrease in number of observation does not influence the results in a way that would change the final conclusions.

Model 3 builds on model 2 by adding an additional control variable that is considered to affect stock price but does not help the model to gain relevance. All of the variables remain highly insignificant with the two control variables – 'Size' and 'Sales and Marketing Expenses' being negatively related to the cumulative abnormal return. Having a negative value for 'Sales and Marketing Expenses' is inconsistent with previous research which finds that when investors spend more on advertising, they help build awareness for their product and help investors to form expectations for their product (Kirca and Rubera, 2012). The inclusion of the third control variable – 'Research and Development expenditures', does not change the results and they remain insignificant with the latter variable being positively related to the dependent variable which is in line with what prior research states.

Models 5 to 8 follow the same logic as the previous four models in terms of building up on the previous one by adding additional variables and the number of observations but they use CAR (-3/0/+3) as a dependent variable. As suggested by the t-test analysis, the emotional ads do show a positive relationship to CAR (-3/0/+3) but it remains insignificant. When accounting for the size of the company (model 6), the results remain insignificant and, similarly to model 2, 'Size' is negatively related to the cumulative abnormal return. Model 7 adds 'Sales and Marketing' into the analysis and, although this variable is also insignificant, 'Size' becomes significant within the 90%

confidence interval. Finally, adding ‘Research & Development’ makes ‘Size’ significant within the 95% confidence interval too. It remains negatively related (as indicated by the beta coefficient), while the rest of the control variables are positive. Given that ‘Size’ is insignificant in the absence of the other two control variables, it could be concluded that ‘Research and Development’ and ‘Sales and Marketing’ are missing variables from model 6 and supplement the analysis.

Table 7: Regression Analyses Output

Dependent Variable - CAR (-5/0/+5)								
CAR (-5/0/+5)	Model 1		Model 2		Model 3		Model 4	
	β Coef	P- value	β Coef	P- value	β Coef	P- value	β Coef	P- value
Intercept		0.892		0.677		0.757		0.172
Emotional Ad	0.058	0.586	0.04	0.73	0.07	0.589	0.039	0.826
Size			- 0.049	0.672	- 0.098	0.447	- 0.251	0.117
Sales & Marketing					- 0.001	0.991	0.11	0.537
Research & Development							- 0.182	0.303
R square		0.003		0.005		0.19		0.081
Adjusted R square		-0.008		-0.017		-0.024		0.000
N		91		91		72		50

Dependent Variable - CAR (-3/0/+3)								
CAR (-3/0/+3)	Model 5		Model 6		Model 7		Model 8	
	β Coef	P- value	β Coef	P- value	β Coef	P-value	β Coef	P- value
Intercept		0.591		0.593		0.922		0.39
Emotional Ad	0.119	0.262	0.072	0.526	0.077	0.54	-0.06	0.73
Size			-0.125	0.275	-0.21	0.093**	-0.343	0.03*
Sales & Marketing					0.142	0.231	0.072	0.678
Research & Development							0.049	0.777
R square		0.014		0.027		0.092		0.128
Adjusted R square		0.003		0.005		0.052		0.051
N		91		91		72		50

The significance of 'Size' for CAR (-3/0/+3) but not for CAR (-5/0/+5) can complement what previous studies have found (MacKinlay, 1997) – more specifically that when a particular event takes place, such as a product launch that signals to investors potential future returns, investors react immediately. The sign of the coefficient for 'Size' also reveals that smaller companies are more likely to be rewarded as they are less expected by investors to be innovative and competitive (Chaney and Devinney, 1992).

It should be also noted that the size of the R^2 , mainly for the models employing 2 or 3 control variables are similar to those obtained in other studies using event studies and observing innovation events' impact (Sood and Tellis, 2009).

As the results from both the regression analysis and the t-tests are insignificant, the null hypothesis that emotional ads employed during the product launch for a new product do not have higher impact on the return on the company cannot be rejected. However, as mentioned earlier, the returns incurred by emotional ads are still significantly different from those incurred by functional ads (within 90% confidence interval) and are predominantly positive, which is a partial confirmation for this hypothesis. Since the results are highly insignificant it is worth running several additional tests to understand where the problem with the model is.

Firstly, there is no multicollinearity problem given that the correlation matrix does not indicate a correlation among the variables that is higher than 0.6 (see Table 5). Secondly, the number of observations should be sufficient for the number of variables as the 'rule of thumb' of using at least 5 times as many observations as variables is not violated and if there was a real effect, this would be visible from the current data set (Janssens, Pelsmacker and Kenhove, 2008). However, more diversified data could show different results. That is, the current data is dispersed within the past 5 years with many of the products being released in the past 3. In addition, only companies for which it is relatively easy to find the product's launch ad were included in the sample as this information is currently available. For researches with broader access to information, it will be worth observing if such an impact exists for products that are known for being very successful but relevant information for the marketing efforts around the launch are not easily accessible (e.g. Pharmaceutical Industry).

The residuals for Model 4 and 8 are also normally distributed (see Appendix 2) and independent of one another. The variables in the model are all interval/ratio with the nominal variable – “Ad type” being transformed into a dummy.

The Scatterplot diagram of the residuals for both CAR (-5/0+5) and CAR (-3/0/+3) do not appear to show heteroscedasticity or non-linear relationship (see Appendix 2). However, additional tests, such as White test or Breusch Pavan, are needed to conclude the absence of homoscedasticity. Since the regression analysis is not statistically significant, there is no need to run these tests as the results would not change the conclusion of lack of effect of the predictor variables on the dependent variable (White, 1980).

3. Discussion – Limitations and Future Research

Implications

Finding significant results from the proposed studies could have implications for both the business and the academic field. The academic field would benefit by observing that what has already been found for product launches in one industry could be applied into others too. In addition, it would find that the careful planning of marketing efforts and the product positioning, in particular, during the launch could shape the magnitude of the success for the companies. Currently, it could be concluded that for companies that are known for creating value to the customers through their innovations, no significant effect on the stock price is expected to be present during the launch or to accumulate through time. That is, these companies need to keep innovating mainly in order to sustain their position and not that much to disturb the market. As outlined by Kirca and Rubera, firms with a constant market power are those that innovate frequently (Kirca and Rubera, 2012).

In the context of product development, another conclusion from the current results could be that during the commercialization stage significant abnormal results are less likely to be observed and that an innovation development project should be evaluated in its different stages, which is in line with previous research (Sood and Tellis, 2009). However, the significance of AAR for emotional ads one day after the launch, i.e. after the product’s ad is aired for the first time, indicates that this type of advertising is potentially more likely to matter when it comes to shaping investor’s perceptions towards the brand.

The business, on the other hand, would be able to use this framework to attempt to forecast how big the impact of the launch of new products is and what the magnitude of the premium that investors give them for their innovation efforts is, as well as to benchmark it against the industry average. Moreover, they may be able to examine what type of advertising strategy works better during the launch for their industry and decide on how to market their products.

Useful managerial implications from the current results include the validation that smaller companies are more likely to incur higher returns during an event of a product launch. Knowing this managers can plan more strategically their objectives and respective measurement indicators and improve their forecasts when an event takes place. Another important takeaway is that abnormal returns for big well-established companies are more likely to appear immediately after they have been released but do not tend to accumulate through time and cause disruptions in stock prices. It is, therefore, very important for product managers to understand that they should not look at their products in isolation and consider the other businesses of the company when forecasting and measuring the success of their products.

Discussion and Future Research

The current study fails to find justification for the hypotheses it sets. The two hypotheses were built on the basis of prior research studies and strive to contribute to them by showing similar new product launch effect but in different industry and by investigating what advertising works better for innovative products during their launch.

The current study employs an event study analysis to find the Cumulative Abnormal Return (CAR) in the period of launches for new products and tests whether the returns incurred by the companies in the sample are statistically different from 0. For robustness purposes, the study uses two event windows to investigate how short-term the effect of such events is - CAR (-3/0/+3) and CAR (-5/0/+5). Unfortunately, the null hypothesis cannot be rejected.

In addition, the study attempts to investigate whether CAR for companies that release emotional type of ads during the product launch is higher than those that use functional ads. However, neither the t-test analysis nor the regression analysis, where the dummy variable 'Emotional Ad' is introduced as an independent variable alongside other control variables that are believed to affect the stock price, manage to show significant results. The only significant result is on AAR for

emotional ads on the first day after the launch (within the 90% interval level). Even though this result is in line with the fact that markets sometimes react on the day after the launch as the ads might be released after the market closes, it lacks context. When looking at CAR, one can observe that the sample fails to incur significant results, meaning that the abnormal return level reached on the first day does not accumulate through time.

Finally, another significant result is that the size of the company explains part of the movement in returns and is negatively related to it, i.e. smaller firms outperform bigger ones. This result is yet another validation for this relationship and is present when the other control variables are also added to the sample.

Since the p-value for the dummy variable remains insignificant with and without the presence of control variables, hypothesis 2 is also rejected. Interestingly, the results show that the 'Size' of the company could explain some of the variance in CAR (-3/0/+3) and is negatively related to it. The latter is in line with previous research which anticipates smaller companies to incur higher returns in the presence of an event as they are the least expected to have this event happening (Chaney and Devinney, 1992).

It should be noted that the data collection process was planned in details to ensure that really innovative companies and their most flagship products were included in the sample. This requirement was set as a proxy for innovation and was based on what prior research states about company innovativeness (Kirca and Rubera, 2012), (Jonash, 1992). In addition, the process itself was carefully executed and only credible sources were used. However, a uniform source which accounts for any sort of data inconsistencies should be used. The data in the paper was manually collected and is, therefore, not free of error.

In addition, the sample is limited in terms of different types of companies due to difficulties in finding relevant information for a more diverse set of companies that would represent the industries more precisely which may lead to selection bias. The ads used to identify the type of advertising strategy during the product launch are also not free of error. For most of the observations the published date of the ad and the launch date coincide. However, there are observations for which it was difficult to ascertain this. This might be another limitation of the data.

The BCG ranking used as a benchmark for innovativeness determines which companies create the most value through their products. Although the study strives to investigate which advertising strategy works better for product introductions (on top of simply observing whether the launch generates a positive effect), it does not manage to find a significant effect. This could, therefore, be attributed to the fact that the companies included in the rank all create value and might do this frequently (i.e. the products they launch are something that the markets expect). The inclusion of a validated variable that actually accounts for the amount of innovation of the product or the presence of a validated framework which sets what innovative product is could tackle this limitation and could also improve the results.

Future research should attempt to tackle all of the above problems and could investigate other interesting relationships, such as the interaction effect between the ad type and the industry. Also, it may try to include other industries known for their grand innovations, e.g. Pharmaceuticals. Another interesting addition would be to investigate the results from an event study conducted during the preannouncement stage and the launch stage and to compare them. Finally, the inclusion of the Automobile industry in the research for which impact of the new product has been initially found (Pauwels et. al, 2004) and the comparison of this industry to other ones will be an interesting addition.

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5. Appendix

Appendix 1: List of Products, Launch Dates and Commercials by Industry

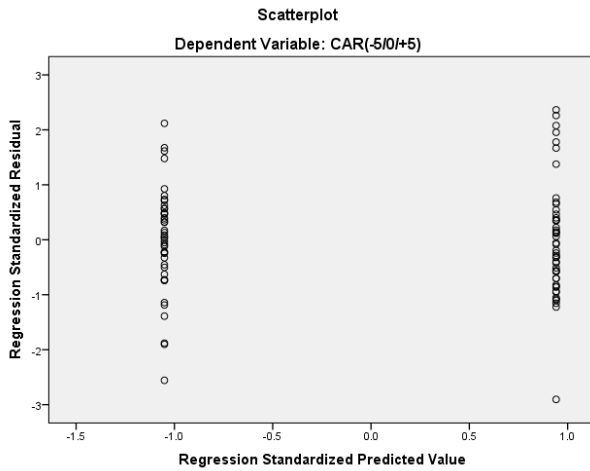
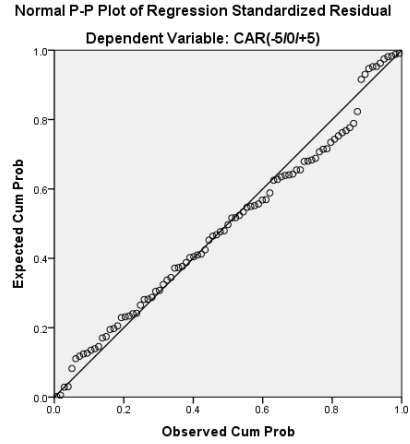
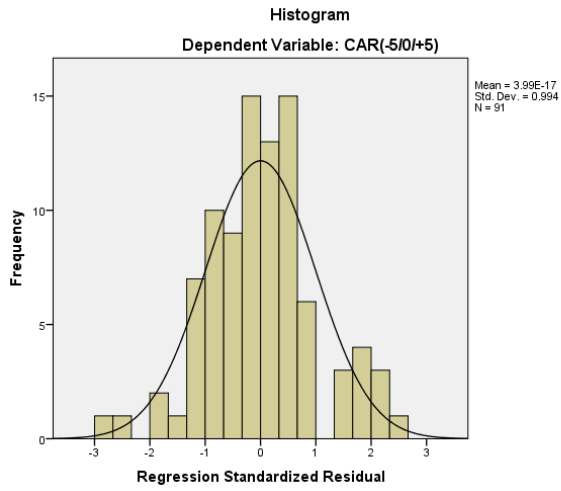
TECHNOLOGY & TELECOMMUNICATIONS					
Company	Product	Product Launch Date	Commercial	Ad type	Reference
Apple	iPhone 6 and 6 Plus	19.09.2014	https://www.youtube.com/watch?v=88iUeeUTBV4	Emotional	https://en.wikipedia.org/
Apple	iPhone 6S and 6S Plus	25.09.2015	https://www.youtube.com/watch?v=aBYWGjlvvww	Emotional	https://en.wikipedia.org/
Apple	Apple Watch	24.04.2015	http://www.apple.com/watch/films/	Emotional	https://www.quora.com/
Apple	iPad Pro	11.11.2015	https://www.youtube.com/watch?v=4AZR8a5XV5s	Emotional	http://www.apple.com/p
Apple	iOS 7	18.09.2013	https://www.youtube.com/watch?v=yLrqaLaUk88	Emotional	http://www.forbes.com/
Apple	Apple Mac Pro	19.12.2013	https://www.youtube.com/watch?v=2veqlfSMRWo	Emotional	https://en.wikipedia.org/
Apple	MacBook Air	29.04.2014	https://www.youtube.com/watch?v=OzQh6wDb2oE	Emotional	https://en.wikipedia.org/
Apple	iPhone 5	21.09.2012	https://www.youtube.com/watch?v=LPIYFKWRqhl	Emotional	https://en.wikipedia.org/
Apple	Apple Music	30.06.2015	https://www.youtube.com/watch?v=9-7uXcvOzms	Emotional	https://en.wikipedia.org/
Apple	Apple TV (4th generation)	26.10.2015	https://www.youtube.com/watch?v=wGe66lSeSXg	Functional	https://en.wikipedia.org/
Google	Android Lollipop	12.11.2014	https://www.youtube.com/watch?v=cOVRsjvvt74	Emotional	http://szlifestyle.com/sz/
Google	Android KitKat	31.10.2013	https://www.youtube.com/watch?v=OKOrkLxOBoY	Emotional	http://www.hongkiat.com/
Google	Pixel C	08.12.2015	https://www.youtube.com/watch?v=iYxXmIOf8w	Functional	https://en.wikipedia.org/
Google	Android Wear	25.06.2014	https://www.youtube.com/watch?v=QrqZl2QlZ0c	Emotional	https://en.wikipedia.org/
Google	Google Drive	24.04.2012	https://www.youtube.com/watch?v=wKJ9KzGQg0w	Functional	https://en.wikipedia.org/
Microsoft Corp.	Windows 10	29.07.2015	https://www.youtube.com/watch?v=Gu6vmNz-PhE	Emotional	https://news.microsoft.c
Microsoft Corp.	Windows 8	26.10.2012	https://www.youtube.com/watch?v=PrRQMO_9lMO	Emotional	http://www.pcworld.c
Microsoft Corp.	Xbox One	22.11.2013	https://www.youtube.com/watch?v=cKeptMVKl5Y	Emotional	https://en.wikipedia.org/
Microsoft Corp.	Office 2013	29.01.2013	https://www.youtube.com/watch?v=o6nXp4dzcwY	Emotional	https://en.wikipedia.org/
Microsoft Corp.	Office 2016	22.09.2015	https://www.youtube.com/watch?v=0x3iA746WBE	Functional	https://en.wikipedia.org/
Samsung	Galaxy S7 and S7 Edge	11.03.2016	https://www.youtube.com/watch?v=15aF23XpBwU	Functional	https://en.wikipedia.org/
Samsung	Galaxy S4	26.04.2013	https://www.youtube.com/watch?v=Q2TtdM4i15k	Emotional	https://en.wikipedia.org/
Samsung	Galaxy S6 and S6 Edge	10.04.2015	https://www.youtube.com/watch?v=KuaOGF8tPFA	Functional	https://en.wikipedia.o
Samsung	Galaxy Note Pro 12.2	13.02.2014	https://www.youtube.com/watch?v=f16DORSbzUw	Functional	https://en.wikipedia.org/
Samsung	Gear S2	02.10.2015	https://www.youtube.com/watch?v=Uhr0x6G3cL4	Functional	https://en.wikipedia.org/
Lenovo	Vibe Z	02.01.2014	https://www.youtube.com/watch?v=yN8mXl-lzGs	Functional	http://news.lenovo.com/
Lenovo	Yoga Tablet	29.10.2013	https://www.youtube.com/watch?v=t2ouuLZqiM	Emotional	http://news.lenovo.com/
Lenovo	ThinkPad X1	01.02.2016	https://www.youtube.com/watch?v=LIeHt1nXb4	Functional	http://news.lenovo.com/
Lenovo	ThinkPad P40 Yoga	01.04.2016	https://www.youtube.com/watch?v=l_LmPYsYakM	Functional	http://news.lenovo.com/
Lenovo	ThinkPad 11e	01.04.2015	https://www.youtube.com/watch?v=Y1AsqhRj504	Functional	http://news.lenovo.com/
HP	HP EliteBook Folio	01.03.2016	https://www.youtube.com/watch?v=EWXCdVtVPMw	Functional	http://www8.hp.com/us/
HP	HP Elite x2	23.11.2015	https://www.youtube.com/watch?v=livyv72GxKM	Functional	http://www8.hp.com/us/
HP	HP Spectre x360	01.03.2015	https://www.youtube.com/watch?v=MKOfLQ1fE_0	Functional	http://www8.hp.com/
HP	HP OMEN Gaming Notebook	04.11.2014	https://www.youtube.com/watch?v=Sc_cWivRgFk	Functional	http://www8.hp.com/us/
HP	HP Sprout	09.11.2014	https://www.youtube.com/watch?v=Ibnf_IHxPdE	Functional	https://en.wikipedia.org/
HP	HP Jet Fusion 3D 4200 Printer	17.05.2016	https://www.youtube.com/watch?v=xjpN_jobblk	Functional	http://www8.hp.com/us/
HP	HP DesignJet technical portfolio	30.11.2015	https://www.youtube.com/watch?v=nBGgu6H9ESU	Functional	http://www8.hp.com/us/
HP	HP ENVY Phoenix	16.01.2016	https://www.youtube.com/watch?v=Xn5gZT7uKwI	Functional	http://www8.hp.com/us/
HP	HP ZIG2 Workstation	24.01.2014	https://www.youtube.com/watch?v=3807JlwmqGQ	Functional	http://www8.hp.com/us/
HP	HP ZBook Mobile Workstations 15	10.09.2013	https://www.youtube.com/watch?v=D2dsZwU8QjU	Functional	http://www8.hp.com/us/
Sony	Sony Xperia Tablet S	07.09.2012	https://www.youtube.com/watch?v=9mKhSQtanAE	Emotional	https://en.wikipedia.org/
Sony	Sony Xperia Z5	01.10.2015	https://www.youtube.com/watch?v=0sCPSwdL5t4	Functional	https://en.wikipedia.org/
Sony	Sony Smartwatch 2	09.09.2013	https://www.youtube.com/watch?v=ApW7oknVnLU	Functional	http://www.pocket-lint.c
Sony	PlayStation 4	15.11.2013	https://www.youtube.com/watch?v=H_zR560dbgw	Emotional	https://en.wikipedia.o
Sony	PlayStation Vita	22.02.2012	https://www.youtube.com/watch?v=WJs1dW3Y6Ko	Emotional	https://en.wikipedia.org/
LG Electronics	LG G5	01.04.2016	https://www.youtube.com/watch?v=tOpsnNf9Wj0	Emotional	http://www.androidauth
LG Electronics	LG G Watch	25.06.2014	https://www.youtube.com/watch?v=0k3KljVuzF4	Emotional	https://en.wikipedia.org/
LG Electronics	LG G Pad 8.3	14.10.1013	https://www.youtube.com/watch?v=J8dtpHSRQpU	Functional	https://en.wikipedia.org/
LG Electronics	LG V 10	30.10.2015	https://www.youtube.com/watch?v=8sZS4Wu5PZ0	Emotional	http://www.pcadvisor.c

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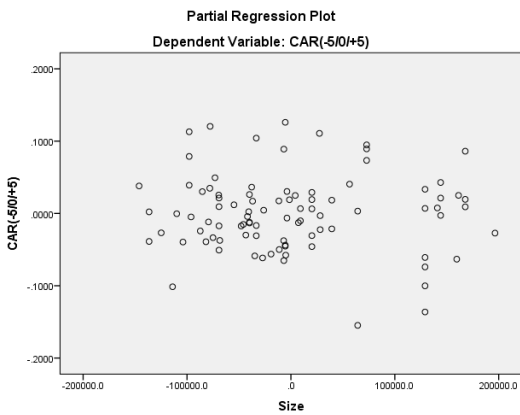
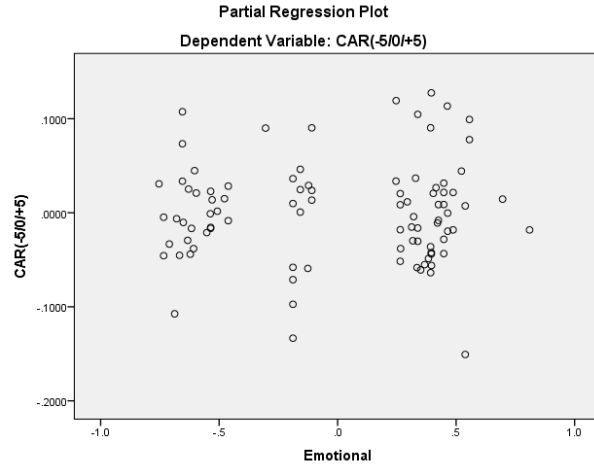
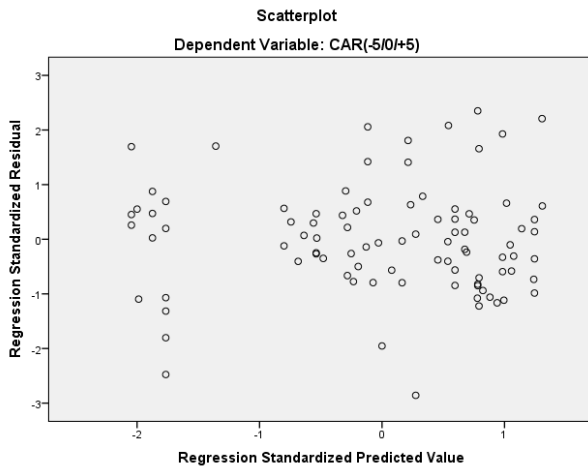
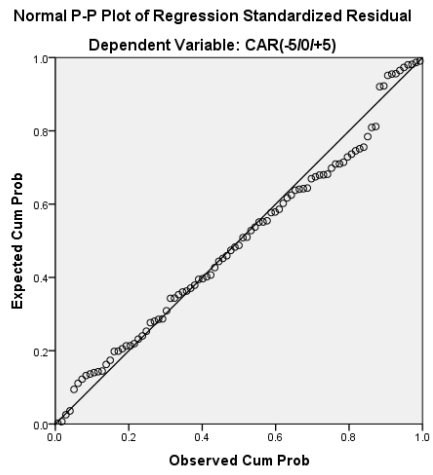
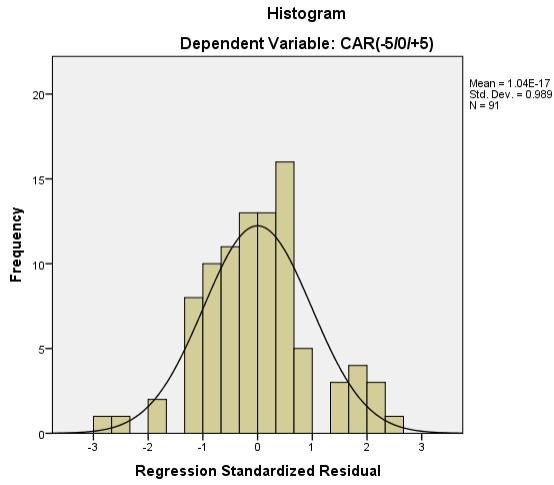
Company	Product	Launch Date	Commercial		Reference
Nike	Nike Air Zoom Structure 18	25.09.2014	https://www.youtube.com/watch?v=iQkN31q4NM0	Emotional	http://news.nike.com/news
Nike	Nike Flyknit Lunar 1+	14.02.2013	https://www.youtube.com/watch?v=ZfUV-eUORaY&fe	Emotional	http://news.nike.com/news
Nike	Nike Mercurial Vapor VIII	29.03.2012	https://www.youtube.com/watch?v=1H7qHsjPwOg	Emotional	http://news.nike.com/news
Nike	Nike Tech Fleece AeroLoft	27.10.2014	https://www.youtube.com/watch?v=1jARNCjm3zg	Emotional	http://www.nike.com/us
Nike	Nike KD8 Elite	14.05.2016	https://www.youtube.com/watch?v=xza8EAJDtcl	Emotional	http://news.nike.com/news
Nike	Nike MetCon 1	31.01.2015	https://www.youtube.com/watch?v=Vq73318k3RQ	Emotional	http://news.nike.com/news
Nike	Nike Free RN Motion Flyknit	05.05.2016	https://www.youtube.com/watch?v=3xN1rOuVV5s	Functional	http://news.nike.com/news
Nike	Nike Air Max Lunar90&Jacquard	03.01.2014	https://www.youtube.com/watch?v=kF8ZR4s08Q	Emotional	http://news.nike.com/news
Nike	Nike Lebron 11	07.10.2013	https://www.youtube.com/watch?v=zhTWdWlVtKc	Functional	http://news.nike.com/news
Nike	Nike LunarGlide+	19.06.2012	https://www.youtube.com/watch?v=kk4h8GZPJ54	Functional	http://news.nike.com/news
Amazon	Amazon Kindle Voyage	21.10.2014	https://www.youtube.com/watch?v=aERTKguJlW8	Emotional	https://en.wikipedia.org/
Amazon	Fire Phone (1st generation)	25.06.2014	https://www.youtube.com/watch?v=ZnrHE_9YF-4	Functional	https://en.wikipedia.org/
Amazon	Amazon Echo	06.11.2014	https://www.youtube.com/watch?v=KkOCeAtKHlc	Functional	https://en.wikipedia.org/
Amazon	Amazon Fire 7	30.09.2015	https://www.youtube.com/watch?v=OhIEK1GDT9k	Emotional	http://www.techlicious.com
Amazon	Kindle Paperwhite (1st generation)	1.10.2012	https://www.youtube.com/watch?v=hkb31fPoTq4	Functional	https://en.wikipedia.org/
Amazon	Amazon Fire HDX	18.10.2013	https://www.youtube.com/watch?v=AGvHScVQh2Q	Emotional	https://en.wikipedia.org/
Amazon	Amazon Fire TV (microconsole + d	12.04.2014	https://www.youtube.com/watch?v=HHoNQrxG_8M	Emotional	https://en.wikipedia.org/
Amazon	Amazon Fire HD	14.09.2012	https://www.youtube.com/watch?v=OrQ_B7xYlc	Emotional	https://en.wikipedia.org/
Amazon	Kindle Oasis	27.04.2016	https://www.youtube.com/watch?v=GVPOVDC9vTI	Functional	https://en.wikipedia.org/
Amazon	Kindle Paperwhite (2nd generation)	03.09.2013	https://www.youtube.com/watch?v=k2sHWTig-qk	Functional	https://en.wikipedia.org/
Procter&Gamb	Gillette Fusion ProShield	27.12.2015	https://www.youtube.com/watch?v=gJHxTUHrgdw	Functional	http://www.target.com/p
Procter&Gamb	Gillette Fusion ProGlide FlexBall	29.04.2014	https://www.youtube.com/watch?v=X6WvdJn9e60	Functional	https://en.wikipedia.org/
Procter&Gamb	Oral-B SmartSeries Electric Toothb	24.06.2014	https://www.youtube.com/watch?v=aZGFIfxi4Q	Functional	http://news.pg.com/pres
Procter&Gamb	Oral-B Deep Sweep Electric Tooth	13.02.2013	https://www.youtube.com/watch?v=1LLMFuRS8T8	Functional	http://news.pg.com/blog
Procter&Gamb	Gillette Male Body Razor	14.02.2014	https://www.youtube.com/watch?v=W_V15z1qVIM	Emotional	http://news.gillette.com/p
Adidas Group	ACE 16+ PURECONTROL	19.01.2016	https://www.youtube.com/watch?v=rID-Oro0NXY	Emotional	http://www.soccer.com/
Adidas Group	Ultra Boost	11.02.2015	https://www.youtube.com/watch?v=G35I-WH39MA	Functional	http://news.adidas.com/
Adidas Group	miCoach SMART BALL	01.06.2014	https://www.youtube.com/watch?v=f1laPmvFtBA	Functional	http://www.trustedrev
Adidas Group	crazyquick	01.05.2013	https://www.youtube.com/watch?v=loDiO7cUYLE	Emotional	http://www.kicksonfire
Adidas Group	Battle Pack	26.05.2014	https://www.youtube.com/watch?v=-CeaG_rH64	Emotional	http://news.adidas.com/g
Adidas Group	Adizero f50 Messi	01.08.2013	https://www.youtube.com/watch?v=yjib_Dy7tXg	Emotional	https://sport-locker.net
Adidas Group	Eskolaite Pack	17.08.2015	https://www.youtube.com/watch?v=jNVikUjrPWW	Emotional	http://news.adidas.com
Adidas Group	miCoach FitSmart	15.08.2014	http://news.adidas.com/global/Latest-News/Unleash	Functional	http://www.cnet.com/
Adidas Group	Energy Boost	27.02.2013	https://www.youtube.com/watch?v=31iCMDd2ZzU	Emotional	http://solecollector.com
Adidas Group	The Enlightened Pack	22.10.2013	https://www.youtube.com/watch?v=QjrtBApTAB4	Emotional	http://news.adidas.com
Coca Cola	Coca Cola Life	04.11.2014	https://www.youtube.com/watch?v=gK7KZW4RqPQ	Emotional	https://en.wikipedia.org/
Coca Cola	FairLife milk	18.02.2014	http://uk.businessinsider.com/coca-cola-is-launching-fairl	Emotional	http://www.pnewswi
L'Oreal	Lancôme Visionnaire	05.11.2015	https://www.youtube.com/watch?v=U-knPQ9H_pg	Emotional	http://www.loreal.com/n
L'Oreal	L'Oréal Professionnel Pro Fiber	22.10.2015	https://www.youtube.com/watch?v=CbTkWGFclJ4	Functional	http://www.loreal.com/n
L'Oreal	VISIONNAIRE CX	25.09.2014	https://www.youtube.com/watch?v=SZesvOunnio	Functional	http://www.loreal.com/n
L'Oreal	KÉRASTASE DENSIFIQUE	23.05.2014	https://www.youtube.com/watch?v=azBE8fS30A	Emotional	http://www.loreal.com/n
L'Oreal	KÉRASTASE INITIALISTE	12.11.2012	https://www.youtube.com/watch?v=8oSpilQIoZk	Functional	http://www.loreal.com/n

Appendix 2: Model 1 – 8 – Output

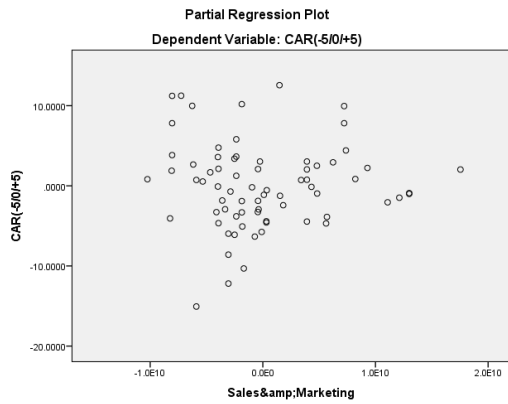
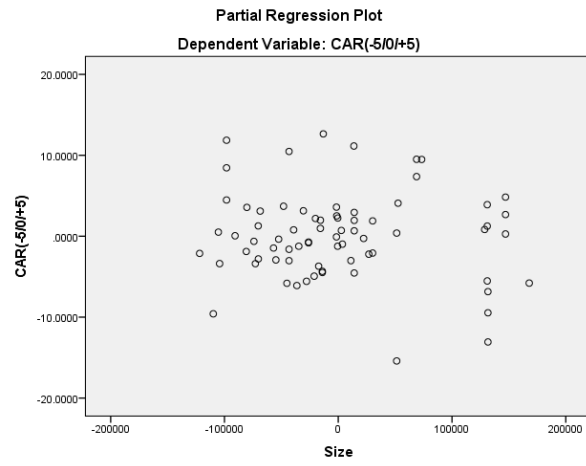
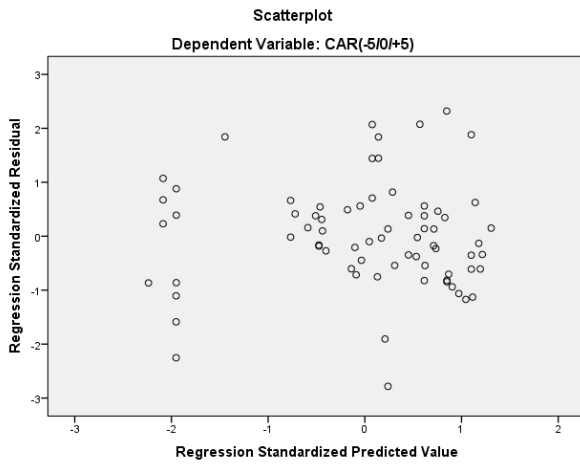
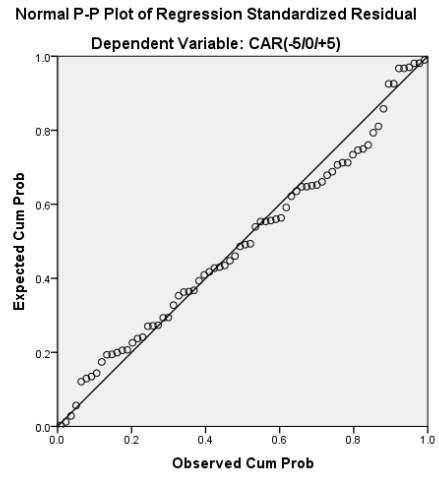
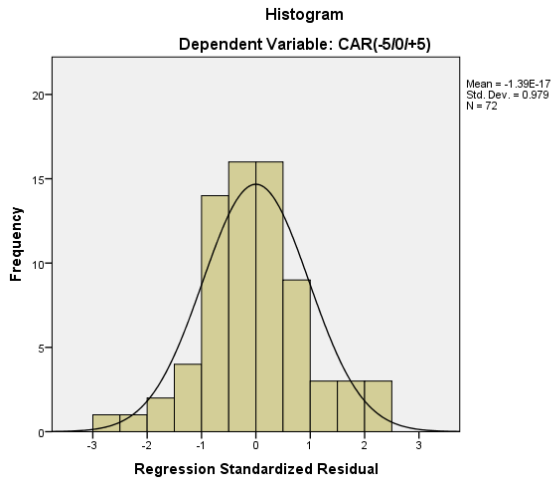
Model 1: Dep. Variable: CAR (-5/0/+5); Predictor: Emotional ad



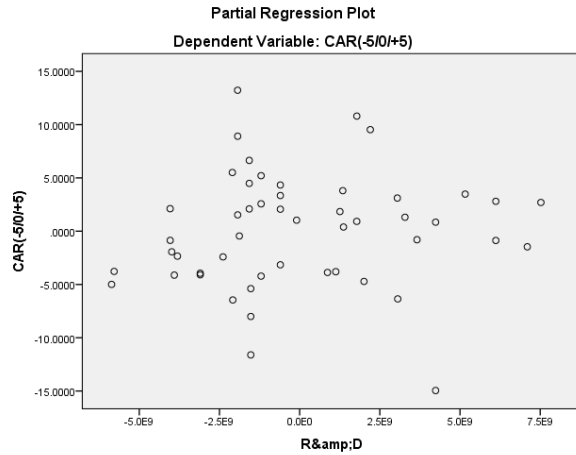
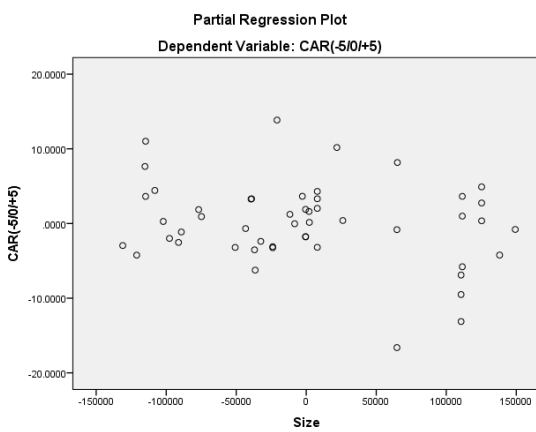
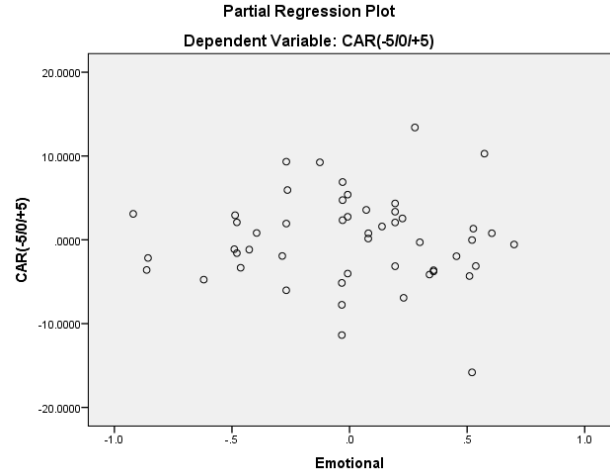
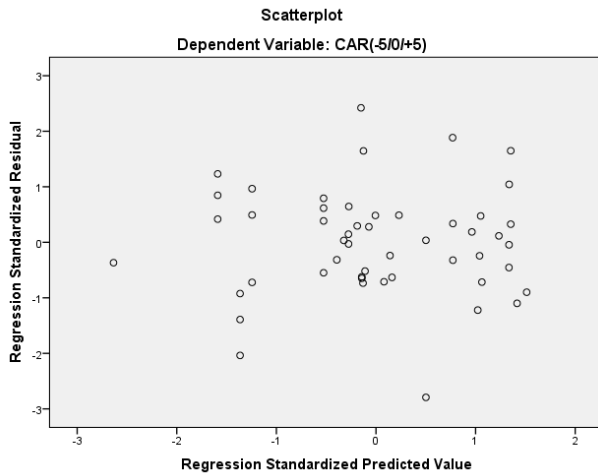
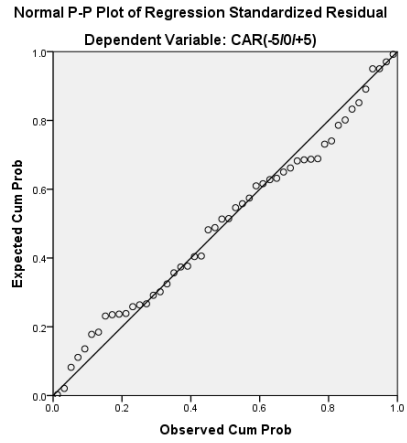
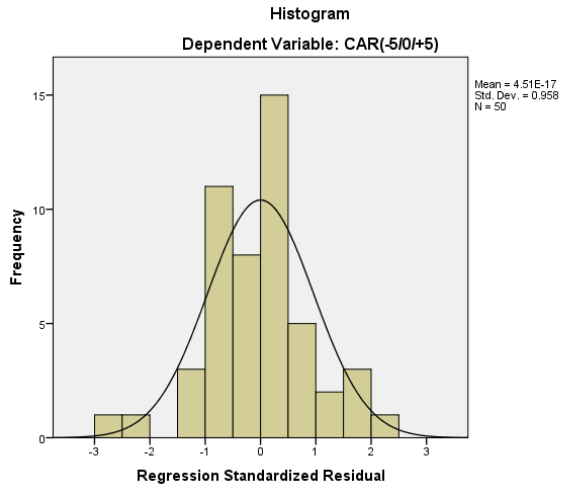
Model 2: Dep. Variable: CAR (-5/0/+5); Predictor: Emotional ad and Size

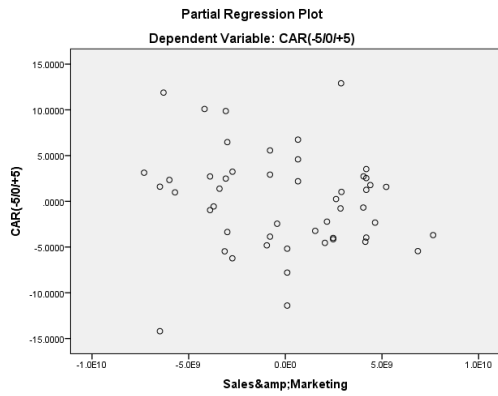


Model 3: Dep. Variable: CAR (-5/0/+5); Predictor: Emotional ad, Size and Sales & Marketing

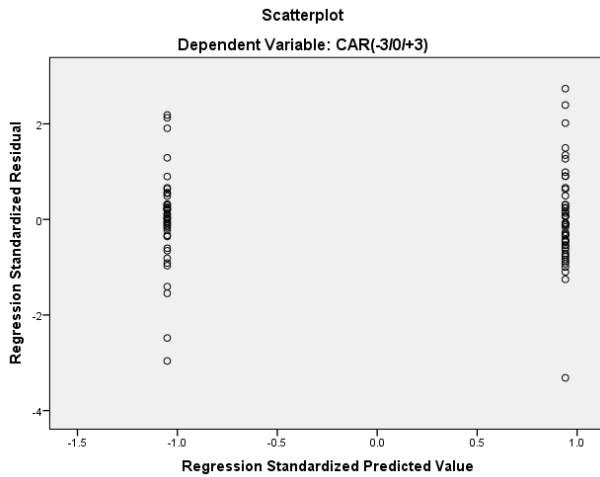
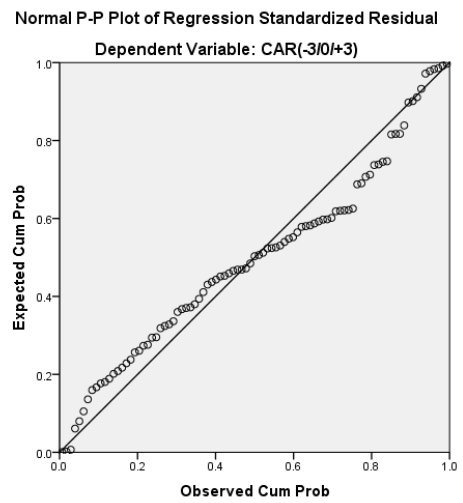
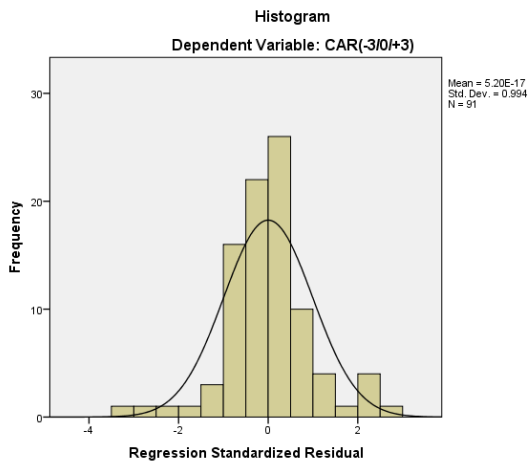


Mode 4: Dep. Variable: CAR (-5/0/+5); Predictor: Emotional ad, Size, Sales & Marketing and R&D

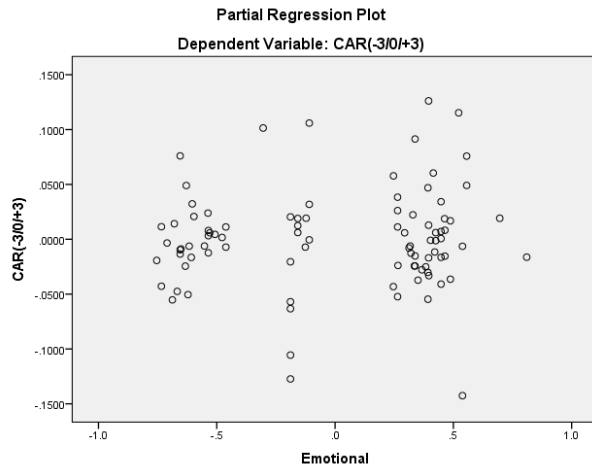
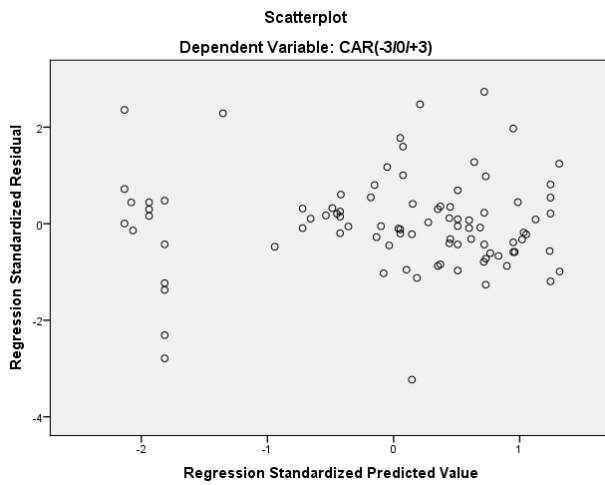
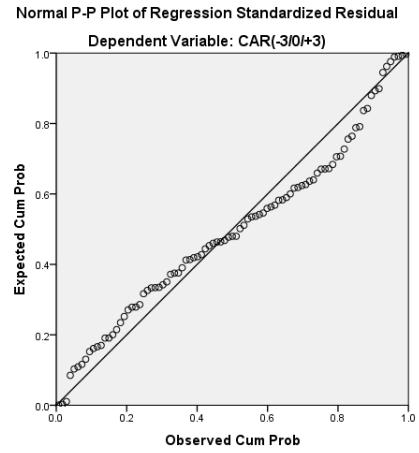
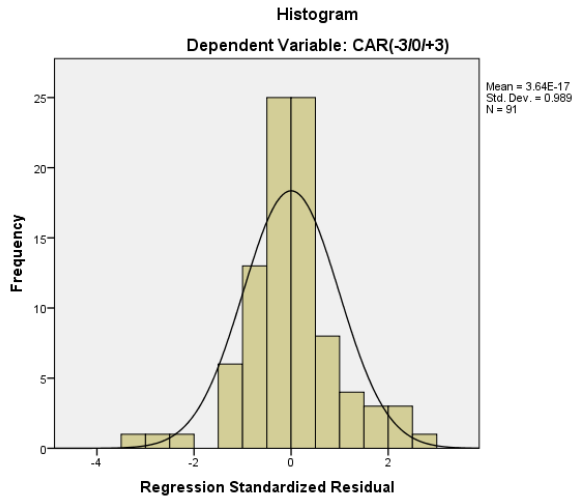


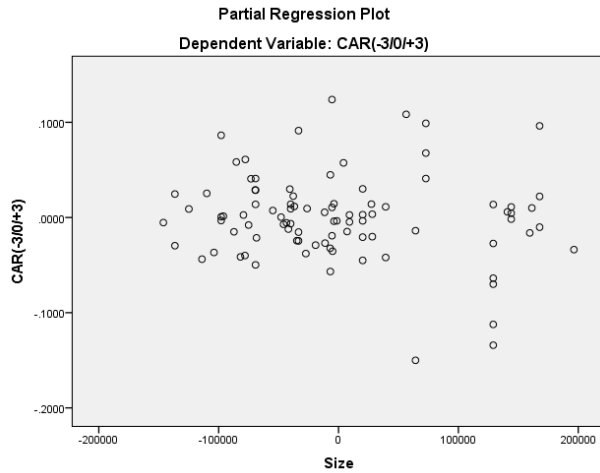


Model 5: Dep. Variable: CAR (-3/0/+3); Predictor: Emotional ad

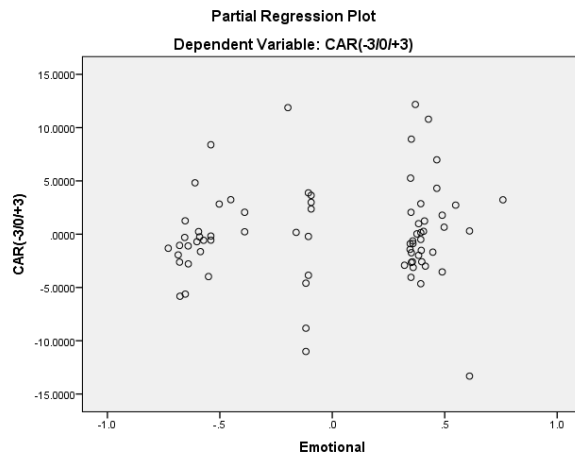
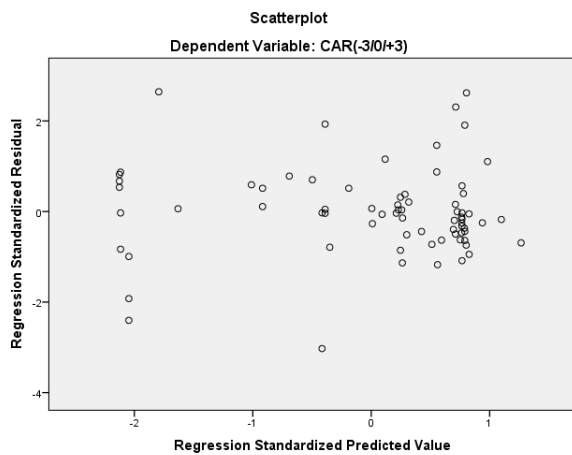
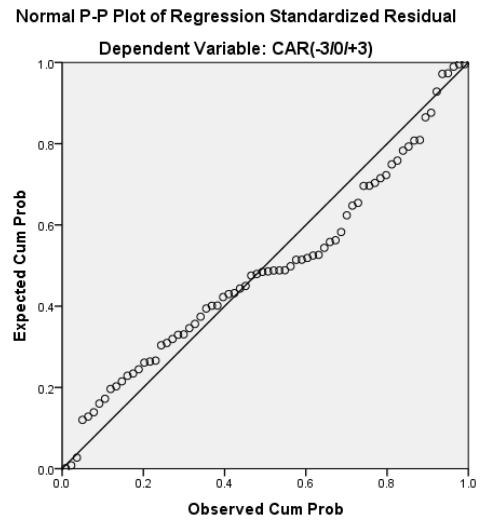
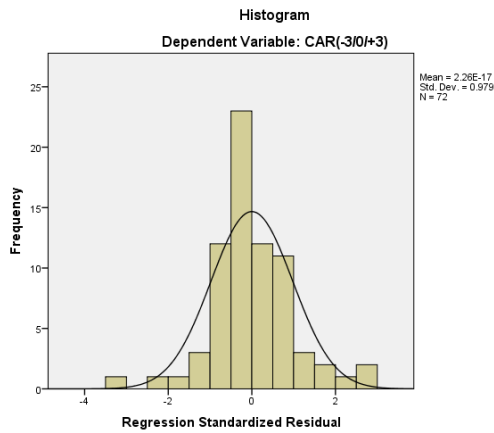


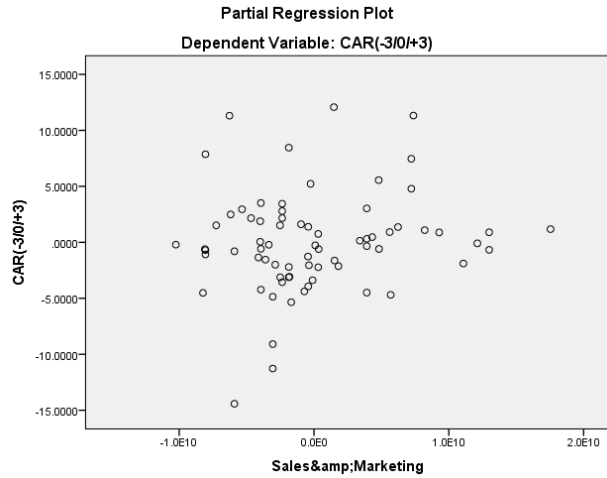
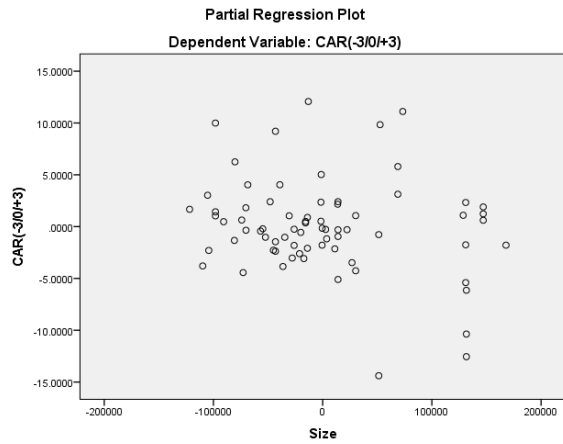
Model 6: Dep. Variable: CAR (-3/0/+3); Predictor: Emotional ad and Size





Model 7: Dep. Variable: CAR (-3/0/+3); Predictor: Emotional ad, Size and Sales & Marketing





Model 8: Dep. Variable: CAR (-3/0/+3); Predictor: Emotional ad, Size, Sales & Marketing and R&D

