Impact of Humor and Gender in E-mail Marketing

Case DefShop GmbH

Johanna Sivén

Bachelor's thesis
August 2015
International Business
International Marketing

TAMPEREEN AMMATTIKORKEAKOULU
Tampere University of Applied Sciences

ABSTRACT

Tampereen ammattikorkeakoulu
Tampere University of Applied Sciences
Degree Programme in International Business
International Marketing

JOHANNA SIVÉN:
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Bachelor's thesis 79 pages, appendices 30 pages
August 2015

This Bachelor's thesis project was conducted for DefShop GmbH. In accordance to the commissioner's interests towards customization of their e-mail newsletter service, a test campaign was administered in order to detect possible differences in the clicking behavior of male and female newsletter subscribers when receiving either neutral or humorous e-mails. The two test e-mails used for the campaign differed in their visual content, changing the message in either humorous or neutral direction. The click rates of both versions were examined in reference to the humor condition applied and the gender of the subject.

The hypotheses were that male subscribers would react more strongly to the humorous e-mail version, whereas female subscribers would not be affected by the amount of humor in the newsletter. Data analysis was conducted through exploratory analysis, contingency tables with Chi-Square tests, and binary logistic regression model. Hypotheses about gender variations were evaluated based on the analysis results.

The theoretical framework of the thesis consists of an overview of an analysis of the e-commerce field, online marketing, more specifically e-mail as a marketing channel, and humor in advertising context. Previous research results on the subject of observed gender-based differences in the effect of humorous advertisement, which found males to be more likely to react to humorous advertisement, while females were not affected by the humor condition, were used as a basis for the hypothesis formation.

The results of the research analysis were not entirely conclusive. Although the hypotheses were found to apply to the population at hand, no statistically inconclusive proof emerged that there would be significant interaction effect between humor and the gender. As a result, it could not be concluded that the observed differences between genders' click-rates were directly linked to the presence of humor. As the different statistical methods yielded partly incoherent results, no statement can be made that gender would be a determining factor of click-tendency in different humor condition groups. Further research points on the subject were suggested to the commissioner based on the analysis.

Keywords: marketing research, humor in advertising, e-mail marketing

CONTENTS

ABBREVIATIONS AND TERMS

df	degrees of freedom
p	probability
sig.	significance
ANOVA	Analysis of Variance
CTO	Click to Order
CR	Click rate
CRM	Customer Relationship Management
EDA	Exploratory Data Analysis
ELM	Elaboration Likelihood Model
HSM	Heurestic-Systematic Model
MLE	Maximum Likelihood Estimation
OR	Opening rate
ROI	Return on Investment
SEA	Search Engine Advertising
SEM	Search Engine Marketing
SEO	Search Engine Optimization
SPSS	Statistical Package for the Social Sciences

1 INTRODUCTION

Shopping has gone online in the new millennium, and apparel industry is no exception. According to the statistics of the European Interactive Digital Advertising Alliance (IAB Europe), as much as 87% of all European Internet users use Internet to shop online, and of all the purchases made 38% are in the field of apparel retail (IAB Europe: Mediascope 2012). In the light of such statistics it is not surprising that Germany – one of the leading e-commerce nations of Europe – has a relatively high percentage of corporations moving their operations online every year. According to the Federal Statistical Office of Germany, around 20% of all companies in Germany provide their products and services through e-commerce platforms, and the proportion of those companies keeps on rising year by year (In Focus archive 2014).

The awakening of the online shopping trend has also brought about the need for new forms and channels of marketing. Online marketing in its current form can be divided into three main areas according to their objectives: search engine visibility, social interaction and community building, and direct informational communication. Although search engines and social media as relatively new marketing channels have both continued to increase their importance in online marketing over the past years, other online implementations of more traditional marketing means still have high importance in achieving other objectives of online marketing. In the light of the current research, it is important to recognize the role of E-mail Marketing in the further integration of already existing customer base into the company and its brand image. As a modernized version of traditional direct marketing means, E-mail marketing provides e-commerce businesses with a highly cost-effective tool for customer relationship management, commercial information channeling, and straight forward conversion generation. (Geddes et al 2015, 10– 11, 42–50.)

1.1 Thesis background

This Bachelor's thesis project was conducted in spring 2015 in co-operation with the thesis commissioner DefShop GmbH, the author of the thesis, and Tampere University

of Applied Sciences. The topic of the thesis is a quantitative marketing research, which is set out to examine possible variations in the clicking rates of two different types of e-mail newsletters. The distinguishing variable between the two examined versions is the humor element, which is implemented in the visual content of the newsletter. The click rates of both of the campaign newsletter versions are recorded and the collected data is combined with the newsletter subscribers' gender. The data is analyzed via exploratory analysis, contingency tables with Chi-Square tests, and binary logistic regression model, and hypotheses about gender variations are addressed based on the results. The objective of the research is to find out whether gender-based variances in subscribers' reactions to humorous e-mail marketing can be observed and used as a basis for newsletter content optimization towards different customer groups.

The commissioner of this research is one of the leading online apparel stores in Europe specializing in Hip hop and streetwear clothing. DefShop GmbH, founded and based in Berlin, Germany, is a fully online-based apparel retailer with annual revenues of over 25 million € and an international customer base of over 800 000 (2014). As a big operator in the German online apparel industry, DefShop GmbH is implementing all main online marketing activities on their dominant platform, the German web store defshop.com. The e-mail marketing activities of DefShop include also an e-mail newsletter service. The newsletter which is sent out twice a week has around 381 000 subscribers (April 2015) and serves as an important traffic source for the platform. Therefore it is in the interest of the commissioner to ensure, that the e-mail-based operations on its German platform are as efficient as they can possibly be. Therefore, this thesis project aims at contributing to DefShop's efforts in creating an optimized and eventually fully customized newsletter service for their German customers.

1.2 Thesis purpose and objective

The objective of the thesis is to enhance and further develop the communication models utilized in e-mail marketing campaigns of DefShop in order to improve its effectiveness as the company's most important customer management tool. Experimenting on different communication styles in the commercial messages towards the customer base is of commissioner's interest, and after careful consideration the amount of humor used in

the messages was selected as the most interesting topic for a test campaign. Consequently, it was decided to conduct an e-mailing campaign research on the German customer base of DefShop, which would examine the effect humor has on the click rates of the e-mail newsletter, and to analyze the results in relation to the respondent's gender.

Humor was selected due to its compatibility with DefShop's brand image and company profile, the commissioners target group profile (young, dominantly male) and the wide range of implementation possibilities it offers. By examining different communication styles via the two test campaigns, the research strives to identify the significance of humor in e-mail advertising per gender, hence being able to provide the commissioner with suggestions on how to customize the communication towards its customer segments. The research concentrates on the German customer base only, and the suggestions provided to the commissioner may only be applied to the German market.

The thesis project follows a quantitative research design, where the population constitutes all DefShop's German newsletter subscribers. The behavior of the subjects (click vs no click) is recorded via two test campaign newsletters, one with humorous and another one with neutral content. This primary data collected from the population is then examined on an individual level (e-mail address), and its interaction with the secondary data available (gender) is analyzed via statistical methods. The perception of the messages' style as humorous or non-humorous is validated with a pretest prior to the launch of the actual campaign.

It is assumed that gender-based differences can be detected when examining customer behavior after receiving promotional e-mails in the form of a newsletter. The following hypotheses are set for the research:

1. **Humor in newsletter content enhances male customers' tendency to click the received promotional e-mail when comparing with the performance of the non-humorous version.**
2. **Female subscribers' clicking tendency is not expected to be affected by humor in the e-mail – equal click rates are expected for both newsletter versions.**

Chapter two in this report provides a necessary overview of the commissioner DefShop GmbH; their history, business model and marketing mix composition. Chapter three presents the theoretical framework of the research; an overlook of the development and implementation forms of e-commerce, online marketing and more specifically e-mail marketing, as well as the use of humor in advertising context. Chapter four describes the research design and provides insights to the statistical procedures of the analysis. Chapter five presents the pretest and its results, and chapter six provides the result of the analysis as well as the most relevant statistics which lead to the formation of the analysis and final conclusions. The last chapter provides an overview of the research and its outcome and presents recommendations for the commissioner in terms of result implementation possibilities and further research topics. A comprehensive statistical output from SPSS as well as samples of the campaign e-mail designs and the pretest survey can all be found in the appendices of the report.

2 THE COMMISSIONER

The commissioner of the thesis project at hand is one of the leading operators in the field of online apparel retail in Europe. As a family-founded company, DefShop's business model has been right from the beginning to build the brand and the organization as tight and devoted as possible, and therefore all main operators from CEO to warehouse management are positioned in one big warehouse-office-complex in the northern district of Berlin, Germany.

2.1 History and current market position

DefShop was founded in 2007 as a private limited partnership (=KG as in Kommanditgesellschaft) by Mr. Alexander Büchler, and has remained as a family-owned business ever since. In February 2015 the company finalized its transition from a limited partnership to a limited liability company (GmbH as in Gesellschaft mit beschränkter Haftung). Over the years, DefShop has earned its position as one of the leading online shops in its field with annual revenues of around 25 million euros (after returns), and has grown to employ over 130 employees who are all situated under one roof in Berlin, Germany. DefShop's current product selection encompasses over 20 000 items from nearly 250 well-known and striving fashion brands. While def-shop.com – the German shopping platform – has remained the company's strongest market throughout its operating years, the company is also operating actively on five additional markets through five subdomain web stores: Austria, Switzerland, Finland, France, and the Netherlands. Additionally, there are existing subdomains for several other markets, which are currently not under active development but are nevertheless up and running and creating revenues to the company. DefShop also delivers its products worldwide. (Spangenberg M., Head of Online Marketing DefSHop GmbH, 2015.)

The business idea of family Büchler was based on the unique positioning of their service in the German marketplace; with a wide range of streetwear apparel with a light and sporty hip hop twist, the product selection and brand image of DefShop was not in direct competitive position with the leading apparel online retailers in Germany at the time. In comparison to the biggest "rivals" of DefShop, its product selection was not

limited to for example mainly skate wear and other sport apparel and equipment (like Titus, PlanetSports or Skatedeluxe), nor was it offering so called hard old-school hip hop –styled clothing (like Hoodboyz), nor did it represent mainstream fashion trends alongside with the frontline online retailers (like Zalando). One of the main themes of DefShop's business right from the beginning was to provide fashion for individuals across traditional genre classifications.

In addition to their wide and notable selection, DefShop is also competing with their fellow online retailers with their lowest price –guarantee. DefShop was the first and only online store in the German market to introduce this new USP (unique selling proposition) to online retail industry. With this guarantee, DefShop allows a carefree shopping experience to their customers without having to worry about possibly not getting the products for the cheapest price in the market. Guaranteed lowest market price applies to all DefShop's products and can also be implemented retrospectively; by informing the customer service within one month of the purchase when finding the exact same product cheaper elsewhere, the customer is rewarded with a full refund of the price differential.

2.2 Online marketing activities

Out of the 130 people employed by DefShop, 15 persons are currently working in the online marketing department. The department consists of several teams: SEA, SEO, SMM, Affiliate, E-mail marketing, and off-site project management. According to the most current statistics at the time of the research, the biggest traffic source to the web store (international comparison) comes through Social Media channels (Facebook, Twitter, Instagram, Google+), SEO being the second biggest source of visitors. These are followed by Google Search Advertising (SEA) and Google shopping.

Although other platforms are currently bringing in more traffic to the online shop, e-mail marketing's importance as one of the major Customer relationship management tools is fully recognized by the commissioner. Additionally, due to its near-to-zero costs, it can be considered highly profitable channel for conducting campaigns to both producing revenues and for communicating effectively with the consumer base. High

potential and multiple cost-effective implementation possibilities of e-mail marketing are further raising the commissioner's motivation to conduct research around the topic. Conclusively, the aim and objective of the commissioner is to enhance open- and click-rates of the weekly newsletter e-mails, and hence the effectivity of the company's e-mail marketing as a CRM tool and to improve their B2C -communication in general. DefShop has practiced e-mail marketing in the form of the current newsletter for several years, and both the structure and the content of this communication channel are currently undergoing optimization-driven evaluation. As part of this bigger picture, the thesis project at hand is aiming at helping DefShop to develop their e-mail marketing from the current bulk communication design towards their goal of a fully customized form.

Table 1 below describes the coverage of the current bulk e-mail newsletter as well as its performance in terms of opening- and click-rates.

TABLE 1. DefShop Newsletter statistics 2015

		Newsletter 2015 average*	**Newsletter April 12th 2015**
Number of subscribers		391.558	391.851
Opening rate		10.64%	10.40%
	Number of unique openings	41.673	40.860
	Number of openings total	55.496	55.168
Clicks-to-open (CTO)		15.48%	18.70%
	Number of unique clicks	6.452	10.723
	Number of clicks total	not available	7.635

*01.01.2015 - 22.04.2015

3 THEORETICAL FRAMEWORK

In order to understand the scope of the research at hand, it is necessary to have an overview of the industry and business environment in which companies such as DefShop GmbH operate, as well as the background behind the rise of online advertising and more specifically e-mail marketing in the market place of the 21st century.

The following chapters provide insights to the current status and trends in the field of e-commerce, online marketing and humor in advertising, and aims at establishing an understanding of the key terminology the research is dealing with. Hence, the topicality of the research question at hand and the motivation behind the research can be outlined in a more profound manner. Due to the scope of the research being narrowed solely to the German customers, the characteristics of German consumers in specific are not in the main focus of the theoretical review.

3.1 The upward trend of e-commerce

It is not difficult to reason why e-commerce has become a norm rather than an exception in the business activities of modern corporations. A pan-European research by IAB Europe (2012, consisting of 28 markets) provides impressive statistics regarding internet usage among the population of the continent: according to the IAB Mediascope (2012) 65% of all European consumers have access to the Internet, respective percentage for West Europe being 81. This translates to 426,9 million prospective e-commerce clients with on average 14,8 hours spent online per user per week. Due to the contributions of the advent of mobile Internet access, an upward trend in the Internet usage statistics can be observed – the amount of Internet users has increased by 19% and the hours spent online by 15% across Europe in comparison to 2010. Out of all the Internet users in Europe, the majority of 95% are active e-mail users. More interestingly, according to the statistics 87% of the European Internet users shop online, and their shopping contributes to 19% of all shopping activities in Europe. Clothes and accessories rank as the second most popular online shopping objects after books. (IAB Europe Mediascope 2012.)

The connection between better access to Internet and the emerged trend of online shopping is self-evident. However, the increasing popularity of online shopping has also grounding in its various advantages to the consumer, which include among others time efficiency, wider selection, flexibility, lack of geographic challenges, and ease of use (Shannon, Forsythe & Liu 2006, 6–7; Jusoh & Ling 2012, 224).

E-commerce in Germany

Germany, the third largest consumer economy in the world and the largest one in the European Union, emerged as the leading nation of e-commerce already in the early 21st century. When looking at the amount of consumers utilizing internet in their retail acquirements, as well as the amount of money spent on e-commerce sector annually, Germany is positioned at the top of the charts alongside the UK and the USA (Huffmann 2004, 9). There are a number of things supporting Germany's role as one of the innovators of the e-commerce field; rapid development of effective electronic infrastructures after the II World War and more precisely after the reunification of East and West Germany, high level of education, widely spread ICT-skills, a wealthy consumer population, and a relatively liberal marketplace and regulation, just to name a few (Koenig, Wigand & Beck 2002, 2). As pointed out by Koenig, Wigand and Beck (2002), one important factor in Germany's developing role as the leading e-commerce instigator lays in its economic structure; over 80% of Germany's GNP in year 2002 was generated by middle-sized enterprises, which are more prompt and flexible to adopt new business models and policies than bigger, international corporations (Koenig, Wigand & Beck 2002, 2). In the year 2012, 99.3% of all German companies in the company register accounted for as small and medium-sized enterprises (Federal Statistical Office Key Figures 2012).

According to the Federal Statistical Office of Germany, 84% of all German households had access to internet in year 2014. When looking at the statistics regarding Information and Communication Technologies use in the first quarter of the same year, a more frequent usage of Internet could be observed among the population over 10 years old in comparison to 2010. Furthermore, out of all over-ten-year-olds with internet access, the proportion accessing internet every day or almost every day had cumulated up to 85%. A rapid increase in the use of mobile devices for accessing internet could also be observed. (Federal Statistical Office: ICT 2014.)

Hence, online sales have increased their importance for German companies exponentially in the past years. The records provided by the Federal Statistical Office (2014) reveal a seven percentage point increase in the amount of companies providing their products and services via e-commerce networks from 2008 to 2012. In the year 2012, the percentage proportion of e-commerce in terms of total turnover was about 12% (compared to the total turnover of all companies in Germany). The contribution of e-commerce specifically in retail trade was 5.3% of the total domestic trade turnover of the year 2012. (Federal Statistical Office 2014.)

Popularity of online shopping among German consumer population was last measured nationwide by the Federal Center of Statistics in the first quarter of year 2009. Back then over half (55%) of the reported 54 million internet users at the time (aged 10 or older) said they had ordered products online in the past months of 2009, indicating a strong upward trend in comparison to the previous survey in the year 2005. The most active online shopper group was reported to consist of internet users aged between 25 and 54. Clothing and sports goods ranked as the most popular objects of online shopping. The percentage proportion of the total turnover in Germany acquired through e-commerce activities in year 2008 was 14%. The research had recorded a relatively low proportion of enterprises offering their products and services online; however, the ones who did could accredit around 39% of their turnover to electronic sales. The main reasons for not practicing e-commerce revealed by the survey among enterprises using computers that year included concerns of security, consumer data protection and the compatibility of their product to the new electronic environment. (In Focus -archive 2014.)

3.2 Online marketing in e-commerce

Online marketing refers to all marketing activities which are applied by utilizing Internet technology: collecting data on the consumers, targeting them via either customized or bulk advertisement and pursuing to alter their perceptions and buying behavior (Geddes et al 2015, 7). Search Engine Marketing (SEM), Social Media Marketing (SMM) and E-mail Marketing, alongside with other smaller areas of online marketing, like affiliate co-operations, form the basis for the online marketing activities of most modern e-

commerce businesses. Advertising encompasses two kinds of functions, which either aim at direct sale generation by identifying leads, or at providing information about a brand, company or product, hence raising awareness and interest towards it (Evans 2008, 362). In the case of online marketing, the first category includes the biggest and the most topical online marketing form, which is search engine marketing. The latter relates to marketer-initiated communication, which can refer to either display advertising or e-mail based direct marketing activities. According to Evans (2008), search-based advertising is the dominating form of online marketing with approximately 40%, followed by display advertising with 32% (Evans 2008, 363).

The latest newcomer, which holds the number one priority for most e-commerce businesses at the moment, is Search Engine Marketing (SEM), commonly referring to Search Engine Advertising (SEA) and Search Engine Optimization (SEO). As around 96% of all European Internet users do research online before making purchasing decisions (IAB Europe: Mediascope 2012), the importance of search engine visibility and hence also the implementation of effective SEM has become a key success factor for any business pursuing high profits online. (Evans 2008, 360).

As mentioned, search engine marketing encompasses both paid and organic search result optimization. It experienced its full-scale birth in the year 2007 when Google acquired the US-company DoubleClick which provided online advertising services to companies, and created its own service for E-commerce marketers worldwide. This service, Google AdWords, is the dominating keyword-bid-based search advertising tool in the current market place while Google's organic ranking formulas simultaneously determine the SEO-visibility of E-commerce websites. Other smaller search engines, such as Yahoo and Bing, also provide their own optimization tools and systems, but due to Google's dominating position in the search engine industry their importance to modern e-commerce players has diminished. Search engine marketing can be considered the most important lead generating marketing channel in e-commerce, because it provides the marketer with an option to offer a direct supply to the customer demand based on their search query in the search engine. (Evans 2008, 360.)

Another relatively new trend which has risen alongside e-commerce popularity is Social Media Marketing (SMM), which represents the social aspect of brand building. Social networks like Facebook and Instagram serve both as a channel for a company to com-

municate with and integrate their existing customer base more tightly to their brand, and as a platform for the customers to engage in social interaction with the company through liking and sharing. (Geddes et al 2015, 58 – 60.)

IAB Europe is actively keeping track of the online advertising activities in Europe. According to their Adex Benchmark study (2012), the European online advertising market value had risen to 24,3 billion € in the year 2012. The exponential trend in online advertising growth in Europe is also indicating that the online sector apparently has suffered the smallest effect of the overall economic downturn of the recent years (the same phenomenon has also been observed via a research by Zorn et al. (2012) regarding the US market in 2009-2010). (Fennah 2013; Zorn et al 2012, 173.)

The year 2012 was also the first year in history in which online advertising overcame print newspapers in terms of ad spend, hence becoming the second largest media for advertising after television (Fennah, 2013).

3.3 E-mail advertising as part of online marketing strategy

Although it may seem that search engines and social platforms are dominating the online marketing field, these new trends have not erased the more traditional internet-based marketing channels from existence. One of the only direct online marketing means, e-mail advertising, is still a viable option to look into for most companies operating in the field of e-commerce.

The roots of direct marketing date back to the mid-1900s when mail-order catalogues were introduced to the public. Because of their costly nature, large direct advertising campaigns were, however, restricted to the biggest companies with highest budgets. Since the invention and popularization of e-mail usage especially in the past 20 years, a new and low-cost form of direct marketing was introduced to all sorts of businesses in the form of e-mail marketing. (Geddes et al 2015, 10–11.)

E-mail marketing can simply be identified as a Customer Relationship Management tool, representing traditional direct marketing means but in a new, modernized form (Geddes et al 2015, 10). Unlike for instance social media marketing, e-mail-marketing

can be seen as a type of direct promotion, in which a customer is approached personally by the service provider. The promotional messages, which used to reach the consumers in the form of print advertisements and product catalogues, are now being delivered in a form of for example electric newsletters. The main objectives of marketing e-mails include providing the potential customers with information about the product or service of the company, advertising of upcoming promotion campaigns and sales, expansion of customer base, and attending to customer relationship management of both new and already engaged customer base. (Ayanso 2014, 9.)

There are clear distinctions which can be observed in the e-mail marketing models used by e-commerce operators. According to Geddes et al (2015), commercial e-mails can roughly be divided into two main categories: promotional e-mails and retention based e-mails. While promotional e-mails aim at provoking an immediate conversion from the receiver, retention based e-mails such as newsletters are – despite their promotional nature – mainly used for relationship building and information convoying rather than as a direct call-to-action. (Geddes et al 2015, 11.)

Spam and motivation behind customization

When comparing the advantages and disadvantages of e-mail marketing from the marketers' perspective, it becomes very clear why its use caught on almost parallel to the growth of private e-mail usage itself. E-mail marketing as a channel for promotion provides the marketer with cost-effectiveness with high ROI, customization possibilities on a relatively large scale, better targeting, and easy measurability of success (Geddes et al 2015, 10, 19). Being one of the most potential channels for promotion, e-mail marketing provides brands countless possibilities to approach separate customer segments directly with customized content. Due to its versatility and wide range of opportunities for effective customization, e-mail marketing optimization should be in the interest of any brand pursuing high profits through their online platform (Ansari & Mela 2003, 133).

The increased popularity of e-mail marketing has not been experienced without any negative byproducts. As the marketers have found their easy and enforceable way to potential as well as established consumers' homes via direct e-mailing campaigns, the privacy and consumer protection regulations have had to go through a strict re-evaluation and modification process in order to provide the consumers with higher in-

tegrity. The optimization efforts of companies' marketing activity spending combined with the great sales potential provided by easy, cost-effective bulk e-mail campaigs has also brought upon a big issue affecting the whole e-mail marketing industry – spamming. Easy access to e-mail lists, tiny marginal cost and easiness of measuring campaign success has made it profitable for companies to enforce their bulk advertising to large amounts of customers, regardless of their preferences and wishes and without any customization of the commercial messages. (Kanich et al 2008, 1; Chaffey et al 2009, 144.)

The public reaction to emerged spamming problem has forced e-mail marketers to develop both better lead generation processes and more customized and relevant content entities in order to prevent ending up in the spam folder of the consumers. Since the high return on investment and easiness of use have created the problem of spam messages, it has become more difficult for marketers not to raise negative emotions in consumers who receive dozens of marketing e-mails per week. Therefore, the focus of many marketing activities has shifted from bulk to customization. (Ansari & Mela 2003, 131; Pavlov, Melville & Plice 2008, 3.)

Customization itself can no longer be seen as a recent development in marketing. According to Ansari and Mela (2003), one of the main separators between web-based marketing and traditional promotion channels is, in fact, the multiple opportunities to customize the messages through content, presentation and design. As pointed out by Ansari and Mela, although the cost of e-mail based marketing activities is low, a profound knowledge on the customers' behavior and preferences is required before effectively customized advertising can be implemented. E-mail advertising, to which Ansari and Mela refer to as external customization, can also be seen as the safest way to bring personalization and customized information to the customer based on their preferences; possibility to create and test new designs in a dynamic, fast and low-cost manner are far less risky than practicing on-site customization, where several web page structures and continuously altering designs may in fact drive the users away. (Ansari & Mela 2003, 131–133.)

The main distinction between solicited e-mail marketing and spamming, according to Ayanso (2014) is whether the consumer has willingly signed up for receiving promo-

tional messages from the marketer to their e-mail addresses. E-mail applications such as newsletters which require a subscription are a good basis for the company to start building up their e-mail marketing strategy, since the prospects have already indicated their interest towards the product by subscribing to the e-mail newsletter service. However, Ayanso also points out that permission-based e-mail advertising has a risk of the customer turning against the marketer and perceiving the e-mails as spam-like disturbance, if they are implemented poorly. (Ayanso 2014, 10.)

3.4 Humor and its applications in marketing

TV, radio, print and more recently electronic marketing channels are all using humor to some extent. The past has shown how the historical events have shaped the way humor has been applied to marketing activities, but its popularity does not seem to diminish. (Beard 2008, 7–33.)

Although it has been possible to determine the birth era of advertising relatively accurately, the roots of humor applications in the field are not so evident. Humor has been widely used across several channels of marketing for years, however, there seems to be no unified opinion on whether its application in marketing activities is advisable or not. Some researchers have for example noted its possible risks regarding differing perceptions of humor which might lead to negative brand image. On the other hand, humor can also be seen as a means to stand out from the ever increasing competition. (Marketing and Consumer Behavior 2015, 982.)

Beard (2008) notes that advertisement messages can, in terms of effect factors, be divided into two groups. The humor-dominant ads are according to Beard those in which the role of humor is evidently intended, meaning it is clearly intentionally positioned in the main role. By removing the humor element form the ad the message itself would not be powerful and clear enough to work on the consumers. Reversely, advertising messages which Beard refers to as message-dominant ads which place the humor on secondary position while the main focus is in convoying information. (Beard 2008, 54–55.)

Meta-review of existing researches on humorous advertising

The research data available on the topic of the effect of humor in marketing communication is extensive and constantly growing. Perhaps due to the fact, that e-mail marketing – as well as online marketing in general – is a relatively recent trend, the existing research material on humor particularly in e-mail advertising is not widely available. However, the topic has been widely researched on a more general level, as the researchers have pursued to reveal what makes advertisement funny for the consumer and whether it has a positive or negative impact on the desired consumer behavior. When reviewing the existing research material it becomes evident, that there is no inclusive result to the very common research questions such as "How does humor in advertising affect the buying behavior of consumers" or "Is there variance in the reactions to humor in advertising between different genders".

Humor is widely acknowledged as one of the most effective psychological ways to raise interest and to increase memorability in an individual exposed to any kind of stimulus. Memory research has proven humans' ability to remember incidents more effectively when they are associated with something out of the ordinary, such as humor (Strick, Holland, Van Baaren & Van Knippenberg 2010, 37). Some researchers have found evidence to suggest that the enhanced attention levels at the moment of being exposed to humorous messages may in fact help the subjects to recall what they have seen, heard or read even after longer periods of time. (Strick, Holland, Van Baaren & Van Knippenberg 2010, 38). Similar observations have also been made in several earlier researches (Spotts, Weinberger & Parsons 1997).

Opposed to these hypotheses, prior research also suggests that the brain begins to disregard the informational content of a message as the humor factor is increased, leading to lower processing of the factual content itself. An empirical research from Strick, Holland, Van Baaren and Van Knippenberg (2010) utilizing eye tracking technology among other methods found that humor which does not relate to the informational content of the promotional message itself may in fact distract the subjects from memorizing the brand and the presented messages. Strick, Holland et al investigated the extent to which inducing humorous content and style in product advertisement distracted the customers from the informational value of the commercial messages and therefore had a negative effect on product memory of the respondents, and named the main reasons behind this

phenomenon to be the level of cognitive processing, which left no room for memorizing the informational content of the received advertisement messages.

Additionally, previous studies have provided evidence to suggest that humorous ads in both print and non-print ads get more attention from the consumers than non-humorous ads (Madden, Weinberger 1982; Strick et al via Gulas, Weinberger 2006). Using text with different levels of humor they discovered that the humorous version does in fact receive more attention from the subjects in comparison to the neutral text, but the memorization process of the unrelated context was violated. This suggested that although inserting humor in the advertisement of a product or a service may increase the positive perceptions of the product, the effect on product memorability can in fact be negative. (Strick, Holland, Van Baaren & Van Knippenberg 2010, 45.)

It has also been in the interest of researchers to discover the undelying psychological factors behind the information processing of the consumers. Theories such as Chaiken's Heurestic-Systematic Model of Information Processing, developed by Shelly Chaiken (1980), or Elaboration Likelihood Model (Petty & Cacioppo 1983) are widely used as theoretical basis for researching the persuasive message processing of consumers. For example HSM suggest that the heuristic processing model of an individual guides them to save the cognitive resources when being commercial messages, and this theory has led many researchers to examine the relation between the level of cognitive processing required and the persuasiveness of the message. (Cline & Kellaris 1999, 71.)

A study by Lammers, Leibowitz, Seymour & Hennessey (1983), with a similar setting as in the current research, tested the hypothesis that humorous commercial messages are more effective in persuasiveness than serious messages with pure informational content, while implementing the trace consolidation approach with a time variable. Lammers et al based their hypothesis on three theories. First of these was the assumption, that due to the distraction created by the need to process humor in advertisement, the resources for generating counterarguments for the commercial messages were lowered and hence the resistance to persuasion decreased. Secondly they referred to McGuire's information processing analysis of attitude change and to previous studies, which suggest that due to the fact that most people's attention is increased when detecting humor and therefore the remaining steps in the chain of attitude change are disregarded. Final theory in

which Lammers et al refer to is the arousal hypothesis by Berlyne, which indicates that the positive attitude towards humor in the ad can get mixed with the actual feelings the consumer has towards its content, thus triggering positive thoughts about the product itself. In their empirical research, Lammers et al found an interdependency between the response to humorous advertisement and the timely delay as per the trace consolidation theory, from which the hypotheses was derived. More interestingly in reference to the current study, a strong gender-based variation could also be observed regardless of the measurement interval; male respondents indicated lower level of counter argumentation, whereas females had more negative perception of advertising messages with humorous content. (Lammers, Leibowitz, Seymour & Hennessey 1983.)

Also for example Madden and Weinberger (1984) have suggested that young and especially male population might be the most potential target group for humorous advertising for their positive reaction to it (Marketing and Consumer Behavior 2015, 977).

4 RESEARCH DESIGN AND METHODOLOGY

This chapter introduces the research design and provides an overview of the statistical methods used in different stages of the research; the reasoning why they were chosen and an explanation of their principal function.

4.1 Research objective and hypothesis

The research at hand pursues to reveal the effect of the independent variables on the dependent variable of the experiment, as well as possible interaction effects of those independent variables in respect to the dependent variable. The independent variables of this research are the humor condition (present or not present) and gender condition (female or male), while the dependent variable of the research is the outcome (click or no click).

The assumption upon which the hypotheses of the research are set is that gender of the respondent would be a significant determining factor in the tendency to click the newsletter link in interaction to the presence of humor. **The exact hypotheses for the research are the following: it is expected that male respondents will show a higher tendency to click the humorous version of the ad than the non-humorous version, while no similar difference is expected to be found among female subscribers.**

4.2 Research design

The research is following a quantitative research design with various statistical analysis methods. The population of the research consists of all the subscribers of DefShop's German newsletter service. The primary data gathering is implemented via two e-mail newsletter campaigns, which are distributed 50-50 among the population. The two campaign newsletters differ in the presence of humor element in the graphical presentation, while the textual content remains unchanged. The effectiveness of the two newsletter designs in term of their humorousness is validated by a pretest (see chapter 5). The reac-

tion to the campaign e-mails is recorded on single e-mail address level. This information is combined to the demographic information linked to the e-mail address, hence providing the researchers with a possibility to statistically examine the interaction between the subject's gender and the presence of humor in the e-mail newsletter in relation to their clicking tendency.

In order to effectively gather data of the click rates of the test campaign e-mails, it was decided to perform it as a 24h sale campaign. The decision to carry out the research with the Daily offers –theme was reasoned with three main advantages:

1) the 24hour Daily offers are one of the most common promotions of DefShop (implemented 1-2 times per month) and have usually good conversion rates
2) the landing page optimization was easy to implement in regard to the newsletter theme of Summer fashion (separate section called Tagesangebote = Daily offers as an already existing part of the standard structure of the web shop which could easily be modified according to the campaign)
3) the time variable effect could be excluded by limiting the promoted offers to one day only

The statistical analysis on the data set will be conducted using SPSS software. The data is analyzed using exploratory data methods, descriptive data presentation (contingency tables) and logistic regression model. Exploratory analysis and contingency tables are applied to map out the main observations and variable interactions within the collected data, and logistic regression is used to test whether the click rate of different groups can reliably be predicted according to the hypothesis. Reasoning for the use of each analysis method as well as their basic function is provided in the respective chapters to follow. In order to be able to understand and interpret the results provided by the software, it is also necessary to break down the main mathematical principles from which the result values are derived.

4.3 Implementation

When discussing the concept of humor in e-mail advertising, it is important to distinguish the possibilities provided by the channel in use. Consisting of text, graphical content, hyperlinks, subject line, banners and possible interactive sections, there are many ways to convey the promotional message in a desired style. However, as also discussed by Lammers et al (1983, 176) one of the main difficulties when conducting a marketing research based on humorous vs. non-humorous -setting is the challenge to include the same amount of factual information in both campaign messages. In order to not make it difficult to measure only the effect of humor on consumer behavior, it is crucial to eliminate the error factor of giving one test group more / more relevant information in respect to their decision-making process, which will lead to the result of click or no click. Due to this dilemma it was decided to implement the altering amount of humor to which the test groups were being exposed solely via the graphic content of the messages. Hence the informational value provided remains equal to both groups.

The research was launched on Wednesday the 13th of May. Wednesday is the other regular DefShop German newsletter send-out day, Sunday being the other. The e-mails used for the research followed the standard design and structure of normal DefShop newsletter, in which the informational text content with category links are positioned on the top of the message, followed by the graphic presentation (main banner) with embedded sales slogan and a call-to-action -click button to the web store. Below the main image are three product slider banners as well as three banners leading to men's' products, women's' products and to the sales menu of the web shop. The bottom of the newsletter is the standard company and commercial info of defshop.com.

The main banner is the graphical element, which is altering between the non-humorous (Figure 1) and humorous versions (Figure 2). For future reference, the non-humorous design can also be found in Appendix 1. The humorous version can be found in Appendix 2.

Figure 1. Non-humorous newsletter banner design; free translation: ”Fashion is about attitude – find your style! >To the products!<”

Figure 2. Humorous newsletter banner design; free translation: ”Fashion is about attitude – find your style! >To the products!<”

4.4 Statistical analysis methods

The data sets of the main research are analyzed by three main statistical methods. Exploratory analysis is used to describe and present the gathered data, contingency table - Chi-square-test –combination is implemented to examine the interactions and independency of the variables, and binary logistic regression model is applied in order to test the hypotheses set for the research.

In the analysis of the pretest data, exploratory data analysis approach is implemented alongside with both a one-way and a two-factorial between subjects analysis of variance method (ANOVA). Due to an overall small sample size and the fact that the sample sizes had some variation, the ANOVA analysis is supported by additional non-parametric tests.

The following chapters give an overview of the statistical methods used in the data analysis. Furthermore, the function of specific tests implemented as part of the following statistical entities will be clarified as their results are presented in chapters 5 and 6. All statistical analyses were run with SPSS software in co-operation with DefShop's Business Development department.

4.4.1 Exploratory Data Analysis

Exploratory data analysis approach (henceforth EDA) is the most popular statistical approach to data analysis in modern mathematical science. EDA refers to an approach on how to carry out the analysis of a given data set, and includes mostly graphic statistical techniques with some supportive quantitative methods. EDA is often falsely used as a synonym for statistical graphics, which refers to an actual given technique set based on graphics, focusing on a single characterization at once, whereas EDA does not include a specific set of methods and techniques, hence allowing a broader overlook on the data set. EDA approach aims at giving relevant insights into the data and its structures and at identifying significant factors and values within the data set via descriptive statistics and data normality and variance measurements. These significances include for example main outliers, estimates for parameters and their uncertainties, and statisti-

cal significance of single factors of the data set. (e-Handbook of Statistical Methods 2012; Lewis-Beck, Bryman & Liao 2004, 359.)

In principle, EDA allows to examine the data set which has been obtained and to determine its main characteristics and with which kind of statistical methods ought to be proceeded.

4.4.2 Analysis of Variance (ANOVA)

ANOVA refers to a set of statistical models created by R.A. Fisher, and is one of the most commonly used methods for the analysis of experimental data sets (Sahai & Ageel 2000, 1). ANOVA provides the possibility to conduct a t-test to more than two groups at once to test for statistical significance of the differences observed among different groups, and it works on a null hypothesis rejection justification –basis (Privitera 2015, 468). Rejecting the null hypothesis requires, that the significances of the measured variables will not be equal.

The ANOVA methods used in the analysis of the pretest are the one-way ANOVA, and the two-way between-subjects ANOVA method, where two-way refers to the two independent variables (humor and gender) and the in-between –feature addresses the interdependency of the variables. In a two-way ANOVA, the variance of means can be analyzed for each variable and each variable level simultaneously. In the factorial design at hand, called between-subjects design, each cell (line of variables; condition group) has their own population with their own mean and variation. A two-way between-subjects ANOVA allows the examination of the variation in each cell mean and the interaction between different levels in terms of cell means. Such a factorial ANOVA approach is used to examine the interaction effects among different “treatments” towards the sample. A two-way between-subjects ANOVA is built on four assumptions: variable independence, that the variance of the populations has homogeneity, that each population has a normal distribution, and that random sampling was used in the formation of the sample. (Privitera 2015, 468.)

ANOVA provides researchers with a methodology to analyze the effect of the chosen independent variables on the outcome of the study by conducting significance tests (Sahai & Ageel 2000, 1). In the present research ANOVA is used in its typical function; the null hypothesis is that no variation based on the respondents' gender will occur in the result of the pretest, and the rejection of the null hypothesis would require, that the gender of the person has observably altered their perception of the received message, hence receiving high significance value.

In the procedure of ANOVA, the overall variation detected within the sample is divided into separate components according to what they can be attributed to – the chosen independent variables or chance – and their effects' significance to the overall outcome can be calculated (Sahai & Ageel 2000, 1).
The result which is wanted from ANOVA is called the F-ratio. In the between-subjects ANOVA, it is accomplished by solving the ratio for the mean variance (mean squared = MS) of the condition group (either independent variable or interaction) and the error variance. The value of the F-ratio and its significance value will determine, whether there is a main effect for the variable or interaction. (Privitera 2015, 468.)

$$F\text{-}ratio = \frac{between\ group\ variance}{error\ variance\ (within\ \ groups)} = \frac{MS_{group}}{MS_{error}} = \frac{Treatment\ effect + chance}{Chance} \quad (1)$$

The value returned from the equation (1) can be interpreted based on the degrees of freedom. Degrees of freedom establish the threshold of the critical values, and are set before the analysis is conducted (Privitera 2015, 468).

4.4.3 Non-parametric tests

A non-parametric statistical calculation was decided to be administered in order to support the ANOVA. Non-parametric statistical methods, also referred to as distribution-free tests, are techniques, which can be implemented without assumptions on basic parameters, such as for example standard deviation, sample size, or mean (Sheskin 2003, 375). In other words, they are an effective method set for the analysis of ordinal data sets, such as which has been obtained in the research at hand from the Likert scale responses (Investopedia). The Likert scale used in this experiment is a five-point-scale

with values varying from “I completely disagree” to “I completely agree”, through which the respondents can express their perception of the newsletter design (“I find the attached design humorous”). Hence, it respresents exactly the kind of ordinal data set to which non-parametric measures can be applied. Due to these reasons, non-parametric methods were chosen to be implemented in the current experiment.

The non-parametric test used in this analysis is the so called Mann-Whitney-U-test. According to Sheskin (2003), Mann-Whitney-U-Test can be used for ordinal data for hypothesis testing purposes, when the experiment design includes two independent samples and there is reason to assume, that one or several assumptions of ANOVA or separately conducted t-tests are violated. According to Sheskin, when the u-test returns a high significance value, a difference among the tested groups in indicated. (Sheskin 2003, 423.)

4.4.4 Contingency tables and Chi Square test

The classification of the population of this research is based on dichotomous, exhaustive and mutually exclusive values of independent variables, meaning that each subject of the population is classified into one of two possible categories per variable, and that multiple assignments within a single category are not possible for a single subject. In other words, a subject of this research can only fall into either male or female category (but never both or none), and either humor or non-humor category (but never both or none). This way of classification allows the researchers to count the frequencies of these separate condition groups. When analyzing data samples which are classified based on two or more variables, contingency tables are commonly used. (Everitt 1992, 2.)

In this research, both independent variables are used to classify the population into two groups respectively. Contingency tables can be used to display the relation between the two variables researched in the study (here: humor and gender). In the research at hand, the interdependency of the two chosen variables is examined and the result displayed in a form of such frequency table, and the distribution analysis is followed by the variable dependency calculation through a Chi-square test.

In a contingency table analysis, it is usually of interest to determine whether the qualitative variables used to classify the populations and to create the separate cells (condition groups) are independent. To test this, contingency tables are usually combined with chi-square tests (also called goodness of fit -tests), which are designed to test the null-hypothesis that the variables are not independent. Pearson's Chi-square-test used in this research is a statistical method used to test the significance of the contingency table by calculating the independency rate of the examined variables. (Everitt 1992, 5–7.)

The Chi-square-statistic is first calculated for the individual cells in the contingency table, which then will be summed to return the total value for the entire table. The contingency table – Chi-square-test –combo (just as ANOVA) requires the calculation of the degrees of freedom, which refers to the number of values in the final calculation of a statistic that are free to vary (Everitt 1992, 5–7). The formula for Chi-square tests (2) is presented below.

$$x^2 = \sum \frac{(observed\ value - expected\ value)^2}{expected\ value} \quad (2)$$

4.4.5 Binary regression model

When examining a multivariate dataset, a mere contingency table is not an advanced enough method to extract the desired outcomes from the result and to test the hypotheses set for the research. When aiming at providing the commissioner with useful information in terms of future newsletter click rate optimization, the clicking probability of each set of linear independent variables, a.k.a each condition group (gender condition + humor condition) can be seen as one of the most useful outputs of the analysis. However, due to some fundamental characteristics of the research design and the data set which could be attained, this probability value is unknown. Therefore, a logistic regression model is applied to solve the click probability of each condition group as well as the significance of each applied independent variable separately and as a combination in respect to the dependent variable.

As per a simple definition provided by Feinberg, Kinnear and Taylor (2013), regression is a widely used statistical method for testing the validity of relationships between two

or more variables, and a methodology for measuring the influence of those variables on one another. As it is pointed out by Feinberg et al, regression is a very effective tool also in marketing research, as it allows the researcher to determine and quantify the relationship between variables and their impact on the outcome of different marketing activities. Finally, Feinberg et al point out regression's application possibilities in making predictions on for example the success of future marketing campaigns based on the data which was acquired by the research. (Feinberg, Kinnear & Taylor 2013, 437.)

The term *statistical regression* is an umbrella term for a wider set of techniques. According to Feinberg et al (2013), regression models can be subdivided into several statistical regression methods based on the dependent variable being used on the data set analysis. Due to the characteristics of the dependent variable, the regression model implemented in this research is more precisely called *Binary logistic regression model*, or *Logit-linked Bernoulli model*. In order to avoid confusion, this report will henceforth only use the term binary logistic regression model to describe the method applied. (Feinberg, Kinnear & Taylor 2013, 269, 436.)

The word *binary* refers to the way the dependent variable – the outcome of each trial – is coded: as per fundamental characteristics of binary data, the outcome of each individual case is either a success (=click, coded as 1) or failure (=no click, coded as 0). This kind of binary dependent variable is also in some instances called *dichotomous variable* (Feinberg, Kinnear & Taylor 2013, 665). However, in order to avoid confusion, only the term binary variable will be used throughout this report. Binary coding with values of 1 or 0 makes the dependent variables' values mutually exclusive, meaning there is no possibility of any other outcome than success or failure, 1 or 0.

This characteristic of the research also helps to explain why no other regression model is suitable for implementation; binary data is assumed to follow a so called Bernoulli distribution, which is a variation of binomial distribution. This fits the primary feature description of a logistic regression model, which according to Hilbe (2009) includes the precondition, that the predicted mean is a probability between 1 and 0 (where 1s commonly depict success to meet the set criteria, while 0s apply to failed cases to meet the set criteria). Normal distribution would be a condition needed for most other variations of logistic regression, such as simple linear regression or multiple linear regression. As

pointed out by Hilbe (2009), if one would model binary response data on the basis of other distribution models, such as Gaussian or Normal distribution, the fundamental assumptions upon which the entire binomial model is based would be violated, as the values of the dependent variable could also land outside the pre-determined range of 0 to 1. Any value which reaches outside the limits of binary data does not fit the definition of probability in the case of this research. (Hilbe 2009, 2, 573.)

Allen (2004) describes the logistic regression from a scientific point of view as a process of modeling a mathematical equation in which the dependent variable is equal to the natural logarithm of the odds that the outcome of the trial is 1 (success) as opposed to being 0 (failure). What the SPSS (or any other software that could be used for the analysis) does, is that it determines the probability of the dependent variable receiving the value 1 by first forming the estimation equation, secondly determining the coefficients, and then combining these two to return the estimated probability of a click, referred to as $\hat{p}$ (see figure 3 for summary). The equation is derived from the logit of the odds ratio, while the coefficients are extracted by using Maximum-likelihood estimation. (Allen 2004, 189.)

The equation returning the estimated probability of a success – in this case a click – for a certain case of applied independent variables is as follows:

$$\hat{p}(1) = \frac{e^{\beta_0+\beta_1 x_1}}{1+e^{\beta_0+\beta_1 x_1}}$$, where $\hat{p}(1)$ is the estimated probability of a click (3)

This *estimated regression equation* (3) provides the analysis with the estimated probability – $\hat{p}$ – of a click for each combination of independent variables applied. In this research, these combinations are female-humor, female-no humor, male-humor, and male-no humor. The logistic regression analysis also computes the significance of the conditions and their interactions in regard to the result. This information can be utilized to optimize the subscribers' tendency to click to the maximum by altering the humor used in the newsletter they will receive in the future, provided that the set hypothesis holds true and a *statistically significant difference* between the sample groups can be observed in the collected data. For more information on the mathematical principles and basic terms regarding the estimated regression equation, see Appendix 4.

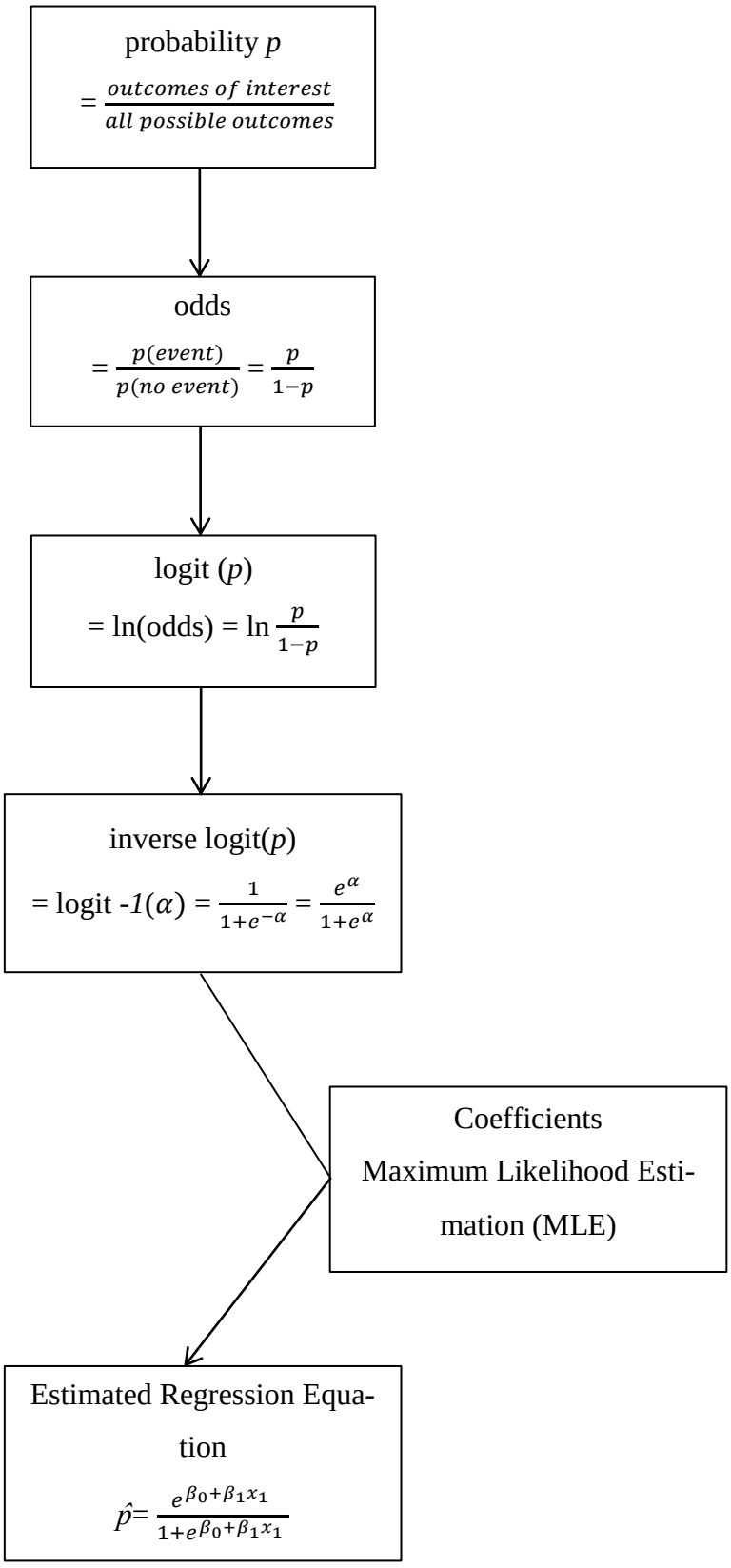

Figure 3. Binary logistic Regression process

Coefficients and Maximum Likelihood Estimation

The use of binary data allows the computing of correlation coefficients for each variable used. A coefficient of a variable in regression model measures the degree of effect of the variable on the outcome – that is the dependent variable – with the condition that other variables included in the model remain constant (Albright, Winston & Zappe 1999, 659). This indicates, that the coefficient returns the measure of a variables effect on the outcome in addition to the other variable's effects.

According to a definition presented by Jackson (2012), correlation coefficient is a statistical indicator with a value between +1 and -1, measuring either positive or negative relationship of the variables. In other words, it predicts the change observed in one value when the other one is changed, based on the degree of its effectiveness. Positive correlation indicates direct relationship between variables, which in reality can be observed as a codirectional change in the values of the independent variable and the dependent variable (increase in one variable increases the other as well). Negative correlation indicates an inverse relationship of variables, which can be observed as an inverse change in the values of the variables (increase in one variable causes a decrease in the other). Logically, the coefficient of zero indicates no relationship between the variables. (Jackson 2012, 63–64.)

The method used by SPSS to compute the coefficients is called the Maximum-likelihood estimation (MLE). MLE is a method to determine the one probability distribution, which would make the observed data most likely. The function is based on the assumption that the desired probability distribution is also the one that makes the returned observations most likely to have occurred. By using a formula for the parameter vector, a.k.a an MLE estimate, it seeks to maximize the outcome of the likelihood function. The output which softwares such as SPSS provide based on MLE in logistic regression analysis is the coefficients of independent variables. (Myung 2001, 93.)

According to Jackson (2012), a universal categorization for the significance of the coefficients between -1 and 1 has been established. Coefficient values landing between $\pm 0.70 - 1.00$ are considered to indicate strong relationship. Values between $\pm 0.30 - 0.69$ indicate moderate strength of relationship. Values of $\pm 0.00 - 0.29$ indicate weak relationship, where 0.00 refers to absolute no relation. (Jackson 2012, 64.)

There are some features of regression analysis which ought to be reviewed before implementing the analysis methods on a data set. One of the data set characteristics also mentioned by Feinberg et al (2013) as a possible violating factor is the possible problem of multicollinearity of the variables. Albright, Winston and Zappe (1999) define multicollinearity as a phenomenon, where there is a "fairly strong linear relationship" between the independent variables used to predict the dependent variable. This interdependency of the variables can make it difficult to estimate the effect of one single independent variable on the outcome; if the independent variables have a strong linear relationship, the effect of variable x on the outcome may not be accounted in its coefficient correctly, since other independent variables may have affected the significance of that variable x in the background. According to Feinberg, et al, multicollinearity can be especially topical when dealing with large customer databases, where some of the independent variables and their correlations are unknown. Considering the scale and type of the data set at hand, the multicollinearity problem is good to keep in mind when analyzing the SPSS output. (Albright, Winston & Zappe 1999, 659; Feinberg, Kinnear & Taylor 2013, 438.)

4.4.6 About the coding of independent variables for analysis purposes

The logistic regression analysis gets more complicated when more than one independent variable is added to the equation. Since the research at hand is measuring the effect of two independent variables as well as their interaction effects to the dependent variable, a coding scheme has to be decided upon before running the analysis with SPSS.

There are several coding schemes to choose from when using categorical data variables. However, in the cases where only two categories – such as gender (male/female) and presence of humor (yes/no) – are being used to make predictions on the dependent variable, a so called *dummy coding scheme* is preferred. This is mainly due to dummy coding's ease of implementation and result analysis. As pointed out by Aguinis (2004), dummy coding is useful when drawing comparisons between the two groups being examined. The dummy coding assigns a certain value (1 or 0) on each category (humorous or non-humorous, male or female), allowing the researcher to examine the interactions

of the two independent variables and to observe their effects on the dependent variable both combined and separately. (Aguinis 2004, 118–119.)

In this research, the dummy coding of independent variables has been implemented as demonstrated in table 2.

TABLE 2. Coding scheme of independent variables

		Parameter coding
		(1)
Humor Condition	non-humorous	0,000
	humorous	1,000
Gender	female	0,000
	male	1,000

As it can be observed from the table above, each linear set of independent variables (a.k.a each condition group) can be assigned to a two-pointed code, which helps in identification of the independent variable combination of an individual data point in the data set. The first value point of the code determines the humor condition, while the second value determines the gender condition. As an example, a male subject who has been exposed to the humorous advertisement receives the coding value of (1,1), whereas a female subject in the humor-condition group can be identified from the coding value (0,1). Because of the coding, it is possible to compare the outcome of each trial to the condition set which had been applied and to measure the effect and significance of each condition in respect to the dependent variable.

5 PRETEST

The importance of administering a pretest before the launch of the actual research campaign is great in assuring the validity of the research results. The two tested campaign e-mail versions are designed to have different amounts of humor in them, but also to not provoke reaction based on the respondents' gender – in other words, the aim of the campaign messages is to vary only in the amount of humor inserted in the message, and the humor used should not be gender-specific and therefore trigger different perception of their humorousness from the respondents based on their gender. This is a very important aspect of the research – the evaluation whether the ad is humorous should not depend on gender. Hence it could be assured that once the actual study is conducted, the behavioral differences of the participants can be attributed to the style used in the message, and the variance between genders will only be recorded for further examination. Otherwise differences in behavior could also be caused by gender-specific perceptions of humor and not just by the amount of humor present in the ad message.

5.1 Pretest objective

The objective of the pretest is to validate the universal perception of the designed messages style as humorous or non-humorous, hence minimizing the possibility of the personal preferences of the campaign designers affecting the results. Another important aspect of the pretest is to ensure that there would be no difference between genders when discussing the humorousness of the ads.

It is expected to find no significant interaction effect between the gender of the participants and the presence of humor in the messages. No significant main effect for gender should be observed, and a significant main effect for humor should be observed in relation to the dependent variable.

5.2 Experiment design

The pretest design is a 2x2 factorial experiment. Factorial experiment refers to a statistical method, where the effect of the chosen factors (two or more) and all their levels to the response variable under examination can be observed alongside with the interactions of those factors. In this pretest, the two factors measured were gender (with the levels male or female) and humor (with the levels present or not present), while the response variable refers to the dependent variable (perception of the humorousness of the ad, measured here by Likert scale).

A pretest was conducted among a sample drawn from the employees of the commissioner. Although the pretest population may not have been 100 per cent representative of the population of the actual research, it could be considered large enough to give indication on the general perception of the designed ad versions as humorous or not. It could also due to its strong representation of both genders be considered relevant for the other main purpose of the pretest experiment: measuring the possible gender factor effect on the perception of the message style.

The pretest population is divided into two groups, both consisting of male and female subjects. These groups are exposed to different stimuli during the pretest; one of the groups is asked to evaluate the humorous-intended message, while the other receives the non-humorous-intended message for evaluation. The participants of the pretest are asked to evaluate whether they perceive the message as funny on a five-point Likert scale. The pretest survey also records the participants' gender and level of German language knowledge.

5.3 Implementation

The pretest was conducted on May 7 – 8 2015. A sample of 76 people was drawn from the employees of DefShop GmbH, and the pretest was conducted via an e-mail invitation to respond to an online-based survey regarding the campaign designs. The survey was created using Google Forms, and it included either a non-humorous newsletter sample (group A – see Appendix 1) or a humorous newsletter sample (group B – see

Appendix 2). The surveys as well as the e-mails were composed in English by the thesis author and translated into German by the E-mail Marketing Manager of DefShop.

Both groups A and B received an invitation from the Human Resources team of DefShop to participate in a survey via their work e-mail. Both e-mails were identical except for the link to the survey. Also, the surveys which could be found from the links had no variation in the presentation or content and wording of the questions, but the graphics displayed in the survey form were either the non-humorous version (group A) or the humorous version (group B).

The surveys were structured as follows. After short instructions on how to complete the questionnaire, the respective graphic newsletter design was displayed to the participant. Below the image, the participants were asked express their perception of the humorousness of the displayed design on a 5-point Likert scale ("I find this newsletter design humorous": I completely disagree – I disagree – I don't know – I agree – I completely agree). The Likert scale is constructed in the survey from -2 to +2, -2 referring to "I completely disagree" and +2 "I completely agree", but for analysis purposes the values are converted to 1–5 respectively. The Likert scale was followed by two multiple choice questions where the participants were asked to indicate their gender (male/female) and their level of German language skills (native: yes/no). For pretest survey design see Appendix 3.

5.4 Result

This chapter provides the exploratory analysis data for the pretest as well as the result of the most important statistical methods applied in its analysis; ANOVA, test of normality, test of homogeneity of variance, and Mann-Whitney U-test. A comprehensive analysis output can be found in the attachments of this report (see Appendices 5-9). All tables available only in the appendix are marked with a prefix A.

As a conclusion, the analysis of pretest data proved the success of the intended message styles as humorous or non-humorous regardless of the gender of the respondents. No significant interaction effect between humor and gender could be observed in either of

the versions, which indicates strong universal comprehension of the ad styles as humorous or non-humorous, as intended. These results confirm the desired effect of the campaign designs: the humorous version was ranked significantly funnier than the non-humorous version. As suggested by the ANOVA, the humor itself was the main variable resulting higher humor-rank of the design, while gender was not a significant determining factor. The following chapters review the main results which lead to the analysis.

5.4.1 Exploratory analysis

The following represents the main findings of the pretest exploratory data analysis. For comprehensive SPSS output, see the respective appendix marked. All tables available only in the appendix are marked with a prefix A.

Descriptive statistics

For statistics see Appendix 5.

The pretest survey was sent out to 76 employees of DefShop – 37 employees were assigned to group A and 39 employees to group B. An answer was received from 42 employees (table A11). As presented in table A12, group A consisted of 22 respondents, of whom nine (40.9%) were female and 13 (59.1%) were male, while group B had 20 respondents with a distribution of 8 females (40.0%) and 12 males (60.0%). Out of all 42 respondents, only five were non-native German speakers. Three of them had been assigned to the non-humorous group, and two to humorous group (see table A13).

Exploratory statistics – Humor condition

For statistics see Appendix 6.

When looking at the humorous and non-humorous groups without gender specification, it can clearly be seen that the humorous version received a substantially higher average ranking on the Likert scale measuring “I find that the advertising banner is humorous” in comparison to the non-humorous version. The non-humorous sample’s statistic mean was 1.82, while the humorous sample’s statistic mean was 3.40, indicating a strong difference in the perception of the two versions’ humorousness (table A15).

The distribution of Likert scale responses for each version are presented in figures 4 (non-humorous version) and 5 (humorous version). For scaling principles, refer to chapter 5.3.

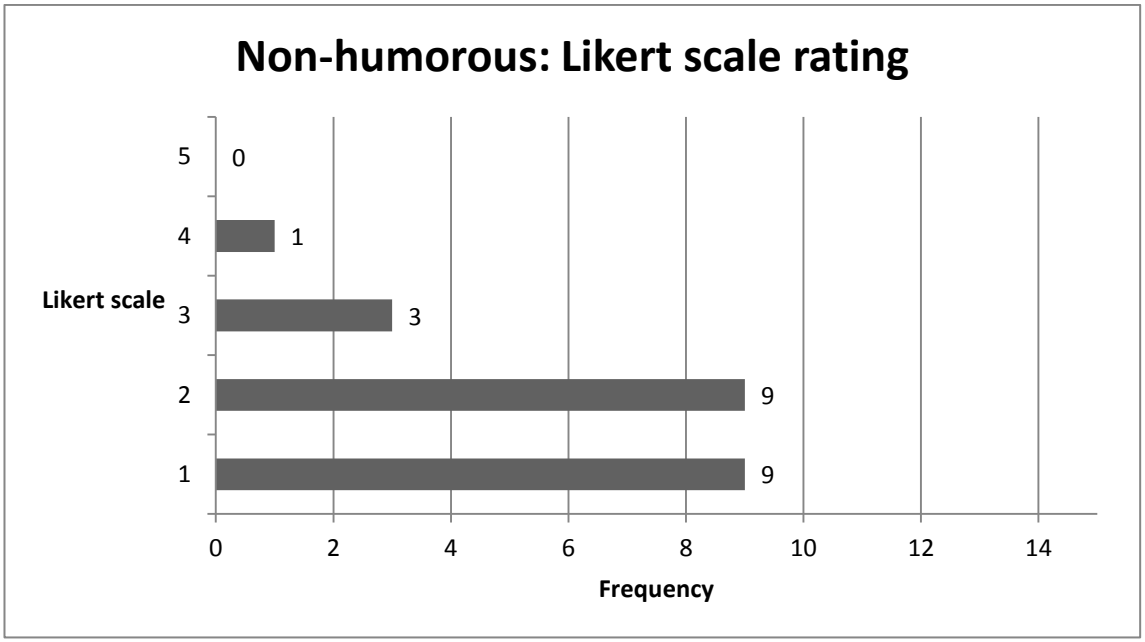

Figure 4. Likert scale values for the non-humorous version
Mean = 1,82 , Std. Dev. = 0,853 , N = 22

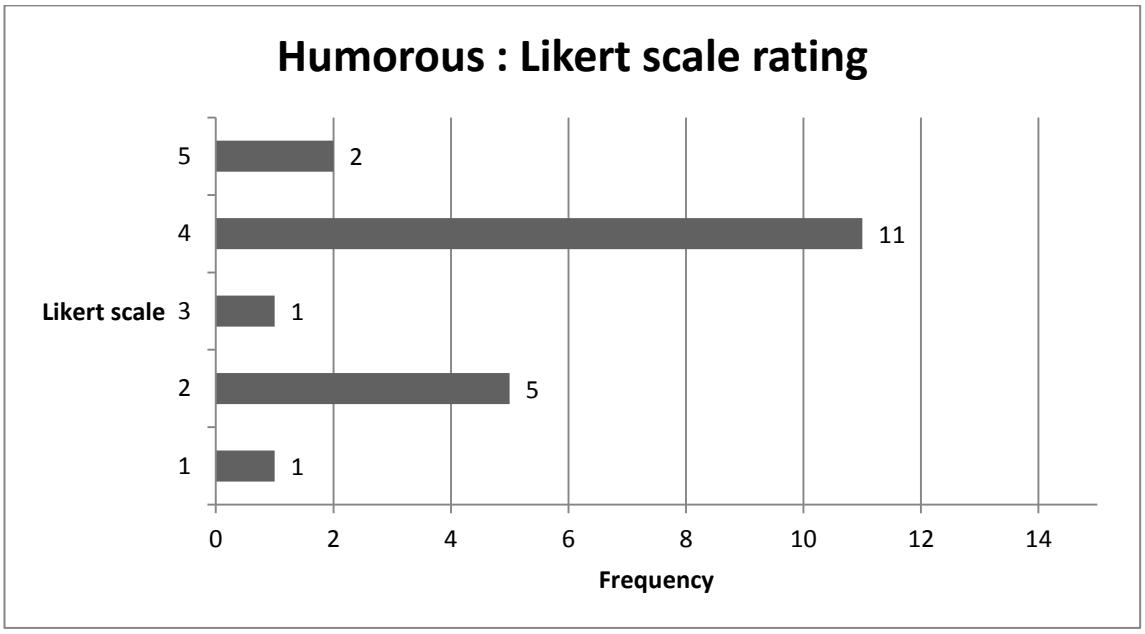

Figure 5. Likert scale values for the humorous version
Mean = 3,40 , Std. Dev. = 1,142 , N = 20

Test for normality and homogeneity of variance – Humor condition

The tests for normality were run as a part of the analysis process of the Likert scale data. Out of the two default tests for normality in SPSS, the Shapiro-Wilk-test provides more accurate results for analysis of sample distribution's normality with small sample sizes than the Kolmogorov-Smirnov-test. As it can be seen in table A16 (Appendix 6), the p-value (sig) for Shapiro-Wilk is .001, which indicates a highly non-normal distribution.

Test of homogeneity of variance measures whether the variance of the data remains equal in all samples of the data set. SPSS uses the Levene statistic based on mean to test this variance homogeneity. In table A17 (Appendix 6) a relatively high significance value (sig.) is observable (above the threshold of .05), indicating that there is no homogeneity but heteroscedasticity in the variances of the data set.

Exploratory statistics – Humor condition * Gender

A more in-depth view of the success of the design could be gained from exploratory statistics of the combined effect of humor and gender, so when making comparisons between all four condition groups. For the results presented below, refer to table A19 in Appendix 6.

The humorous version received higher rankings across the gender groups; the mean among female respondents in the humorous group was 3.25, whereas the respective value for male respondents was 3.50. In the non-humorous group, the mean for female respondents was a very low 1.44, and for males the mean value was 2.08. These values indicate strongly that the humor used in the humorous version was perceived as funny by both men and women, as intended. An overall lower ranking could be observed for the non-humorous version, however it is interesting to notice that the male respondents also ranked the non-humorous version as funnier than their female colleagues in the same condition group. However, due to the big difference to the other male group in the humorous condition (2.08 vs 3.50), this should not imply a failure in the advertisement design.

The distribution of Likert scale responses for each version are presented by gender in figures 6–9. Figure 6 presents the Likert scale responses from females in the non-humorous condition, figure 7 from males in non-humorous condition, figure 8 from

females in humorous condition, and figure 9 males in the humorous condition. For scaling principles, refer to chapter 5.3.

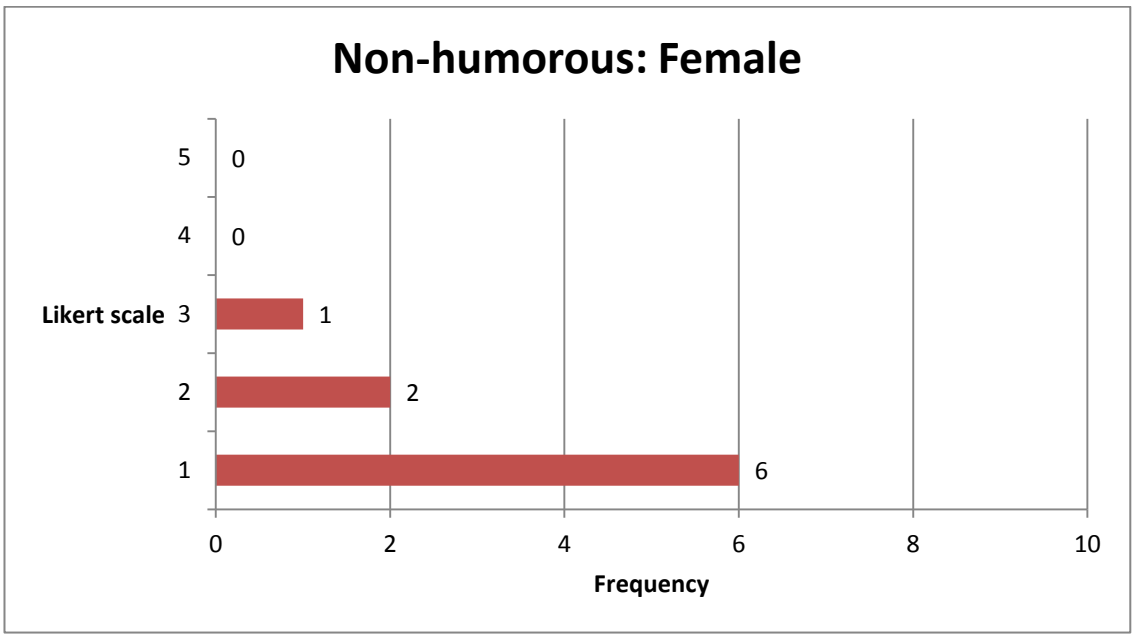

Figure 6. Likert scale values for the non-humorous version from female respondents
Mean = 1,44 , Std. Dev. = 0,726 , N = 9

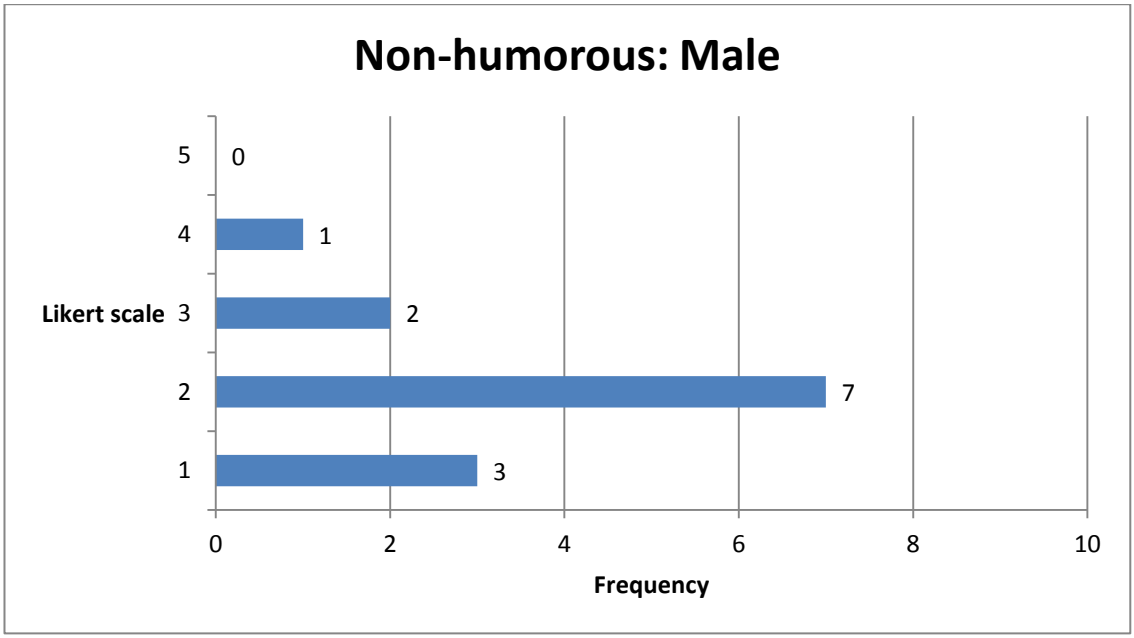

Figure 7. Likert scale values for the non-humorous version from male respondents
Mean = 2,08 , Std. Dev. = 0,862 , N = 13

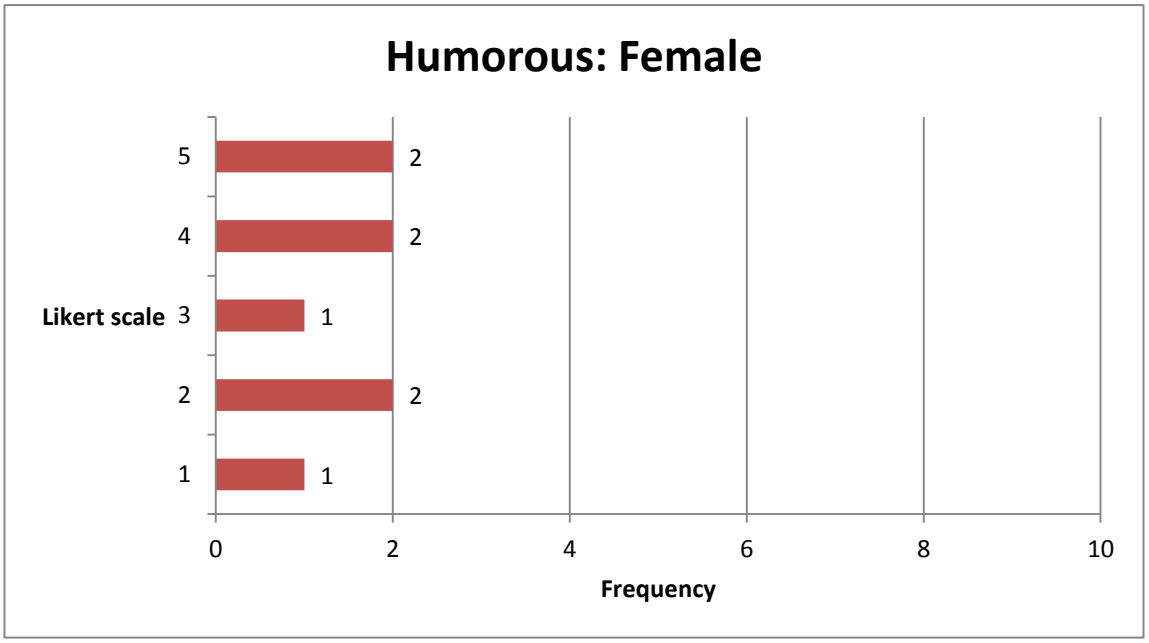

Figure 8. Likert scale values for the humorous version from female respondents
Mean = 3,25 , Std. Dev. = 1,488 , N = 8

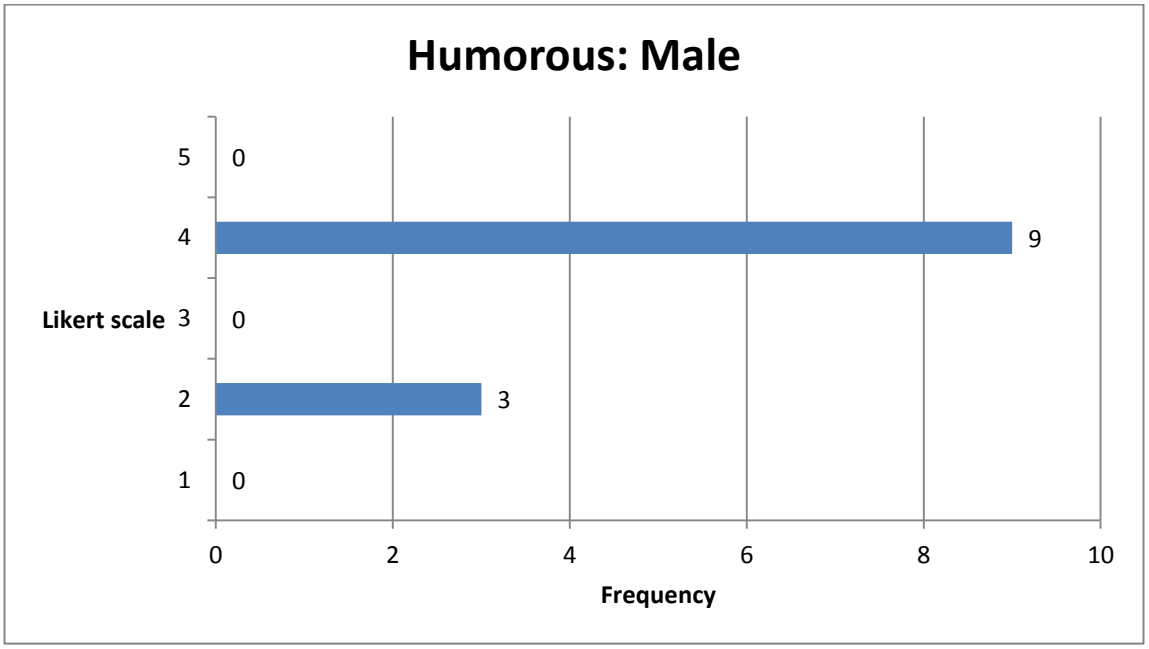

Figure 9. Likert scale values for the humorous version from male respondents
Mean = 3,50 , Std. Dev. = 0.905 , N = 12

Test for normality and homogeneity of variance – Humor condition * Gender

The tests for normality (table A20) and homogeneity of variance (table A21) were also run for the statistics above, and they can be found in Appendix 6. The results indicate non-normal distribution for two of the groups and homogeneity of variance between the samples based on mean.

5.4.2 Analysis of Variance

The significance of the gender and humor factors to the result of the pretest was measured by conducting both one way between-subjects ANOVA for each variable and a two way between-subjects ANOVA for the interaction effects. The results of these tests were clear; no significant main effect for the gender could be identified, and a significant main effect for humor was observable. The analysis revealed no significant interaction effect between gender and humor condition. For comprehensive SPSS output, see Appendices 7–9.

Table 3 below presents a summary of the results of the analysis. The humorous version received a higher average ranking than the non-humorous version in both gender groups.

TABLE 3. Descriptive statistics for ANOVA

Dependent Variable: "I find that the advertising image is humorous."

Gender		Mean	Std. Deviation	N
Female	non-humorous	1,44	,726	9
	humorous	3,25	1,488	8
	Total	2,29	1,448	17
Male	non-humorous	2,08	,862	13
	humorous	3,50	,905	12
	Total	2,76	1,128	25
Total	non-humorous	1,82	,853	22
	humorous	3,40	1,142	20
	Total	2,57	1,272	42

The Levene test presented below in table 4 is calculated by SPSS to validate the data set's characteristics to meet the requirements of ANOVA. It tests for the equality of variance in different groups used for the analysis. A significance value higher than 0.05 indicates equal variances, which is a prerequisite for valid ANOVA results. The recorded sig. value is .041, which suggests that the ANOVA results may be violated.

TABLE 4. **Levene's Test of Equality of Error Variances[a]**

Dependent Variable: "I find that the advertising image is humorous."

F	df1	df2	Sig.
3,027	3	38	,041

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + gender + condition + gender * condition

Table 5 below presents a summary of results of the between-subjects ANOVA. As it can be seen, the significance is above the set threshold of alpha = .05 in the case of gender and the interaction, implying no significance. A value below alpha has been recorded for the condition – which refers to humor variable – implying significance.

TABLE 5. **Tests of Between-Subjects Effects**

ependent Variable: "I find that the advertising image is humorous."

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	28,640[a]	3	9,547	9,637	,000	,432	28,910	,995
Intercept	266,170	1	266,170	268,678	,000	,876	268,678	1,000
gender	1,965	1	1,965	1,983	,167	,050	1,983	,279
condition	26,299	1	26,299	26,547	,000	,411	26,547	,999
gender * condition	,369	1	,369	,373	,545	,010	,373	,091
Error	37,645	38	,991					
Total	344,000	42						
Corrected Total	66,286	41						

a. R Squared = ,432 (Adjusted R Squared = ,387)

b. Computed using alpha = ,05

The result tables for individual ANOVA results, which are recapped below, can be found in Appendices 7–9.

The one-way ANOVA for gender (Appendix 7) revealed a low F-ratio for the variable and a significance level of .167, indicating no significance (table A24). This provides evidence that gender has no main effect; the significance value of .167 indicates, that there is no significant difference between the newsletter ranking means of the two genders.

The one-way ANOVA for humor condition (Appendix 8) revealed a high F-ratio for the variable with a significance level of .000, indicating high significance (table A27). This indicates that there is a main effect for the humor condition without interaction: .000 significance level for both groups indicates that the means of the humor rankings which the two newsletter versions received had significant differences.

The two-way ANOVA for the two independent variables (Appendix 9)
When computing the significance levels for the interaction (two-way between-subjects model), gender as a main variable received a significance value above the threshold of .05 for both humor condition groups (table A29), indicating no significance, whereas humor condition's effect was found significant in both gender groups (.001) (table A30). This provides strong supporting evidence to the expectation that gender was not a determinant factor of the messages perception as humorous or not.

As seen in table A31, the non-humorous version received a sig. of .151, while the humorous version had a sig. of .585. Both values depict low significance, indicating that the means within a humor condition's funniness-ranking from males and females do not differ. When looking the other way round, both female and male receive a sig. value of .001, which refers to high significance (table A32). What this indicates is that when looking at either of the gender groups, the two newsletter version's ranking means differ significantly; the humorous version is ranked more funny by both genders.

5.4.3 The Mann-Whitney U-test

Due to the non-normality and heteroscedasticity –problem detected, a set of additional non-parametric tests were run in order to back up the ANOVA results. Their results were consistent with previous findings; a significant difference between the humorous and non-humorous version could be found. The Mann-Whitney-U-Test returned a significance value of .000, indicating differences in the variance of the separate samples and hence rejecting the null hypothesis (figure 10).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of "I find that the advertising image is humorous." is the same across categories of Humor Condition.	Independent-Samples Mann-Whitney U Test	,000	Reject the null hypothesis.
2	The distribution of "I find that the advertising image is humorous." is the same across categories of Humor Condition.	Independent-Samples Kolmogorov-Smirnov Test	,001	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

Figure 10. Hypothesis Test Summary: Mann-Whitney U Test

6 ANALYSIS OF THE RESEARCH CAMPAIGN RESULTS

This chapter reviews the findings of the actual research campaign. The newsletters used in the research campaign included same designs of non-humorous banner (see appendix 1) and humorous banner (see appendix 2) as the pretest.

At the time of the campaign launch on Wednesday 13th of May 2015, there were a total of 387736 subscribers with a German postal address to the German e-mail newsletter service. All subjects with non-German address where excluded from the analysis right from the beginning due to possible cultural contradictions regarding humor perceptions and language issues; since the pretest to validate the humor effect was conducted on German test subjects, there was no guarantee that other nationalities – such as Hungarian, Austrian and Swiss, which all were present in the population – could scientifically be analyzed on the same grounds as the German subscribers. While it can be argued that all the subscribers with a German postal address may not be native Germans, it is, however, assumed in this research that those subjects are a marginal group within the sample. Hence their effect on the result cannot be considered significant.

The following chapters provide the main results which lead to the analysis conclusions. For comprehensive SPSS output, see the respective appendices. All tables available only in the appendix are marked with a prefix A.

6.1 Exploratory Data Analysis

The exploratory analysis gives indication that the hypotheses set for the research could be observed also in the sample; male subjects were more inclined to click on the humorous newsletter than the neutral one, while similar phenomenon was not observable in significant amounts among female subjects. The full SPSS output for EDA can be found in Appendices 10–11.

Descriptive statistics

The population N of the research campaign was 387736. The distribution of the humorous version and the neutral version of the newsletter among the whole population was an even 50-50. The total opening rate of the newsletter was 8.9%, which is within the limits of an average DefShop newsletter opening rate. Out of all the newsletters which were sent out, 0.8% resulted in a click on an element. All the clicks were accounted regardless of whether they were on the main banner, side banners, one of the text hyperlinks, or any other element within the e-mail.

There were 1518 cases (0.4% of the whole population) with unknown gender data, which consequently had to be excluded from the analysis. This resulted in 386218 cases with valid gender information, which could be included in the analysis sample. Out of the valid sample, 41.9% were female and 58.1% were male (figure 11).

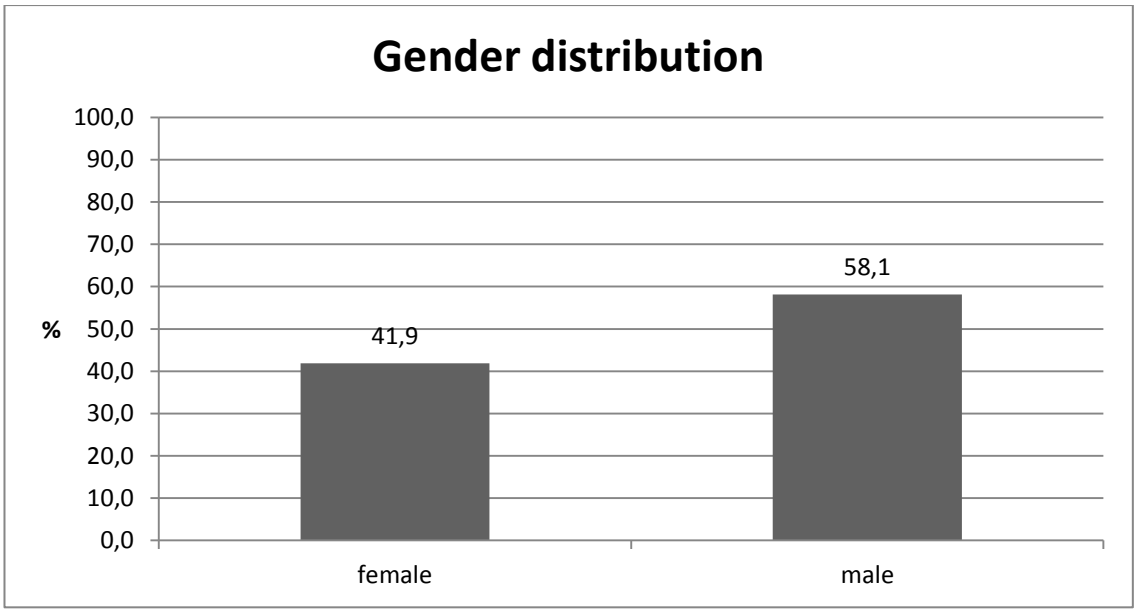

Figure 11. Gender distribution (validated) N = 386218

The opening rate among the valid gender cases was 8.9%, which translates to 34408 cases altogether (figure 12). The big amount no not-opened e-mails can partly be explained by outdated e-mail addresses, which still have the subscription even though they are not in active use anymore, and partly by the fact that the data gathering lasted only one day due to the 24h-offer nature of the campaign, and opened e-mails on the following days are not counted in.

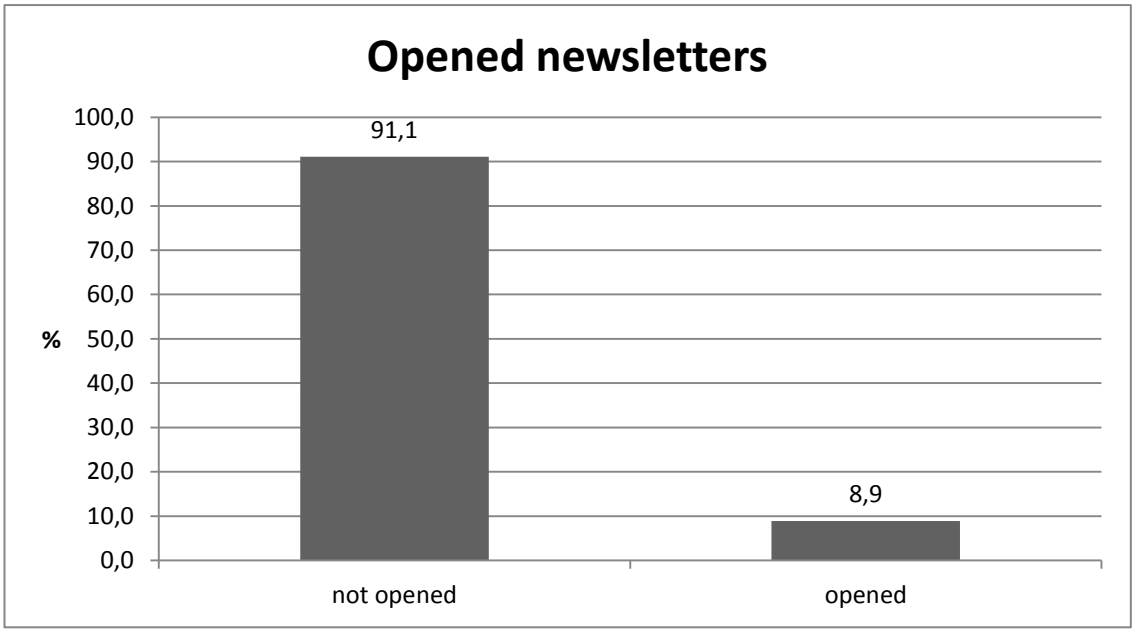

Figure 12. Opened newsletter among valid gender cases N = 386218

The final sample used for the analysis herewith consists of 34408 data points, for which all cases carry valid gender information and all subjects viewed the newsletter by opening the e-mail. The excluded cases are those with missing gender information as well as those where the newsletter was not viewed by the subject. As seen in figure 13, the two humor conditions among the opened newsletters were still distributed equally within the final sample – the non-humorous version constituted 49.8% of the cases in the final sample, whereas 50.2% of the sample were assigned to the humorous version.

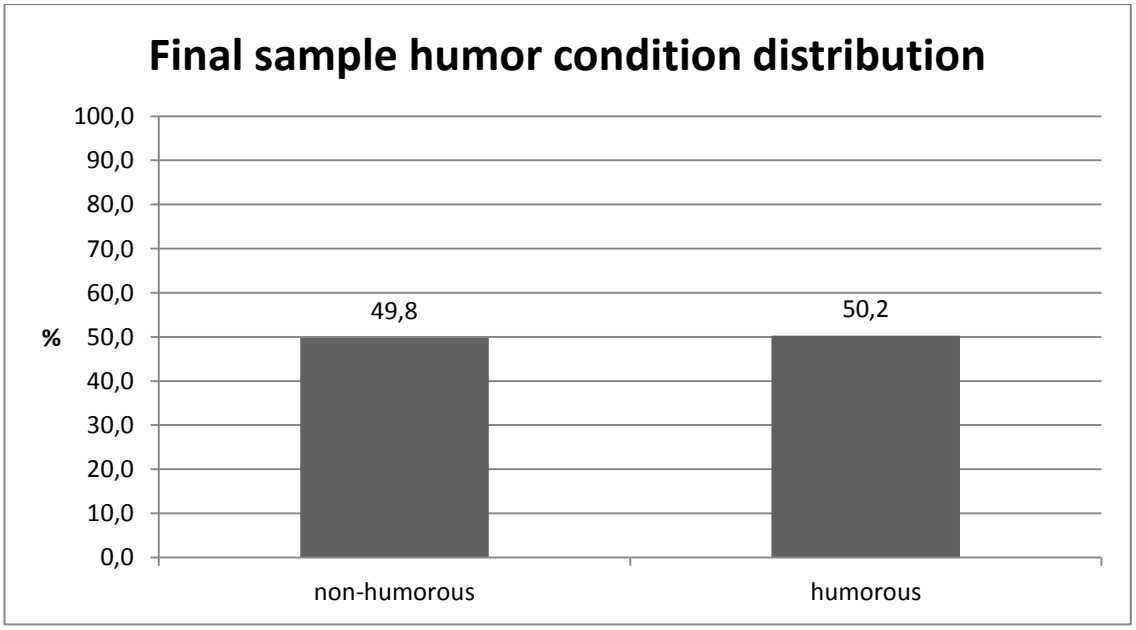

Figure 13. Final sample humor distribution N = 34408

37.4% cases in the final sample were female subscribers, whereas 62.6% of subscribers were male (figure 14). This gives indication that male respondents are more likely to open the newsletter to begin with (although, since the subject line of the e-mail had no difference among humorous and non-humorous e-mails and because the opening rate was not the main interest of the analysis, this result cannot be linked to the topic of this research and will not be discussed further in this report).

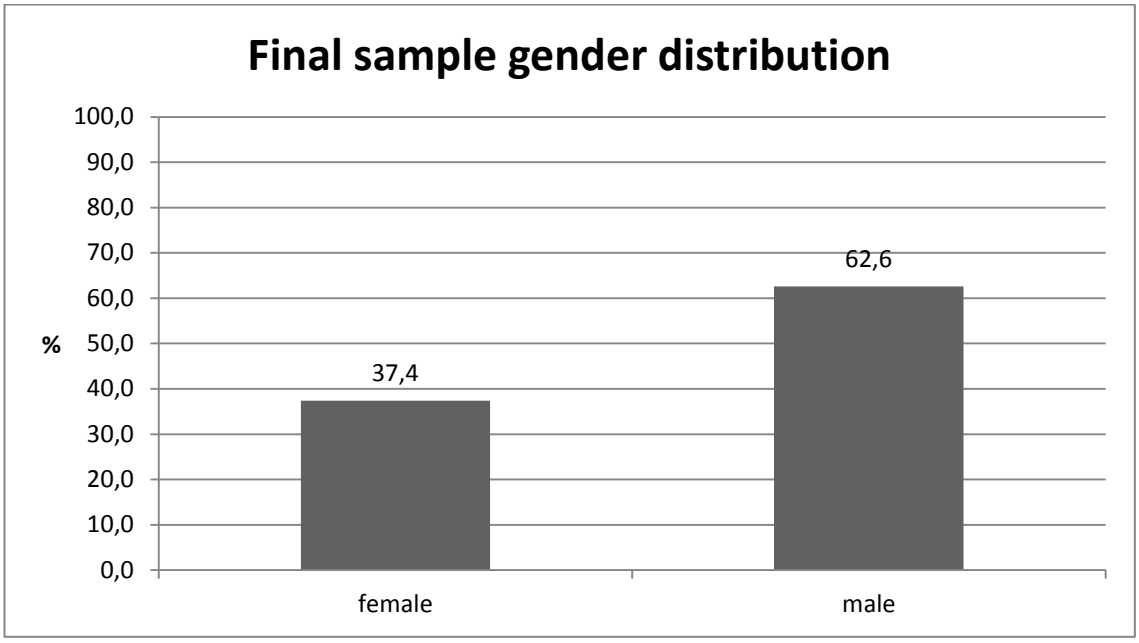

Figure 14. Final sample gender distribution N = 34408

The click rate of opened e-mails presented in figure 15 was 8.7%, which gives a total of 3010 clicks on some element within the newsletters.

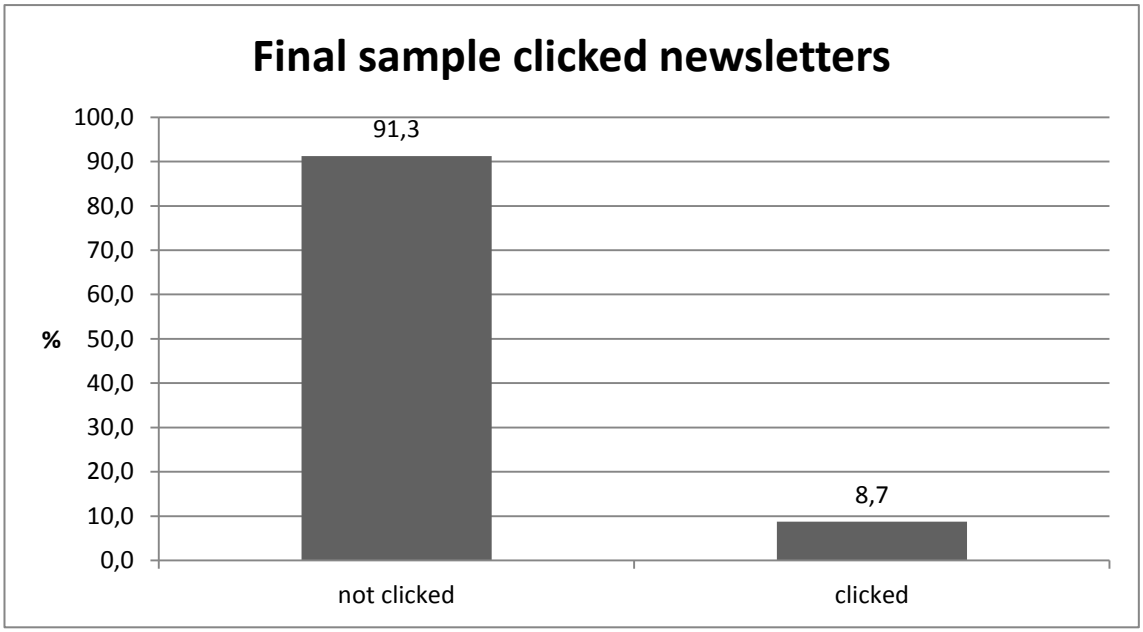

Figure 15, Final sample clicked newsletters N = 34408

Exploratory statistics – Humor condition x Gender

It can be seen from combined statistiscs in figure 16 that both male and female subjects are distributed quite equally to different humor condition groups.

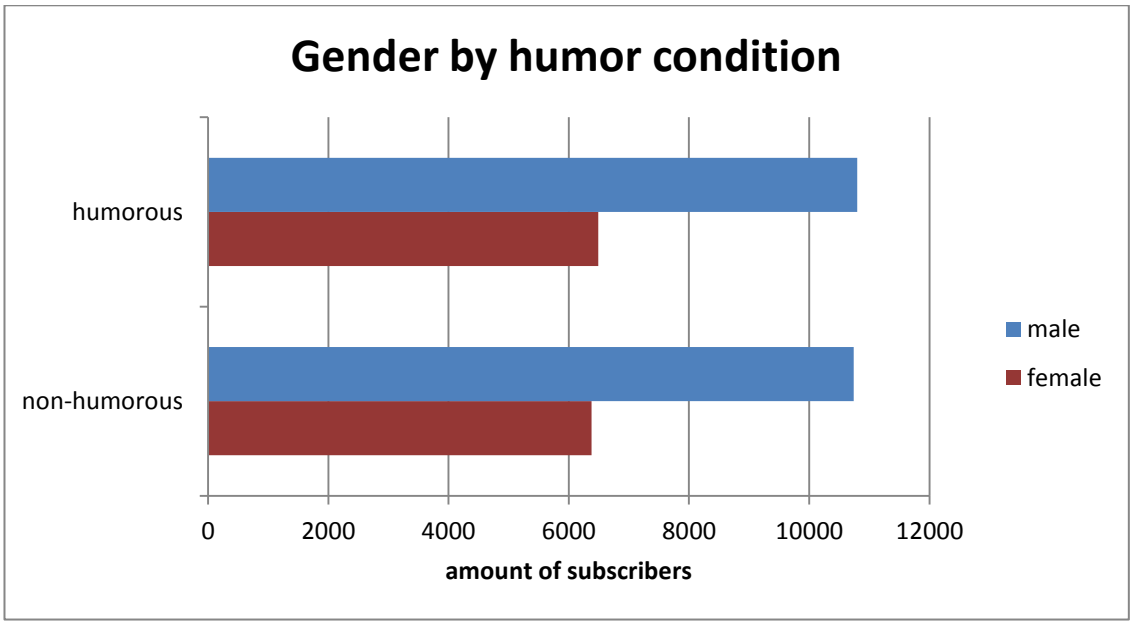

Figure 16. Gender distribution of humor condition groups N = 34408

When taking a look at the exploratory data analysis results, some interesting observations can be made in regard of the mean values of the different variable combinations. When investigating the click rates of different condition groups, more specifically when

comparing the means of different condition groups (humor condition + gender condition), there are few observations to be made.

First of all, it can be concluded that there is no significant difference between the two genders' click rates within the non-humorous condition group, indicating that the neutral version is not more effective for females nor males. There is, however, a significant difference between the two genders' click rates in the humorous group; male group has a higher mean value than female group.

Additionally, when making comparisons between the genders across the humor condition groups (table A44, appendix 11), the following could be observed: the statistic mean of the females has no significant difference across the humor groups, indicating that neither female group experienced higher tendency to click the newsletter than the other. This again provides evidence that females are not highly affected by the amount of humor in the newsletter. As a contrast, when comparing the two male groups, there was an observable difference in the click rates; the humorous newsletter resulted in higher click rate than the non-humorous one, which supports the assumption that male subjects are more likely to click the humorous newsletter than the non-humorous one.

6.2 Contingency table and Chi-square test

The unknown gender cases have been left out of the contingency table analysis. The first contingency table about opening rates per gender includes all cases with valid gender data, and the following cross tabulations were conducted on the sample of 34408 cases, not-opened e-mails being excluded from the analysis as well. Opening rate is not connected to the humor condition, since the subject line of the e-mail did not differ among the two condition groups.

Gender itself does not seem to be a significant factor for click rate of the newsletter. No statistically significant differences between the two genders' click rates could be detected. Contrastingly, the humor factor alone seems to have an effect on the subjects' clicking tendency; on overall difference between the humorous and non-humorous version' s performance in terms of clicks could be observed. No prove was found that the non-

humorous version would have been more effective for one or other of the genders in terms of click rate. However, a slightly higher click rate was recorded for the humorous version from male subjects as opposed to from females, which gives indication that the humorous version has worked better on male subscribers than female subscribers.

Within gender groups, the humorous newsletter received higher click rates than the non-humorous one. This difference was found significant in the case of male subjects, and fairly insignificant in the case of females. Hence, indication is provided that the hypothesis of males being more likely to click the humorous version would hold true in the case of DefShop's newsletter subscribers. Due to fairly small and insignificant differences in the performance of the newsletter versions among female subjects it can also be stated that the second hypothesis about females not being affected by the humor condition has also been supported.

What should be noted from the contingency table analysis is that the Phi-value (functioning here like the correlation coefficients do) recorded in the symmetric measures falls to the categorization of weak correlation effect. This indicates that although a statistically significant difference in the click rates of males in the humorous condition group could be observed in comparison to the other condition groups, the correlation is not very strong.

Opening rate * gender (for tables see Appendix 12)

The contingency table for opening rate and gender (table A45) indicates that male subscribers open the newsletter e-mail more often than their female counterparts. A majority of all the e-mail openers were male. The chi-square test output gives .000 significance for the Pearson Chi Square of the contingency table of OR and gender, indicating that all variables and their levels present in the table are independent (table A46). The symmetric measures, which provide a measurement of relationship strength between the variables, indicate minor and weak effect (table A47) This weak effect indicates that although the relationship between the variables is observable, it is nevertheless not very strong.

9.6% of all male subscribers opened the newsletter e-mail, while the corresponding percentage for females was 8.0% (figure 17). A 1,6 percentage point difference in the

opening rate suggests, that male subscribers are slightly more likely to open the newsletter e-mail than females. However, due to the small differences between the genders and the 24h –nature of the newsletter, no significant conclusions can be made on possible e-mail opening-behavior differences of Defhop's male and female customers.

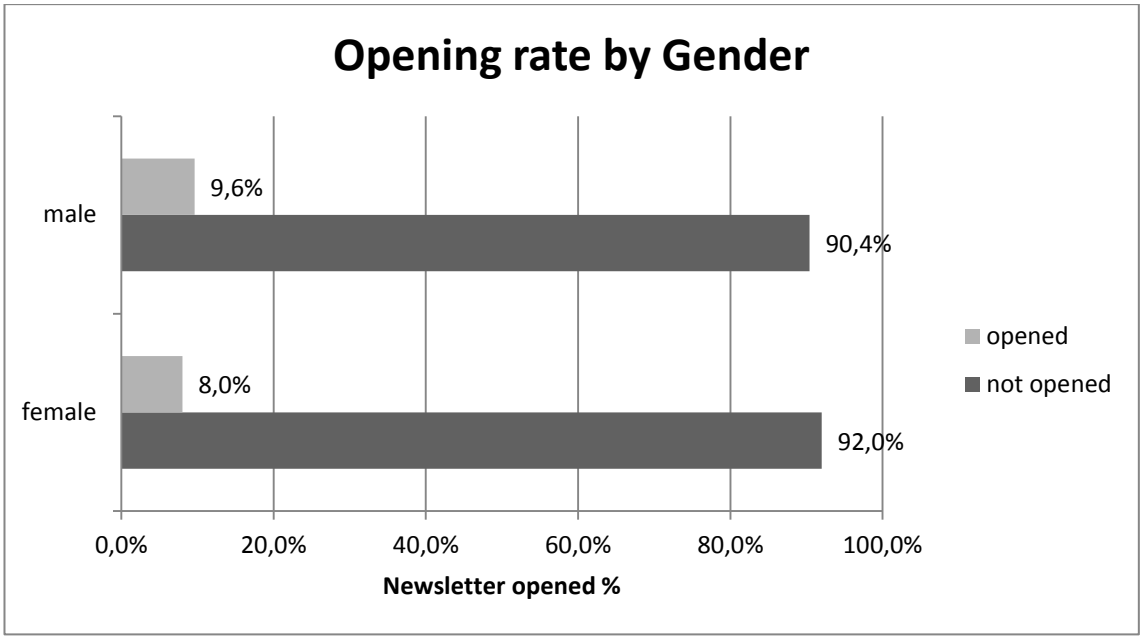

Figure 17. Opening rate by gender N = 386218

As depicted in figure 18, the gender ratio among the opened e-mails was 62.6% male vs 37.4% female. In the not opened e-mails group the distribution was 57.7% male vs 42.3% female. It ought to be noted, that the sample under examination here was dominantly male; out of the sample with valid gender data, 41.9% were female and 58.1% were male (refer to figure 11).

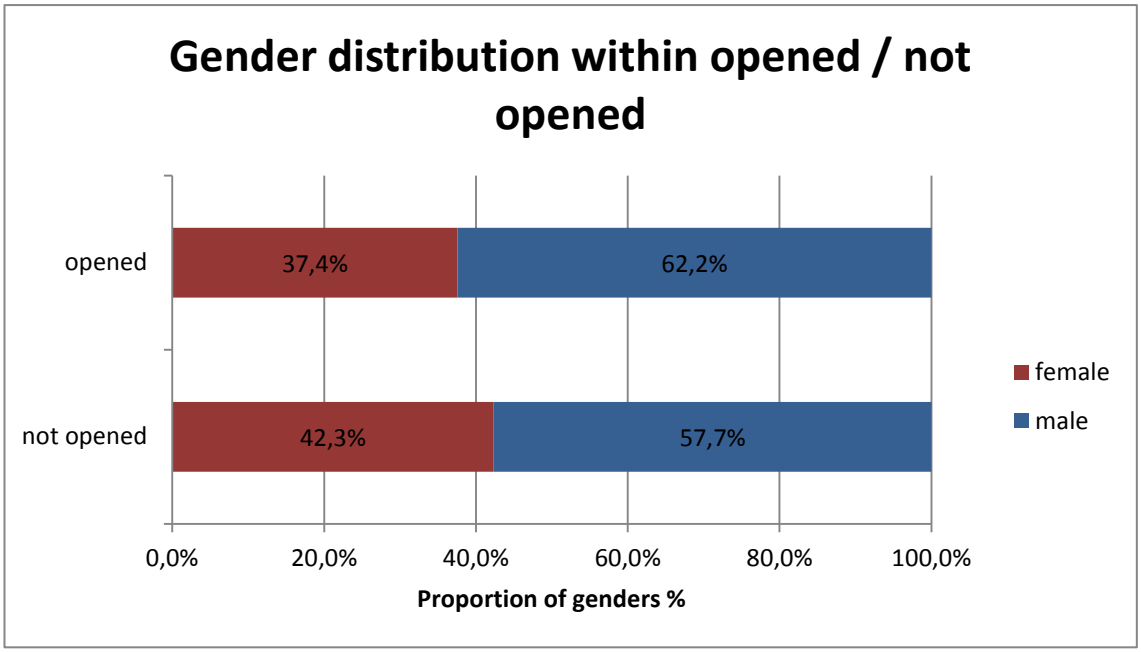

Figure 18. Gender distribution of opened and not opened e-mails N = 386218

Click-rate * gender (for tables see Appendix 13)

No significant difference in the overall clicking behavior between male and female respondents could be detected solely based on their gender. Majority of the clicks came from male subscribers, but there were no big differences between the click rates of the genders (table A48). As seen from table A49, the chi-square test indicates no relationship between gender and click rate (.612). The relationship strength of the variables is very weak (.003) (table 50).

Within all the clicks on e-mails, 63.0% came from male subscribers. Out of all subscribers who did not click on any element, 62.6% were male and 37.4% were female (figure 19). Again, the gender ratio of the sample should be considered here.

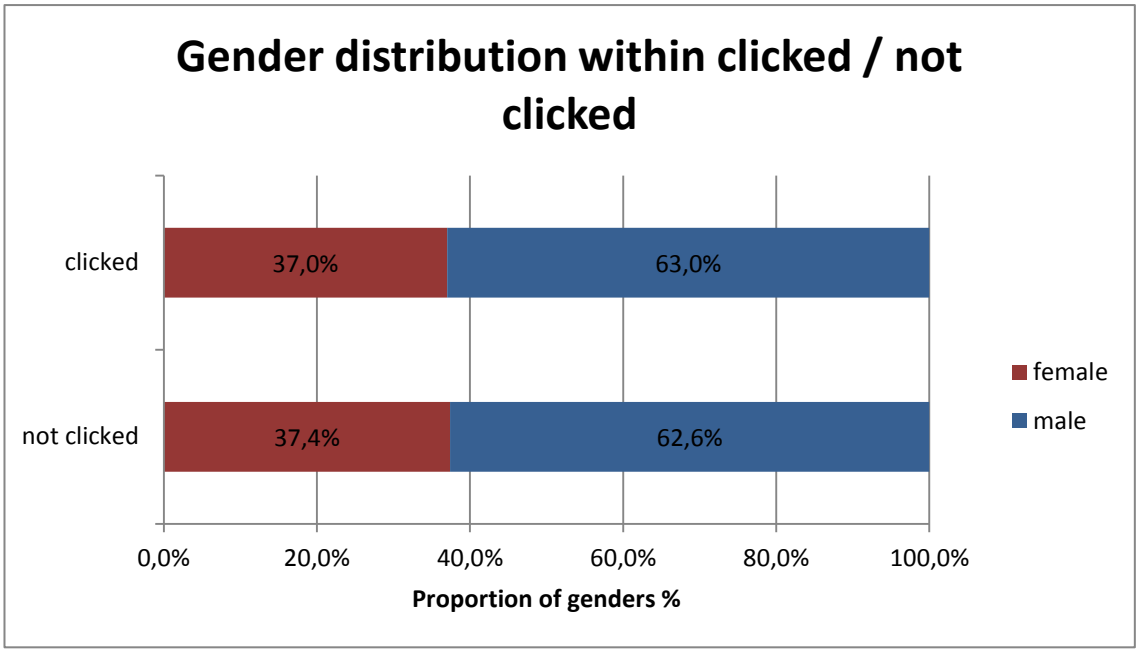

Figure 19. Gender distribution of clicked and not clicked e-mails N = 34408

8.8% of males clicked on an element within the newsletter, the corresponding percentage for females being 8.6% (figure 20). Fairly small differences between male and female subjects indicate, that gender alone is not a determining factor for the click rate of the newsletter.

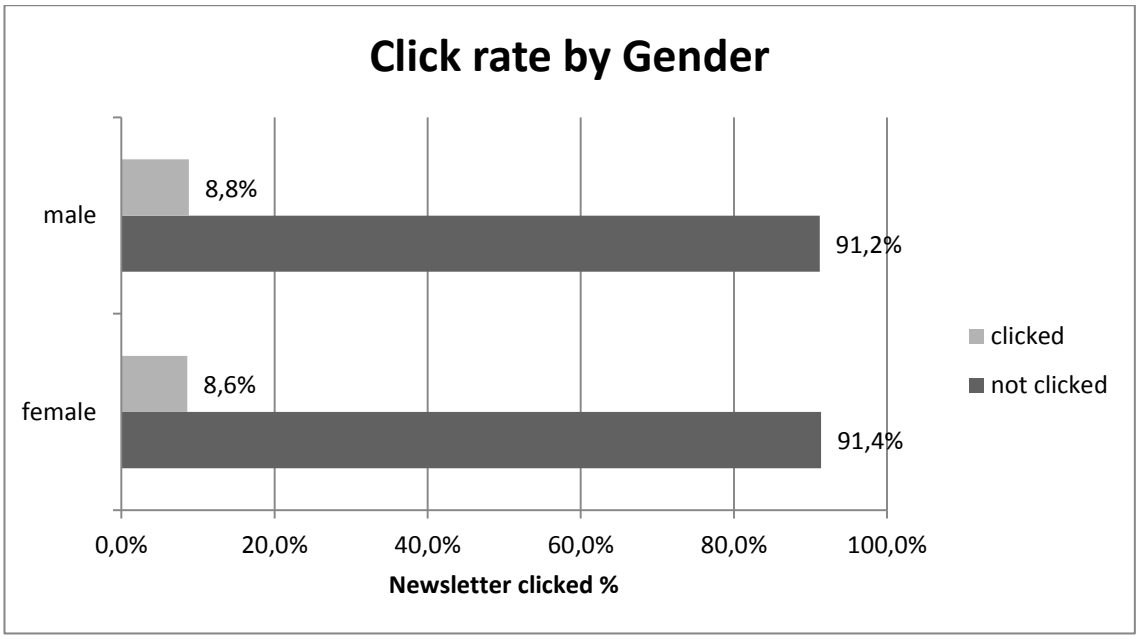

Figure 20. Click rate by gender N = 34408

Click-rate * humor condition (for tables see Appendix 14)

Contingency table for clicks and the humor condition revealed an overall difference between the two e-mail versions' click rates (table A51). It should be remembered, that the distribution of the humor conditions within the opened e-mails with valid gender data was fairly even, 49.8% vs 50.2% (refer to figure 13), and therefore there is no uneven distribution distorting the reults. The chi-square test returns a significant value of .008 for the contingency table (table A52). However, it is worth noting that the correlation strength is once again evaluated weak (.014) (table A53).

The click rates of both humor conditions are presented in figure 21 below. Humorous version of the newsletter received more clicks than the non-humorous version; out of all the clicks to the newsletters, 52.6% were generated by the humorous version. When examining the e-mails which were not clicked, the proportions of the two versions are even, 50-50. Indication is provided, that the humor condition has affected the clicking tendency on some level.

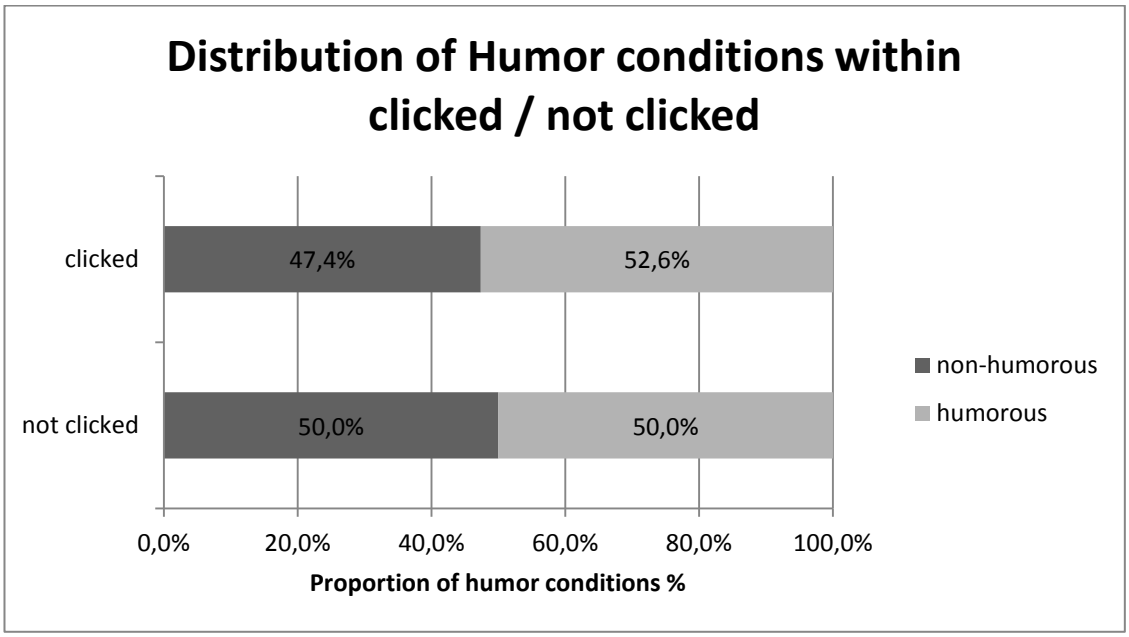

Figure 21. Humor condition distribution of clicked and not clicked e-mails N = 34408

9.2% of the humorous versions resulted in a click, while the non-humorous version got a click only from 8.3% of the people who opened the e-mail (figure 22). This indicates, that the humor factor has affected the overall clicking tendency of the subjects and has a significant effect on its own.

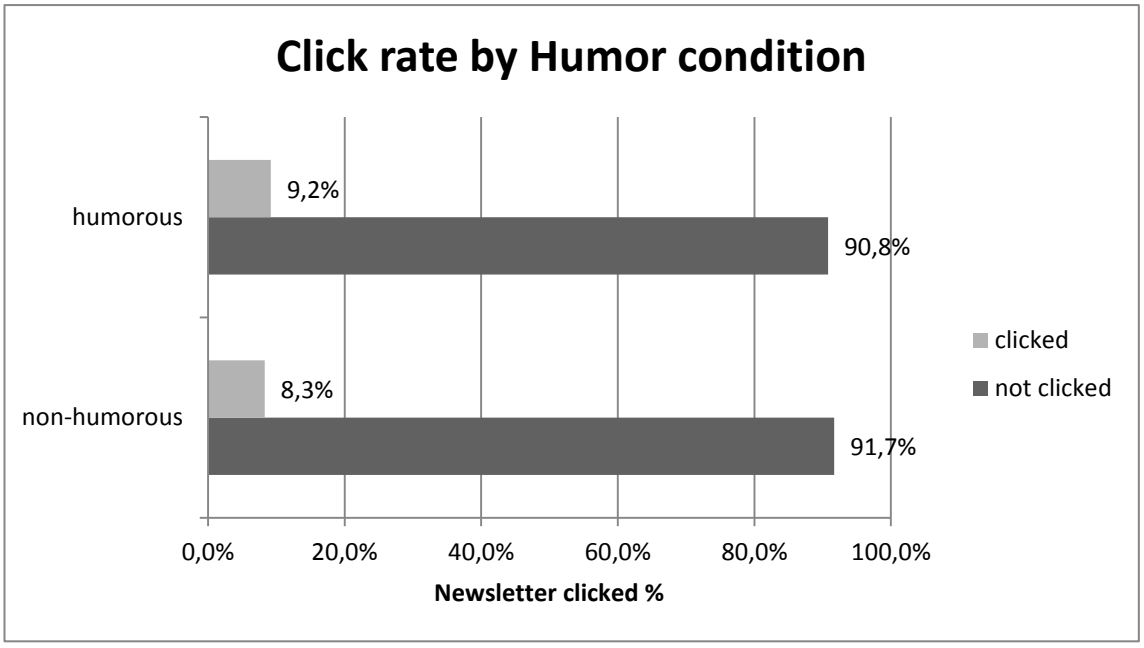

Figure 22. Click rate by humor condition N = 34408

Click-rate * gender * humor condition (for tables see Appendix 15)

In this contingency table (table A54), the click rate of genders is examined separately in each humor condition, and no big differences can be observed between the humor condition in reference to the gender's click rates. In table A55, humor condition receives significance values which indicate no significance of the table variables. The correlation strength of the variables is concluded as weak in the cases of both humor conditions (table A56).

When looking more in depth into the non-humorous advertisements per gender it can be seen that no big differences occur when it comes to click rates. As seen from figure 23 below, male subjects in the non-humorous condition group have a click rate of 8.4%, while the corresponding number for females is 8.3%. No indication that the non-humorous newsletter would have been more effective for any gender is provided by the analysis.

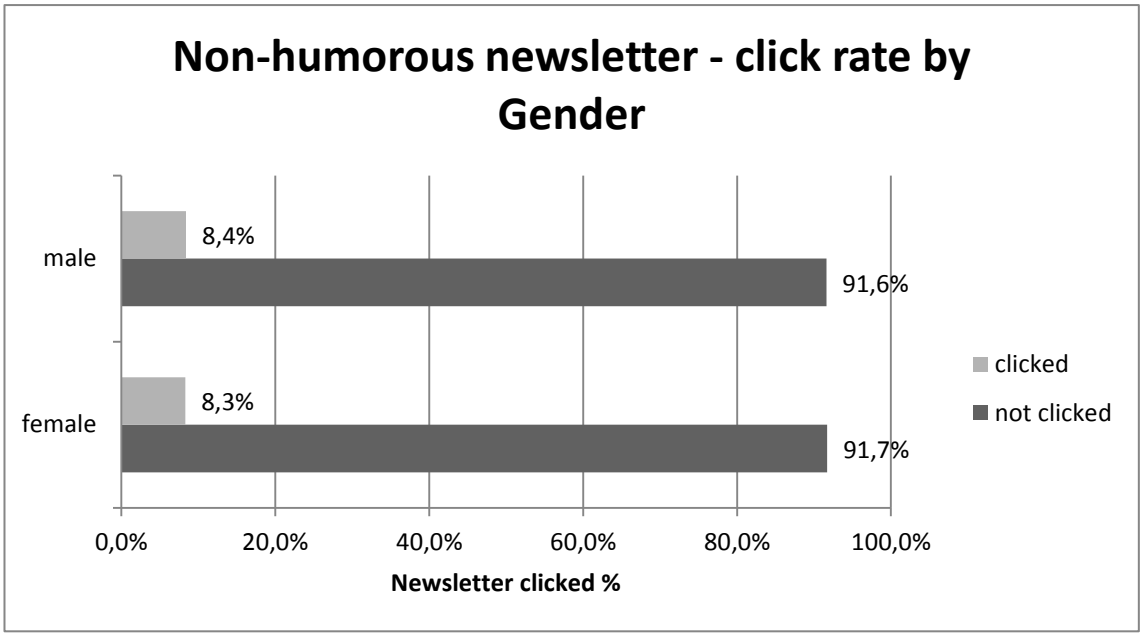

Figure 23. Non-humorous newsletter click rate by gender N = 17123

Out of all the clicks that were accounted for the non-humorous newsletter, 62.8% came from males. The same ratio of approximately 63-37 was observed in the not-clicked group of non-humorous newsletter. These ratios are illustrated in the figure 24 below.

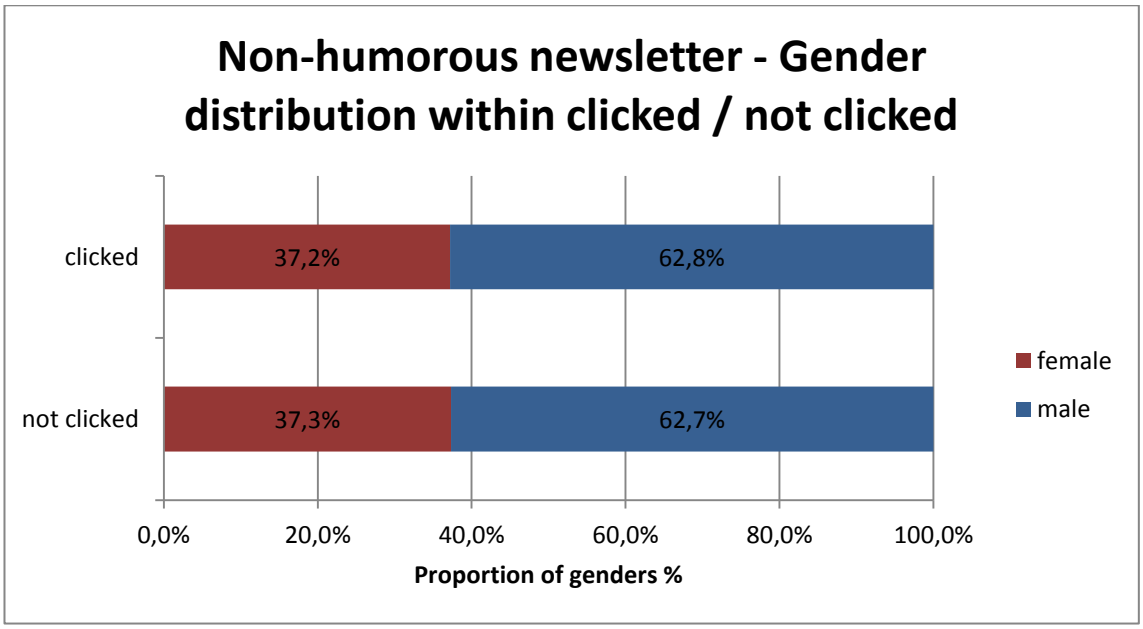

Figure 24. Non-humorous newsletter gender distribution of clicked and not clicked e-mails N = 17123

As figure 25 shows, 9.3% of all the males assigned to the humorous newsletter group clicked on an element in the ad. The corresponding value for females in the same group

is slightly lower, 9.0%. Thus indication is provided, that the humorous newsletter has been slightly more effective for male subjects than females.

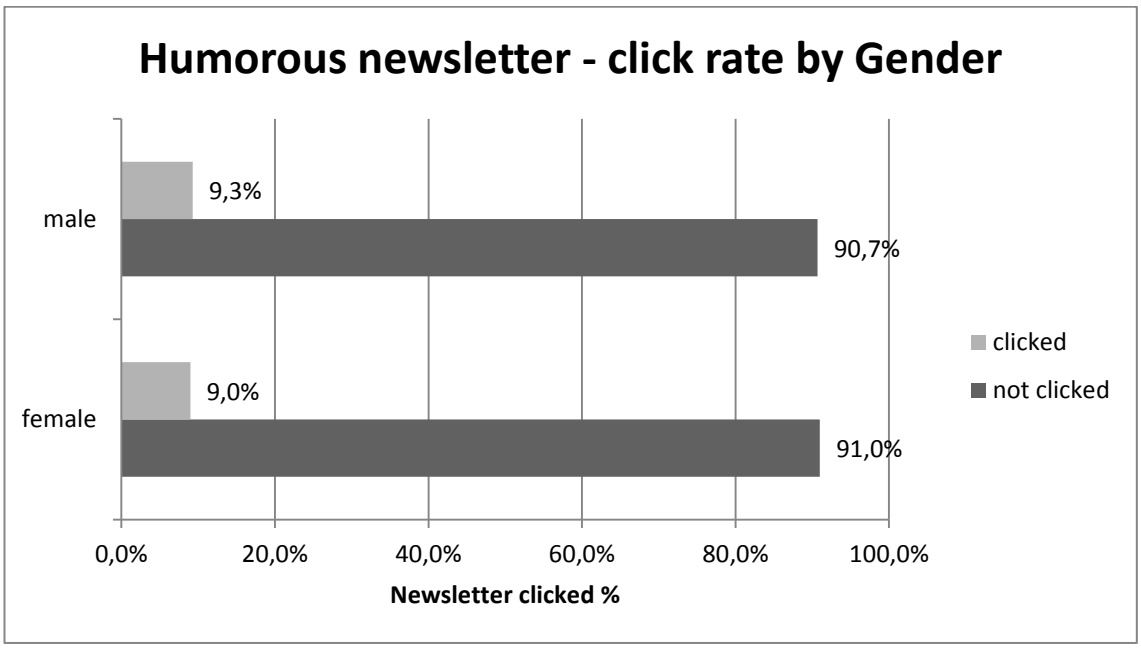

Figure 25. Humorous newsletter click rate by gender N = 17285

Of all the clicks to the humorous version, 63.2% came from males (figure 26).

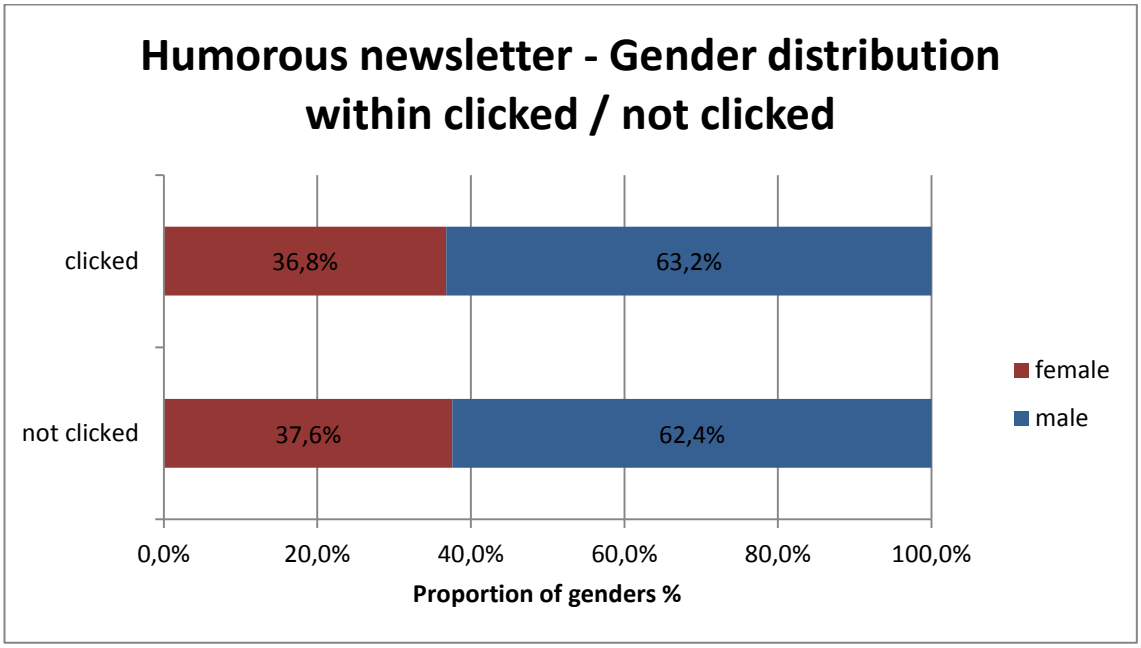

Figure 26. Humorous newsletter gender distribution of clicked and not clicked e-mails N = 17123

Click-rate * humor condition * gender (for tables see Appendix 16)

In the following, the click rates of each humor condition are examined for each gender separately. Chi-square test indicates a significance of the result in the male group and insignificance for the female group (table A58). The overall table receives a relatively high significance value. Once again it has to be noted, that the relationship of the variables is considered weak by the symmetric measures (table A59).

Firstly, when looking at figure 27 of all the females who opened the newsletter, the following can be observed. 8.3% of the females assigned to the non-humorous newsletter group clicked on an element. Contrastingly, 9.0% of the females assigned to the humorous group made a click. It can be observed, that females had a higher clicking tendency if they had received the humorous newsletter. This suggests, that the humorous newsletter has been slightly more effective on females than the non-humorous one, although the difference is only 0.7 percentage points.

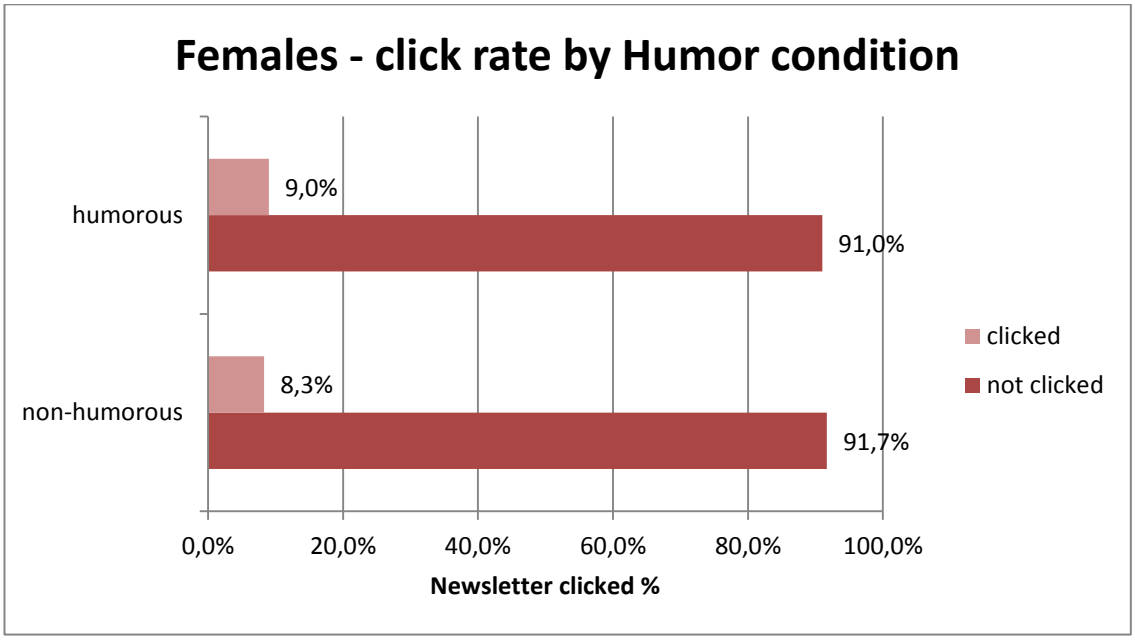

Figure 27. Female click rate by humor condition N = 12870

52.3% of all females who clicked on a newsletter element had received the humorous version, while 47.7% of the female clickers had seen the non-humorous version (figure 28).

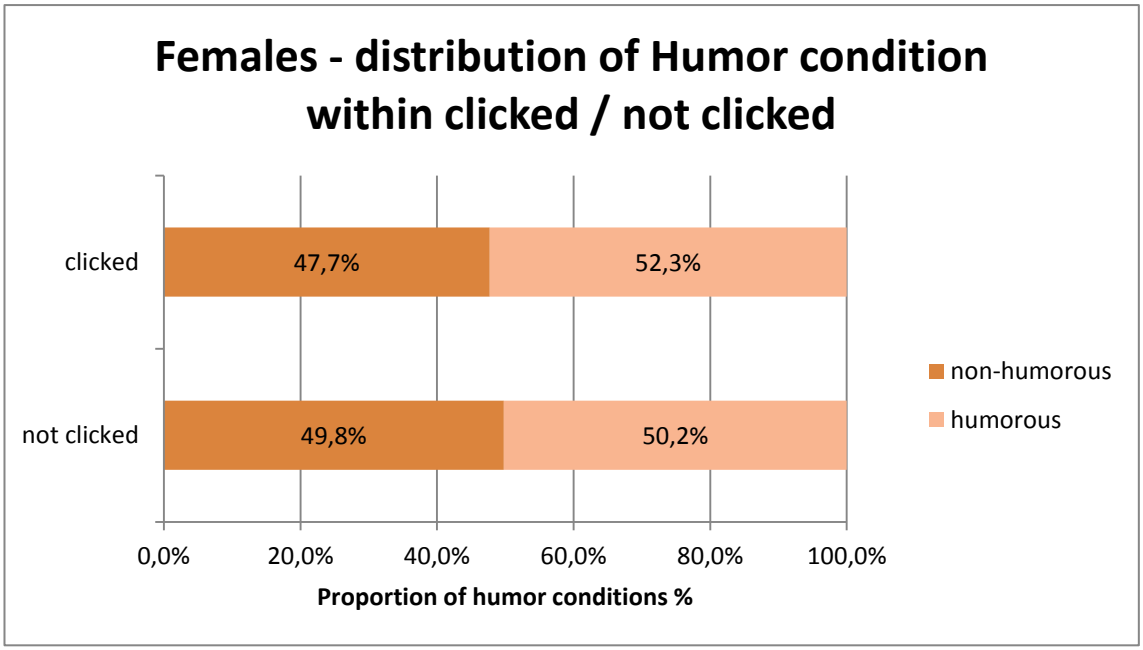

Figure 28. Female humor condition distribution of clicked and not clicked e-mails
N = 12870

For male group the distinction between the two versions click rates is somewhat clearer. As seen in figure 29,only 8.4% of all males who were assigned to the non-humorous group clicked on an element. However, 9.3% of males in the humorous newsletter receiver group clicked on the newsletter. An almost one percentage point increase in the clicking tendency was hence observed when comparing the humorous newsletter to the non-humorous one. This suggests, that the humorous version has been more effective in generating clicks from the male subjects than the non-humorous one.

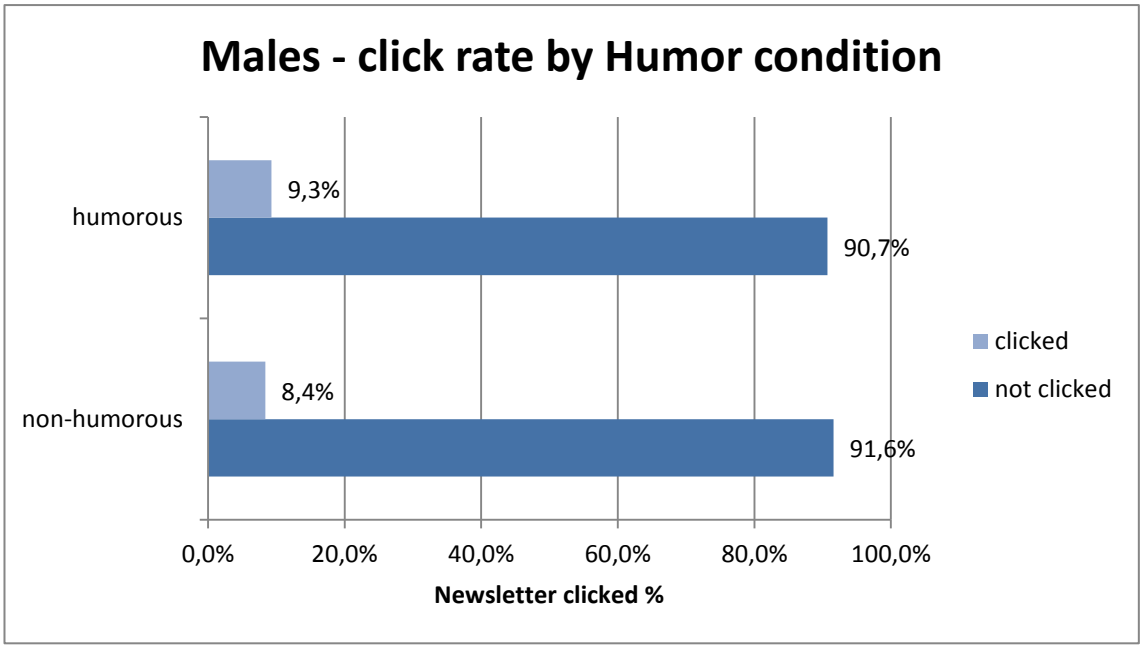

Figure 29. Male click rate by humor condition N = 21538

52.7% of all the males who clicked on an element were assigned to the humorous version (figure 30).

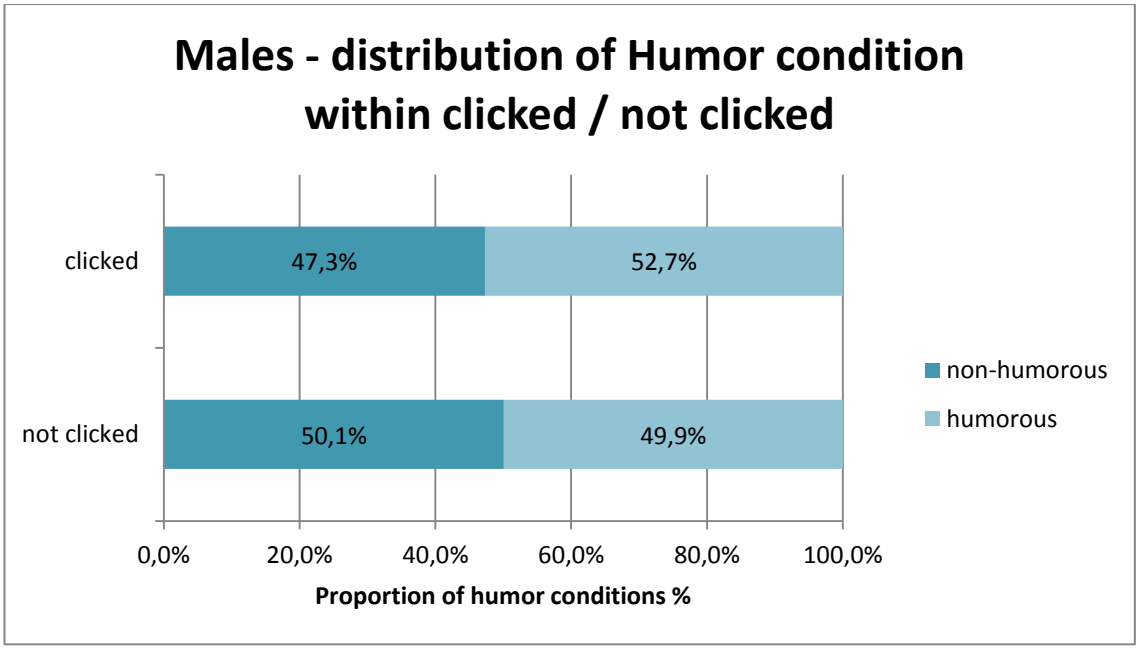

Figure 30. Male humor condition distribution of clicked and not clicked e-mails N = 21538

6.3 Binary logistic regression

The logistic regression analysis was conducted on the same filtered sample as the descriptive statistics presented in previous chapter; only the opened e-mails with valid gender information were included in the calculations. The analysis found none of the independent variables nor their interaction effect to be significant enough to be used to make assumptions on the clicking tendencies of separate condition groups. Hence, it did not support the previous results and rejects both hypotheses about gender being a determinant factor together with humor.

When conducting a logistic regression model, the objective is to come up with a method to categorize all data points into either click or no click –group. The SPSS output of the regression analysis provides a wide range of statistics, which give information on four main areas; evaluation of the model's prediction accuracy in comparison to a model without any of the variables, testing of the predictor variables, several goodness-of-fit-statistics, and a classification table to validate the given probabilities. This report reviews the most important results for the scope and objective of the research. These statistics are firstly calculated on the plain model without variables (Block 0), and then for the model which is being created and which includes the variables (Block 1). Better values are expected to be observed for Block 1. The computing method used for logistic regression model is called the Stepwise method, which is the default method for SPSS. In Stepwise method the variables are added to the model step by step and not as a bulk.

The dependent variable was coded binary (1 for click and 0 for no click), while the independent categorical variables followed the previously presented dummy coding scheme. A recap of the coding schemes is available in Appendix 17.

Firstly, it ought to be determined whether a relationship exists between the variables of the research. The needed values are presented in table 6 below. The Wald statistic depicts the significance of a correlation between an independent variable and the outcome – the higher the significance value (Sig.) for the Wald statistic is, the less significant was the relationship found. As indicated by the Sig. values of the Wald statistic in the table below, it can be determined that the analysis determines neither of the independent variables nor their interaction effect to have a significant relationship to

the outcome. All three receive a very high value (.947 for gender, .191 for humor condition, and .689 for the interaction effect).

TABLE 6. Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	gender(1)	,004	,057	,004	1	,947	1,004	,897	1,123
	condition(1)	,082	,063	1,706	1	,191	1,085	,960	1,228
	condition(1) by gender(1)	,032	,079	,160	1	,689	1,032	,884	1,205
	Constant	-2,399	,045	2802,719	1	0,000	,091		

a. Variable(s) entered on step 1: gender, condition, condition * gender .

The presence or absence of a relationship is also indicated in table 7, which summarizes the results of the Omnibus test of model coefficients. As a part of the regression analysis on SPSS, the Omnibus test of model coefficients gives estimations on whether a prediction model, which considers the effect of independent variables to the outcome, is actually more accurate than a model which is not taking the independent variables into consideration. When examining the row for complete model, indication is given that the model as a whole is not significantly better in making predictions on the outcome than the model without the coefficients. To prove that the model suggested by the hypothesis is better in predicting the subject's tendency to click the newsletter than a model without, a statistically significant value should be recorded in the Omnibus test table for Model. The Chi-Square receives a significance value of 0.056, which does not constitute as significant. The possibility of other external factors, which were not included in this research to violate the model and its accuracy may partly explain why these variables have no higher significance although a statistically significant difference in the cross tabulation analysis was detected based on the same variables.

TABLE 7. Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	7,548	3	,056
	Block	7,548	3	,056
	Model	7,548	3	,056

The strength of the relationship can be tested by computing a goodness-of-fit measure, such as an R Squared –value. The Nagelkerke R Square value present in table 8 is computed to be 0.000, which indicates the strength of the expected relationship to be non-existent. This suggests, that the differences between the condition groups can not be contributed to the independent variables.

TABLE 8. Model Summary

Step	-2 Log likelihood	Nagelkerke R Square
1	20407,927[a]	,000

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than ,001.

The likelihood ratio test presented below measures whether the model used to compute the probability of a click would be significantly worsened if either of the independent variables or the interaction effect would be removed. In the significance of the change –column it can be observed, that deleting any of the variables would not have a significant effect on the accuracy of the model, indicating that none of them plays an important enough role to be considered a reliable determinant for a subject's clicking tendency (table 9).

TABLE 9. Model if Term Removed

Variable		Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 1	gender	-10203,966	,004	1	,947
	condition	-10204,817	1,708	1	,191
	condition * gender	-10204,044	,160	1	,689

Finally, the prediction accuracy of the model created should be validated. This can be done by comparing the percentages of correct predictions in block 0 and in block 1; the prediction accuracy ought to be higher for the model in block 1 which uses the coefficients of independent variables as a basis for the estimations. As observed in table A63 (Appendix 17), the model without the coefficients can predict 91.3% of the cases' outcomes correctly. The exact same value is given for the model with coefficients (see table A64, Appendix 17). Hence, no improvement to the accuracy can be gained from adding the coefficients into the equation.

6.4 Correlation

Due to contradicting results of the contingency tables and the logistic regression, an additional table was computed with SPSS. Since the possibility of numerical problems, such as multicollinearity (see chapter 4) was acknowledged, a correlation table was created for further analysis.

The Pearson correlation records the linear relationship between the variables in the research and their interaction in the same way as the correlation coefficients. The main function behind correlation coefficients was reviewed in chapter 4.4.5. This table depicts both the strength of the relationship and its direction (whether a change in one variable is causing parallel or inverse change in the other). The significance value recorded in the table is the p-value of the respective correlation. As it can be interpreted from the SPSS correlation output in table 10 below, there seems to be a detectable but statistically insignificant negative correlation between humor condition and gender (-0.003). More interestingly, a significant and strong positive correlation between gender and variable interaction as well as for the humor condition and variable interaction could be observed. However, the current research has not gathered sufficient data to address the causes of this correlation any further. It should nevertheless be kept in mind when evaluating the results of the logistic regression and when drawing conclusions about the analysis result as a whole.

TABLE 10. Correlations

		Gender	Humor Condition	Gender-Condition-Interaction
Gender	Pearson Correlation	1	-,003	,523**
	Sig. (2-tailed)		,597	0,000
	N	34408	34408	34408
Humor Condition	Pearson Correlation	-,003	1	,673**
	Sig. (2-tailed)	,597		0,000
	N	34408	34408	34408
Gender-Condition-Interaction	Pearson Correlation	,523**	,673**	1
	Sig. (2-tailed)	0,000	0,000	
	N	34408	34408	34408

**. Correlation is significant at the 0.01 level (2-tailed).

7 CONCLUSION AND GENERAL DISCUSSION

The research was set to examine the possible connection of humor in e-mail newsletter and their click-rate, and more specifically to reveal possible gender-related differences in the performance of different newsletter designs. The hypotheses for the research were that the **humorous version would perform better among the male respondents as opposed to the non-humorous version**, and that **no similar interaction was expected to be observed amongst female respondents**. The aim of the research was to be able to provide the commissioner with a recommendation as to whether humor is an effective tool in terms of newsletter service customization towards different genders. Similar indication as presented in the hypotheses has earlier been found in other forms of advertising than e-mail; humor and male subjects have been linked previously by for example Lammers et al (1983) and Madden and Weinberger (1984), both suggesting that male subjects react more strongly to humorous advertisements than females (for reference see chapter 3.4).

Due to the good performance of the campaign newsletter, which conformed general performance levels of average DefShop newsletters in terms of subscriber count, opening rate and overall click-rate of the campaign, the research sample and hence the outcome can be determined representative of the research population. The designs of the two newsletter versions were successfully validated according to their desired perception and no technical difficulties violated the campaign launch or data collection. Hence, it can be concluded that the research was successful in application and the analysis results most likely qualify for generalized analysis of the entire population. The contingency tables as well as the logistic regression analysis with interaction effects, which were presented in the previous chapter, provide significant information and allow the following conclusions.

Both the descriptive statistics and the contingency table analysis showed evidence of a statistically significant difference between the performances of the two newsletters in terms of click rates. A statistically significantly higher click rate could be observed in the male humorous condition group, both when comparing it with female subjects exposed to the same humor condition as well as when doing comparisons to the other male group within the non-humorous newsletter's test sample. These results indicate that the

hypothesis regarding the assumption that humorous newsletter design would yield higher click-rates from males may also apply to the subscribers of DefShop's e-mail newsletter service. The hypothesis about female subscribers was supported by descriptive statistics and contingency tables as well; although a small difference between the two versions performance was observed for females, it was considered to be statistically insignificant (for reference see chapters 6.1 & 6.2).

Even though differences were detected and those regarding male subscribers and humorous advertisements were found statistically significant, they received a correlation value which is categorized as relatively weak. This indicates, that the effects of the independent variables are weak in reference to the outcome. Assumedly due to this weak significance value the logistic regression did not provide additional support to the findings of the explorative and contingency table analyses. The regression analysis revealed no significant difference among the condition groups nor did it rate the model to predict the clicking probability per group significantly worsened when either one of the independent variables or their interaction effect was taken out of the equation (for reference see chapter 6.3). This indicates that the prediction accuracy of a condition groups' clicking tendency is not dependent significantly on any of the independent variables or their interaction effects, meaning that their significance in the clicking-decision process is not notably high. The logistic regression result suggests that no assumptions should be made on male and female subscribers' clicking behavior based on their gender, the amount of humor they are exposed to, nor the combined effect of those.

The regression analysis did, however, raise another interesting observation from within the data set. The detected heavy correlation between the interaction term and the original variables which was presented in chapter 6.4 suggests that the previously discussed phenomenon of multicollinearity may have distorted the model and hence the result of the regression analysis. It gives evidence to support the assumption, that there would be significant variable correlations, which could not be observed from the binary model such as the one used in this research. Further research on the subject is highly recommended to the commissioner.

As a conclusion it can be stated that the research analysis did not result in a conclusive decision on whether the hypotheses regarding male and female subscribers' clicking

behavior can be validated or rejected, hence not allowing too firm conclusions on whether the commissioner could be adviced to plan their future e-mail marketing customization based on humor and gender of the subscribers. Although the descriptive data and the contingency table analyses found the hypotheses statements to be accurate in the case of the population at hand, the logistic regression did not find the independent variables nor their interaction to be significant enough to make any reliable and universalized assumptions on customers' clicking behavior in future campaigns. As the different statistical methods yielded partly incoherent results, it is strongly advisable for the commissioner to engage in further research on the subject, especially when it comes to the underlying multicollinearities revealed by the analysis. Although this issue could not be further addressed within the scope and design of the current research, its further examination could produce valuable information which could be utilized also in the interpretation of the present findings. Alternatively, since the hypotheses could not be fully rejected because of the results from exploratory and contingency table analyses, it may be in the interest of the commissioner to explore the options provided by humorous advertising by incorporating these findings in their future e-mail marketing strategies, even if the regression model – possibly violated by numerical issues – does not support it.

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APPENDICES

Appendix 1. Non-humorous newsletter banner design

Figure 31. Non-humorous newsletter banner design; free translation: ”Fashion is about attitude – find your style! >To the products!<”

Appendix 2. Humorous newsletter banner design

Figure 32. Humorous newsletter banner design; free translation: ”Fashion is about attitude – find your style! >To the products!<”

Appendix 3. Pretest survey design

Ich finde das Werbebild humorvoll.

- -2 - Ich stimme überhaupt nicht zu.
- -1 - Ich stimme nicht zu.
- 0 - Ich bin unentschieden.
- +1 - Ich stimme zu.
- +2 - Ich stimme vollkommen zu.

Ist Deine Muttersprache Deutsch?

- Ja
- Nein

Bitte gib Dein Geschlecht an.

- Frau
- Mann

Translations:
Ich finde das Werbebild humorvoll. = I find the ad picture humorous.
-2 – Ich stimme überhaupt nicht zu = I completely disagree
-1 – Ich stimme nicht zu = I disagree
0 – Ich bin unentschieden = I don't know
+1 – Ich stimme zu = I agree
+2 – Ich stimme vollkommen zu = I completely agree
Ist Deine Muttersprache Deutsch? (Ja / Nein) = Is German your mother tongue? (Yes / No)
Bitte gib Dein Geschelcht An. (Frau / Mann) = Please indicate your gender (Female / Male)

1 (4)

Appendix 4. Estimated probability equation – mathematical principles

In order to describe the process of logistic regression analysis it is beneficial to review some basic mathematical terms used in the formation of the estimated regression equation. The following will recap the basic terms needed to form the equation and their corresponding determinants in the research at hand.

Probability

$$p = \frac{outcomes\ of\ interest}{all\ possible\ outcomes} \quad (4)$$

which, according to binary coding applied in this research is implemented as

$$probability_{(\text{success})} = p(1) = \frac{clicked\ newsletters}{all\ newsletters},$$

$$probability_{(\text{failure})} = p(0) = \frac{not\ clicked\ newsletters}{all\ newsletters} \text{ or } p(0) = 1 - p(1)$$

It is noteworthy, that the maximum value for p is 1, hence the probabilities *p(1)* and *p(0)* add up to 1.

Odds

$$odds = \frac{p(event)}{p(no\ event)} = \frac{p}{1-p} = \frac{\frac{clicked\ newsletters}{all\ newsletters}}{\frac{not\ clicked\ newsletters}{all\ newsletters}} \quad (5)$$

Odds ratio

$$\text{a ratio of two odds} = \frac{odds_{(event)}}{odds_{(no\ event)}} = \frac{odds_{(click)}}{odds_{(no\ click)}} = \frac{\frac{p(1)}{1-p(1)}}{\frac{p(0)}{1-p(0)}} \quad (6)$$

The function of odds ratio for a variable in logistic regression is to represent the change that a one unit increase in that respective variable has on the odds, when all other varia

2 (4)

bles remain unchanged. The increase or decrease in the odds brought by one unit increase in the independent variable remains constant throughout the data set.

Logit

As it has been established, the dependent variable in the given case is coded binary. The dependent variable hence follows a Bernoulli distribution, where *p* is unknown. In order to link together the dependent variable's unknown probabilities (unknown probability of 1 and unknown probability of 0) to the independent variables – in this case gender and presence of humor – a link function has to be determined. In order to find out all the linear combinations of variables, which would return a value which fits the Bernoulli probability distribution (so which land between 0 and 1), the natural log of the odds is needed. The natural log of odds, or simply log-odds, is what in logistic regression is referred to as *logit* (hence the name *Logit-linked Bernoulli distribution*). (Hilbe 2009, 2, Collett, 2002, 1.)

The *natural log of the odds ratio* or *a linear function of the independent variables* is computed as follows:

$$ln(\text{odds}) = logit\ (p) = ln\frac{p}{1-p} \quad (7)$$

To elaborate the basic function of the logit, the following notations can be derived from basic logarithm calculus rules:

If the odds are 1 → $ln(1) = 0$
If the odds are 0 → $ln(0) =$ *undefined*

This leads to the observation, that whenever the independent variable has the value of 1 or 0, the function does not return any logit value (in a graph this is proven by the fact, that the line formed by the odds never quite reaches 1 nor 0, but creates an s curve between them). Respectively, if the probability of both the event occurring or not occurring are 50% (the odds are even), then

$$p=0.5 \rightarrow ln(\frac{\frac{1}{2}}{\frac{1}{2}}) = ln(1) = 0 \quad (8)$$

3 (4)

So when the probabilities and the odds are even, the logit function gives the value of 0.

In a standard logit link function graph, the 0 and 1 run along the x-axis. In a research such as this, however, the dependent variable belongs to the y-axis. Therefore, it is necessary to place the probabilities on the y-axis as well in order to simplify the process. This can be achieved by using an inverse logit, that is inverse log odds (also referred to as mean function), which basically just swaps the x and y axis. Taking these so called antilogarithms of the values is common practice, because it simplifies the interpretation of the coefficients (Allen 2004, 190). This reforms the logit function into the following form:

$logit(p) = ln(\frac{p}{1-p})$, where p is between 0 and 1 (9)

→

$logit\ -1(\alpha) = \frac{1}{1+e^{-\alpha}} = \frac{e^{\alpha}}{1+e^{\alpha}}$, where α = some number (10)

In the case of the current research, the *some number* α will be the linear combination of variables and their coefficients. The inverse logit will return the *p* of being 1 (click).

Estimated regression equation

Based on the facts stated above, the estimated regression equation can be derived by using basic algebra rules. As mentioned before, the natural logarithm of the odds ratio (so the logit) is equivalent to the linear function of the independent variables. Taking the antilog of this logit function allows solving for the probability *p*, which is the value that is sought after:

$logit(p) = ln(\frac{p}{1-p}) = \beta_0 + \beta_1 x_1$ (=linear function of independent variables)

antilog $= \frac{p}{1-p} = e^{\beta_0+\beta_1 x_1}$, where *e = Euler constant*

4 (4)

solve for $p \rightarrow \hat{p} = \frac{e^{\beta_0+\beta_1 x_1}}{1+e^{\beta_0+\beta_1 x_1}}$ (=estimated regression equation for logistic regression, where $\hat{p}$ is the estimated probability and x_1 is the independent variable. As the research at hand is using more than one independent variable, the $e^{\beta_0+\beta_1 x_1}$ will have the additional variable values included, hence adding the extra factor to the exponent → $e^{\beta_0+\beta_1 x_1+\beta_2 x_2}$.) (11)

Once the needed equation to solve $\hat{p}(1)$ has been determined, the coefficients of the independent variables will be inserted to the formula, and the probability for a click per independent variable combination is returned.

Appendix 5. Pretest descriptive statistics

TABLE A11. Pretest Frequencies

		Native language German?	Gender	Humor Condition
N	Valid	42	42	42
	Missing	0	0	0

TABLE A12. Gender distribution in humor condition groups

Humor Condition			Frequency	Percent	Valid Percent	Cumulative Percent
non-humorous	Valid	Female	9	40,9	40,9	40,9
		Male	13	59,1	59,1	100,0
		Total	22	100,0	100,0	
humorous	Valid	Female	8	40,0	40,0	40,0
		Male	12	60,0	60,0	100,0
		Total	20	100,0	100,0	

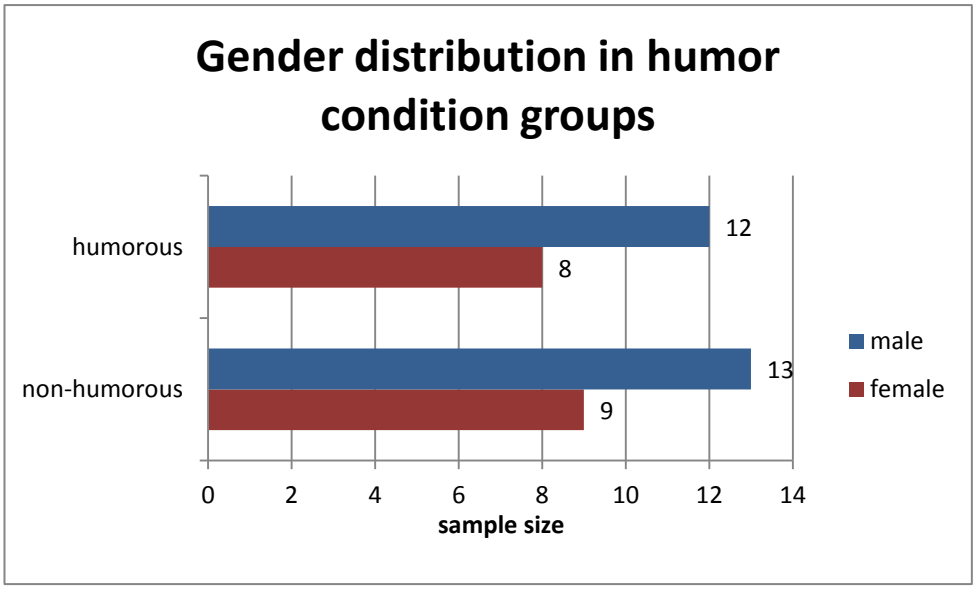

Figure 33. Gender distribution in humor condition groups N = 42

2 (2)

TABLE A13. Native German speakers per humor condition

Humor Condition			Frequency	Percent	Valid Percent	Cumulative Percent
non-humorous	Valid	No	3	13,6	13,6	13,6
		Yes	19	86,4	86,4	100,0
		Total	22	100,0	100,0	
humorous	Valid	No	2	10,0	10,0	10,0
		Yes	18	90,0	90,0	100,0
		Total	20	100,0	100,0	

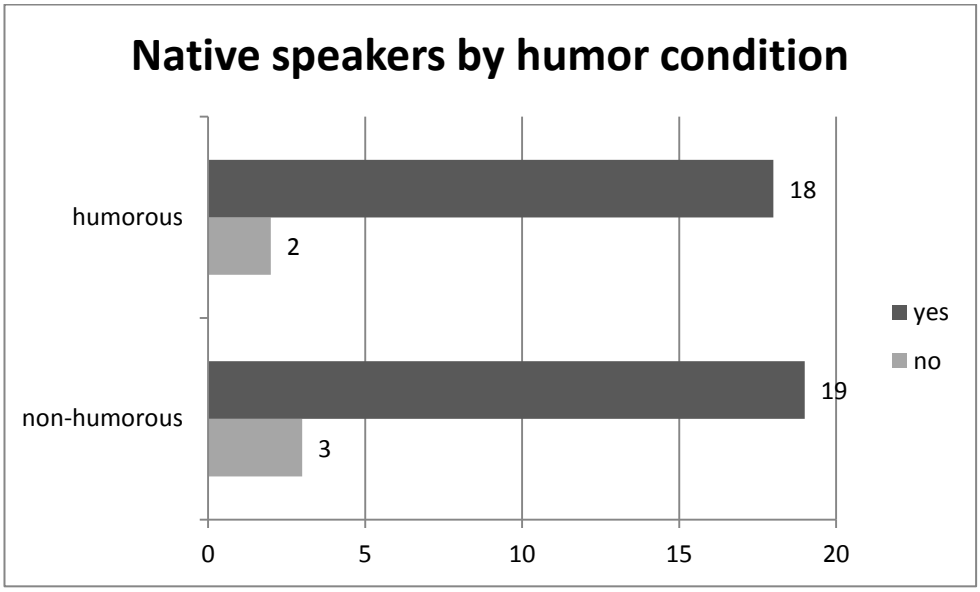

Figure 34. Native speakers by humor condition N = 42

Appendix 6. Pretest exploratory statistics – humor condition

TABLE A14. Frequencies per humor condition

Humor Condition		Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
"I find that the advertising image is humorous."	non-humorous	22	100,0%	0	0,0%	22	100,0%
	humorous	20	100,0%	0	0,0%	20	100,0%

TABLE A15. Descriptive statistics for humor condition

Humor Condition				Statistic	Std. Error
"I find that the advertising image is humorous."	non-humorous	Mean		1,82	,182
		95% Confidence Interval for Mean	Lower Bound	1,44	
			Upper Bound	2,20	
		5% Trimmed Mean		1,75	
		Median		2,00	
		Variance		,727	
		Std. Deviation		,853	
		Minimum		1	
		Maximum		4	
		Range		3	
		Interquartile Range		1	
		Skewness		,884	,491
		Kurtosis		,421	,953
	humorous	Mean		3,40	,255
		95% Confidence Interval for Mean	Lower Bound	2,87	
			Upper Bound	3,93	
		5% Trimmed Mean		3,44	
		Median		4,00	
		Variance		1,305	
		Std. Deviation		1,142	
		Minimum		1	
		Maximum		5	
		Range		4	
		Interquartile Range		2	
		Skewness		-,668	,512
		Kurtosis		-,701	,992

TABLE A16. Tests of Normality for Likert scale

Humor Condition		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
"I find that the advertising image is humorous."	non-humorous	,240	22	,002	,817	22	,001
	humorous	,350	20	,000	,814	20	,001

a. Lilliefors Significance Correction

TABLE A17. Test of Homogeneity of variance for Likert scale

		Levene Statistic	df1	df2	Sig.
"I find that the advertising image is humorous."	Based on Mean	3,673	1	40	,062
	Based on Median	,427	1	40	,517
	Based on Median and with adjusted df	,427	1	31,712	,518
	Based on trimmed mean	3,001	1	40	,091

TABLE A18. Frequencies per humor condition * gender

Humor Condition			Cases					
			Valid		Missing		Total	
			N	Percent	N	Percent	N	Percent
"I find that the advertising image is humorous."	non-humorous	Female	9	100,0%	0	0,0%	9	100,0%
		Male	13	100,0%	0	0,0%	13	100,0%
	humorous	Female	8	100,0%	0	0,0%	8	100,0%
		Male	12	100,0%	0	0,0%	12	100,0%

TABLE A19. Descriptive statistics humor condition * gender

Humor Condition					Statistic	Std. Error
"I find that the advertising image is humorous."	non-humorous	Female	Mean		1,44	,242
			95% Confidence Interval for Mean	Lower Bound	,89	
				Upper Bound	2,00	
			5% Trimmed Mean		1,38	
			Median		1,00	
			Variance		,528	
			Std. Deviation		,726	
			Minimum		1	
			Maximum		3	
			Range		2	

3 (4)

		Interquartile Range		1	
		Skewness		1,501	,717
		Kurtosis		1,467	1,400
	Male	Mean		2,08	,239
		95% Confidence Interval for Mean	Lower Bound	1,56	
			Upper Bound	2,60	
		5% Trimmed Mean		2,03	
		Median		2,00	
		Variance		,744	
		Std. Deviation		,862	
		Minimum		1	
		Maximum		4	
		Range		3	
		Interquartile Range		1	
		Skewness		,758	,616
		Kurtosis		,852	1,191
humorous	Female	Mean		3,25	,526
		95% Confidence Interval for Mean	Lower Bound	2,01	
			Upper Bound	4,49	
		5% Trimmed Mean		3,28	
		Median		3,50	
		Variance		2,214	
		Std. Deviation		1,488	
		Minimum		1	
		Maximum		5	
		Range		4	
		Interquartile Range		3	
		Skewness		-,217	,752
		Kurtosis		-1,410	1,481
	Male	Mean		3,50	,261
		95% Confidence Interval for Mean	Lower Bound	2,93	
			Upper Bound	4,07	
		5% Trimmed Mean		3,56	
		Median		4,00	
		Variance		,818	
		Std. Deviation		,905	
		Minimum		2	
		Maximum		4	
		Range		2	
		Interquartile Range		2	

	Skewness	-1,327	,637
	Kurtosis	-,326	1,232

TABLE A20. Tests of normality for Likert scale – humor * gender

Humor Condition			Kolmogorov-Smirnov[a]			Shapiro-Wilk		
			Statistic	df	Sig.	Statistic	df	Sig.
"I find that the advertising image is humorous."	non-humorous	Female	,396	9	,000	,684	9	,001
		Male	,305	13	,002	,850	13	,029
	humorous	Female	,193	8	,200*	,920	8	,428
		Male	,460	12	,000	,552	12	,000

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

TABLE A21. Test of homogeneity of variance for Likert scale humor * gender

		Levene Statistic	df1	df2	Sig.
"I find that the advertising image is humorous."	Based on Mean	3,027	3	38	,041
	Based on Median	2,129	3	38	,113
	Based on Median and with adjusted df	2,129	3	35,379	,114
	Based on trimmed mean	2,928	3	38	,046

Appendix 7. One-way ANOVA for Gender

TABLE A22. Estimates for gender

Dependent Variable: "I find that the advertising image is humorous."

Gender	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Female	2,347	,242	1,858	2,837
Male	2,788	,199	2,385	3,192

TABLE A23. Pairwise comparisons for gender

Dependent Variable: "I find that the advertising image is humorous."

(I) Gender		Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
Female	Male	-,441	,313	,167	-1,076	,193
Male	Female	,441	,313	,167	-,193	1,076

Based on estimated marginal means

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

TABLE A24. Univariate tests for gender

Dependent Variable: "I find that the advertising image is humorous."

	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Contrast	1,965	1	1,965	1,983	,167	,050	1,983	,279
Error	37,645	38	,991					

The F tests the effect of Gender. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Computed using alpha = ,05

Appendix 8. One-way ANOVA for Humor condition

TABLE A25. Estimates for humor condition

Dependent Variable: "I find that the advertising image is humorous."

Humor Condition	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
non-humorous	1,761	,216	1,324	2,198
humorous	3,375	,227	2,915	3,835

TABLE A26. Pairwise comparisons for humor condition

Dependent Variable: "I find that the advertising image is humorous."

(I) Humor Condition		Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
non-humorous	humorous	-1,614*	,313	,000	-2,249	-,980
humorous	non-humorous	1,614*	,313	,000	,980	2,249

Based on estimated marginal means

*. The mean difference is significant at the ,05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

TABLE A27. Univariate tests for humor condition

Dependent Variable: "I find that the advertising image is humorous."

	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Contrast	26,299	1	26,299	26,547	,000	,411	26,547	,999
Error	37,645	38	,991					

The F tests the effect of Humor Condition. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Computed using alpha = ,05

Appendix 9. Two-way ANOVA for Gender* Humor condition

TABLE A28. Estimates for gender * humor

Dependent Variable: "I find that the advertising image is humorous."

Gender		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Female	non-humorous	1,444	,332	,773	2,116
	humorous	3,250	,352	2,538	3,962
Male	non-humorous	2,077	,276	1,518	2,636
	humorous	3,500	,287	2,918	4,082

TABLE A29. Pairwise comparisons for gender * humor (gender effect)

Dependent Variable: "I find that the advertising image is humorous."

Humor Condition			Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
						Lower Bound	Upper Bound
non-humorous	Female	Male	-,632	,432	,151	-1,506	,241
	Male	Female	,632	,432	,151	-,241	1,506
humorous	Female	Male	-,250	,454	,585	-1,170	,670
	Male	Female	,250	,454	,585	-,670	1,170

Based on estimated marginal means

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

TABLE A30. Pairwise comparison for gender * humor (humor effect)

Dependent Variable: "I find that the advertising image is humorous."

Gender			Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
Female	non-humorous	humorous	-1,806*	,484	,001	-2,785	-,826
	humorous	non-humorous	1,806*	,484	,001	,826	2,785
Male	non-humorous	humorous	-1,423*	,398	,001	-2,230	-,616
	humorous	non-humorous	1,423*	,398	,001	,616	2,230

Based on estimated marginal means

*. The mean difference is significant at the ,05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

TABLE A31. Univariate tests for gender * humor (humor) 2 (2)

Dependent Variable: "I find that the advertising image is humorous."

Humor Condition		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
non-humorous	Contrast	2,127	1	2,127	2,147	,151	,053	2,147	,298
	Error	37,645	38	,991					
humorous	Contrast	,300	1	,300	,303	,585	,008	,303	,084
	Error	37,645	38	,991					

Each F tests the simple effects of Gender within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Computed using alpha = ,05

TABLE A32. Univariate tests for gender * humor (gender)

Dependent Variable: "I find that the advertising image is humorous."

Gender		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Female	Contrast	13,807	1	13,807	13,937	,001	,268	13,937	,953
	Error	37,645	38	,991					
Male	Contrast	12,637	1	12,637	12,756	,001	,251	12,756	,936
	Error	37,645	38	,991					

Each F tests the simple effects of Humor Condition within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Computed using alpha = ,05

Appendix 10. Main analysis – descriptive statistics

TABLE A33. Frequencies – all data points

		Gender	E-Mail opend	Clicked on an element	Humor Condition
N	Valid	386218	387736	387736	387736
	Missing	1518	0	0	0

TABLE A34. Equal humor condition distribution among full sample

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	non-humorous	193963	50,0	50,0	50,0
	humorous	193773	50,0	50,0	100,0
	Total	387736	100,0	100,0	

TABLE A35. Opening rate of all e-mails

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not opened	353226	91,1	91,1	91,1
	opened	34510	8,9	8,9	100,0
	Total	387736	100,0	100,0	

TABLE A36. Click rate of all e-mails

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not clicked	384717	99,2	99,2	99,2
	clicked	3019	,8	,8	100,0
	Total	387736	100,0	100,0	

TABLE A37. Gender distribution of known gender cases

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	161681	41,9	41,9	41,9
	male	224537	58,1	58,1	100,0
	Total	386218	100,0	100,0	

TABLE A38 Opening rate of valid gender cases 2 (2)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not opened	351810	91,1	91,1	91,1
	opened	34408	8,9	8,9	100,0
	Total	386218	100,0	100,0	

TABLE A39. Frequencies final sample

		Gender	Clicked on an element	Humor Condition
N	Valid	34408	34408	34408
	Missing	0	0	0

TABLE A40. Humor condition distribution of final sample

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	non-humorous	17123	49,8	49,8	49,8
	humorous	17285	50,2	50,2	100,0
	Total	34408	100,0	100,0	

TABLE A41. Gender distribution of final sample

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	12870	37,4	37,4	37,4
	male	21538	62,6	62,6	100,0
	Total	34408	100,0	100,0	

TABLE A42. Click rate of final sample

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not clicked	31398	91,3	91,3	91,3
	clicked	3010	8,7	8,7	100,0
	Total	34408	100,0	100,0	

Appendix 11. Main analysis – Exploratory statistics

TABLE A43. Frequencies per humor condition * gender

Humor Condition			Cases					
			Valid		Missing		Total	
			N	Percent	N	Percent	N	Percent
Clicked on an element	non-humorous	female	6381	100,0%	0	0,0%	6381	100,0%
		male	10742	100,0%	0	0,0%	10742	100,0%
	humorous	female	6489	100,0%	0	0,0%	6489	100,0%
		male	10796	100,0%	0	0,0%	10796	100,0%

TABLE A44. Descriptives

Humor Condition				Statistic	Std. Error
Clicked on an element	non-humorous	female	Mean	,0832	,003
			95% Confidence Interval for Mean Lower Bound	,0764	
			95% Confidence Interval for Mean Upper Bound	,0900	
			5% Trimmed Mean	,0369	
			Median	0,0000	
			Variance	,0763	
			Std. Deviation	,2762	
			Minimum	0,0000	
			Maximum	1,0000	
			Range	1,0000	
			Interquartile Range	0,0000	
			Skewness	3,0186	,031
			Kurtosis	7,1142	,061
		male	Mean	,0835	,003
			95% Confidence Interval for Mean Lower Bound	,0783	
			95% Confidence Interval for Mean Upper Bound	,0887	
			5% Trimmed Mean	,0372	
			Median	0,0000	
			Variance	,0765	
			Std. Deviation	,2767	
			Minimum	0,0000	
			Maximum	1,0000	
			Range	1,0000	
			Interquartile Range	0,0000	
			Skewness	3,0115	,024
			Kurtosis	7,0704	,047

humorous	female	Mean		,0897	,004
		95% Confidence Interval for Mean	Lower Bound	,0827	
			Upper Bound	,0966	
		5% Trimmed Mean		,0441	
		Median		0,0000	
		Variance		,0817	
		Std. Deviation		,2858	
		Minimum		0,0000	
		Maximum		1,0000	
		Range		1,0000	
		Interquartile Range		0,0000	
		Skewness		2,8726	,030
		Kurtosis		6,2538	,061
	male	Mean		,0926	,003
		95% Confidence Interval for Mean	Lower Bound	,0872	
			Upper Bound	,0981	
		5% Trimmed Mean		,0474	
		Median		0,0000	
		Variance		,0841	
		Std. Deviation		,2899	
		Minimum		0,0000	
		Maximum		1,0000	
		Range		1,0000	
		Interquartile Range		0,0000	
		Skewness		2,8107	,024
		Kurtosis		5,9014	,047

2 (2)

Appendix 12. E-Mail opend * Gender Crosstabulation

TABLE A45. E-Mail opend * Gender Crosstabulation

			Gender		
			female	male	Total
E-Mail opend	not opened	Count	148811$_a$	202999$_b$	351810
		Expected Count	147276,9	204533,1	351810,0
		% within E-Mail opend	42,3%	57,7%	100,0%
		% within Gender	92,0%	90,4%	91,1%
		% of Total	38,5%	52,6%	91,1%
	opened	Count	12870$_a$	21538$_b$	34408
		Expected Count	14404,1	20003,9	34408,0
		% within E-Mail opend	37,4%	62,6%	100,0%
		% within Gender	8,0%	9,6%	8,9%
		% of Total	3,3%	5,6%	8,9%
Total		Count	161681	224537	386218
		Expected Count	161681,0	224537,0	386218,0
		% within E-Mail opend	41,9%	58,1%	100,0%
		% within Gender	100,0%	100,0%	100,0%
		% of Total	41,9%	58,1%	100,0%

Each subscript letter denotes a subset of Gender categories whose column proportions do not differ significantly from each other at the ,05 level.
N = 386218

TABLE A46. E-Mail opend * Gender Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	308,522[a]	1	,000
N of Valid Cases	386218		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 14404,09.

TABLE A47. E-Mail opend * Gender Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,028	,000
	Cramer's V	,028	,000
N of Valid Cases		386218	

Appendix 13. Clicked on an element * Gender Crosstabulation

TABLE A48. **Clicked on an element * Gender Crosstabulation**

			Gender		
			female	male	Total
Clicked on an element	not clicked	Count	11757$_a$	19641$_a$	31398
		Expected Count	11744,1	19653,9	31398,0
		% within Clicked on an element	37,4%	62,6%	100,0%
		% within Gender	91,4%	91,2%	91,3%
		% of Total	34,2%	57,1%	91,3%
	clicked	Count	1113$_a$	1897$_a$	3010
		Expected Count	1125,9	1884,1	3010,0
		% within Clicked on an element	37,0%	63,0%	100,0%
		% within Gender	8,6%	8,8%	8,7%
		% of Total	3,2%	5,5%	8,7%
Total		Count	12870	21538	34408
		Expected Count	12870,0	21538,0	34408,0
		% within Clicked on an element	37,4%	62,6%	100,0%
		% within Gender	100,0%	100,0%	100,0%
		% of Total	37,4%	62,6%	100,0%

Each subscript letter denotes a subset of Gender categories whose column proportions do not differ significantly from each other at the ,05 level.

N = 34408

TABLE A49. Clicked on an element * Gender Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	,257[a]	1	,612
N of Valid Cases	34408		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 1125,86.

TABLE A50. Clicked on an element * Gender Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,003	,612
	Cramer's V	,003	,612
N of Valid Cases		34408	

Appendix 14. Clicked on an element * Humor Condition Crosstabulation

TABLE A51. Clicked on an element * Humor Condition Crosstabulation

			Humor Condition		
			non-humorous	humorous	Total
Clicked on an element	not clicked	Count	15695_a	15703_b	31398
		Expected Count	15625,1	15772,9	31398,0
		% within Clicked on an element	50,0%	50,0%	100,0%
		% within Humor Condition	91,7%	90,8%	91,3%
		% of Total	45,6%	45,6%	91,3%
	clicked	Count	1428_a	1582_b	3010
		Expected Count	1497,9	1512,1	3010,0
		% within Clicked on an element	47,4%	52,6%	100,0%
		% within Humor Condition	8,3%	9,2%	8,7%
		% of Total	4,2%	4,6%	8,7%
Total		Count	17123	17285	34408
		Expected Count	17123,0	17285,0	34408,0
		% within Clicked on an element	49,8%	50,2%	100,0%
		% within Humor Condition	100,0%	100,0%	100,0%
		% of Total	49,8%	50,2%	100,0%

Each subscript letter denotes a subset of Humor Condition categories whose column proportions do not differ significantly from each other at the ,05 level.

N = 34408

TABLE A52. Clicked on an element * Humor Condition Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	$7,119^a$	1	,008
N of Valid Cases	34408		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 1497,91.

TABLE A53. Clicked on an element * Humor Condition Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,014	,008
	Cramer's V	,014	,008
N of Valid Cases		34408	

1 (2)

Appendix 15. Clicked on an element*Gender*Humor Condition Crosstabulation

TABLE A54. Clicked on an element * Gender * Humor Condition Crosstabulation

Humor Condition				Gender		Total
				female	male	
non-humorous	Clicked on an element	not clicked	Count	5850$_a$	9845$_a$	15695
			Expected Count	5848,8	9846,2	15695,0
			% within Clicked on an element	37,3%	62,7%	100,0%
			% within Gender	91,7%	91,6%	91,7%
			% of Total	34,2%	57,5%	91,7%
		clicked	Count	531$_a$	897$_a$	1428
			Expected Count	532,2	895,8	1428,0
			% within Clicked on an element	37,2%	62,8%	100,0%
			% within Gender	8,3%	8,4%	8,3%
			% of Total	3,1%	5,2%	8,3%
			Residual	-1,2	1,2	
			Std. Residual	-,1	,0	
	Total		Count	6381	10742	17123
			Expected Count	6381,0	10742,0	17123,0
			% within Clicked on an element	37,3%	62,7%	100,0%
			% within Gender	100,0%	100,0%	100,0%
			% of Total	37,3%	62,7%	100,0%
humorous	Clicked on an element	not clicked	Count	5907$_a$	9796$_a$	15703
			Expected Count	5895,1	9807,9	15703,0
			% within Clicked on an element	37,6%	62,4%	100,0%
			% within Gender	91,0%	90,7%	90,8%
			% of Total	34,2%	56,7%	90,8%
		clicked	Count	582$_a$	1000$_a$	1582
			Expected Count	593,9	988,1	1582,0
			% within Clicked on an element	36,8%	63,2%	100,0%
			% within Gender	9,0%	9,3%	9,2%
			% of Total	3,4%	5,8%	9,2%
			Residual	-11,9	11,9	
			Std. Residual	-,5	,4	
	Total		Count	6489	10796	17285
			Expected Count	6489,0	10796,0	17285,0
			% within Clicked on an element	37,5%	62,5%	100,0%
			% within Gender	100,0%	100,0%	100,0%
			% of Total	37,5%	62,5%	100,0%

Each subscript letter denotes a subset of Gender categories whose column proportions do not differ significantly from each other at the ,05 level.
N = 34408

2 (2)

TABLE A55. Clicked on an element * Gender * Humor Condition **Chi-Square Tests**

Humor Condition		Value	df	Asymp. Sig. (2-sided)
non-humorous	Pearson Chi-Square	,004[c]	1	,947
	N of Valid Cases	17123		
humorous	Pearson Chi-Square	,420[d]	1	,517
	N of Valid Cases	17285		
Total	Pearson Chi-Square	,257[a]	1	,612
	N of Valid Cases	34408		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 1125,86.

c. 0 cells (,0%) have expected count less than 5. The minimum expected count is 532,15.

d. 0 cells (,0%) have expected count less than 5. The minimum expected count is 593,90.

TABLE A56. Clicked on an element * Gender * Humor Condition Symmetric Measures

Humor Condition			Value	Approx. Sig.
non-humorous	Nominal by Nominal	Phi	,001	,947
		Cramer's V	,001	,947
	N of Valid Cases		17123	
humorous	Nominal by Nominal	Phi	,005	,517
		Cramer's V	,005	,517
	N of Valid Cases		17285	
Total	Nominal by Nominal	Phi	,003	,612
		Cramer's V	,003	,612
	N of Valid Cases		34408	

1 (2)

Appendix 16. Clicked on an element * Humor Condition * Gender Crosstabulation

TABLE A57. Clicked on an element * Humor Condition * Gender Crosstabulation

Gender				Humor Condition		Total
				non-humorous	humorous	
female	Clicked on an element	not clicked	Count	5850$_a$	5907$_a$	11757
			Expected Count	5829,2	5927,8	11757,0
			% within Clicked on an element	49,8%	50,2%	100,0%
			% within Humor Condition	91,7%	91,0%	91,4%
			% of Total	45,5%	45,9%	91,4%
		clicked	Count	531$_a$	582$_a$	1113
			Expected Count	551,8	561,2	1113,0
			% within Clicked on an element	47,7%	52,3%	100,0%
			% within Humor Condition	8,3%	9,0%	8,6%
			% of Total	4,1%	4,5%	8,6%
	Total		Count	6381	6489	12870
			Expected Count	6381,0	6489,0	12870,0
			% within Clicked on an element	49,6%	50,4%	100,0%
			% within Humor Condition	100,0%	100,0%	100,0%
			% of Total	49,6%	50,4%	100,0%
male	Clicked on an element	not clicked	Count	9845$_a$	9796$_b$	19641
			Expected Count	9795,9	9845,1	19641,0
			% within Clicked on an element	50,1%	49,9%	100,0%
			% within Humor Condition	91,6%	90,7%	91,2%
			% of Total	45,7%	45,5%	91,2%
		clicked	Count	897$_a$	1000$_b$	1897
			Expected Count	946,1	950,9	1897,0

		% within Clicked on an element	47,3%	52,7%	100,0%
		% within Humor Condition	8,4%	9,3%	8,8%
		% of Total	4,2%	4,6%	8,8%
	Total	Count	10742	10796	21538
		Expected Count	10742,0	10796,0	21538,0
		% within Clicked on an element	49,9%	50,1%	100,0%
		% within Humor Condition	100,0%	100,0%	100,0%
		% of Total	49,9%	50,1%	100,0%

Each subscript letter denotes a subset of Humor Condition categories whose column proportions do not differ significantly from each other at the ,05 level.

TABLE A58. Clicked on an element * Humor Condition * Gender Chi-Square Tests

Gender		Value	df	Asymp. Sig. (2-sided)
female	Pearson Chi-Square	1,707[c]	1	,191
	N of Valid Cases	12870		
male	Pearson Chi-Square	5,579[d]	1	,018
	N of Valid Cases	21538		
Total	Pearson Chi-Square	7,119[a]	1	,008
	N of Valid Cases	34408		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 1497,91.

c. 0 cells (,0%) have expected count less than 5. The minimum expected count is 551,83.

d. 0 cells (,0%) have expected count less than 5. The minimum expected count is 946,12.

TABLE A59. Clicked on an element * Humor Condition * Gender Symmetric Measures

Gender			Value	Approx. Sig.
female	Nominal by Nominal	Phi	,012	,191
		Cramer's V	,012	,191
	N of Valid Cases		12870	
male	Nominal by Nominal	Phi	,016	,018
		Cramer's V	,016	,018
	N of Valid Cases		21538	
Total	Nominal by Nominal	Phi	,014	,008
		Cramer's V	,014	,008
	N of Valid Cases		34408	

Appendix 17. Binary Logistic Regression

TABLE A60. Frequencies - Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	34408	100,0
	Missing Cases	0	0,0
	Total	34408	100,0
Unselected Cases		0	0,0
Total		34408	100,0

a. If weight is in effect, see classification table for the total number of cases.

TABLE A61. Dependent variable encoding

Original Value	Internal Value
not clicked	0
clicked	1

TABLE A62. Categorical variables encoding

		Frequency	Parameter coding (1)
Humor Condition	non-humorous	17123	0,000
	humorous	17285	1,000
Gender	female	12870	0,000
	male	21538	1,000

TABLE A63. Block 0 Classification Table[a,b]

Observed			Predicted		
			Clicked on an element		
			not clicked	clicked	Percentage Correct
Step 0	Clicked on an element	not clicked	31398	0	100,0
		clicked	3010	0	0,0
	Overall Percentage				91,3

a. Constant is included in the model.

b. The cut value is ,500

2 (2)

TABLE A64. Block 1 Classification Table[a]

Observed			Predicted		
			Clicked on an element		
			not clicked	clicked	Percentage Correct
Step 1	Clicked on an element	not clicked	31398	0	100,0
		clicked	3010	0	0,0
	Overall Percentage				91,3

a. The cut value is ,500