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TEENS: A Framework for Understanding Adolescent Online Social Behaviors on myYearbook,
Facebook, MySpace and Twitter

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Abstract

Social media is becoming a staple in the marketing mix, along side print, radio, television, and online mediums. One of the major demographic groups marketers are interested in is teenagers – which are heavy users of social media services such as Facebook, MySpace, and others social media sites. Teens tend to be a trend setting group when it comes to technology usage. In this paper, we present the TEENS model as a way to segment teenagers based on their attitudes towards and behaviors with social media services from an ecommerce perspective. This research is a cross-platform descriptive and inferential analysis of teenager's behaviors on four social networking sites: myYearbook, MySpace, Twitter and Facebook. We investigate three major factors: their level of engagement with the social media sites, their engagement with companies on social media sites, and their engagement with ecommerce on social media sites. We then use clustering analysis techniques to find groups of teenagers with distinct behaviors based on these three areas of interest. We found that teenager behaviors on social networking sites are very complex but that the TEENS model can help define some of these teens' interactions of interest in the marketing area. Specifically, a large majority of teenagers who are on social media sites have multiple accounts. In fact, only 10% of social media site users are considered to be "low engagers". Just over 40% of teenagers are willing or have used social media sites in some form of ecommerce, and almost 30% are engaged with a company via social media. Teenagers consider social media sites as personal spaces, and marketers must treat them as such. Through our research, companies can segment teenagers to better utilize social networking sites. Findings indicate that companies can create relationships and target specific groups of teenagers to get their message across in the best and most efficient way possible. We also found that there are distinct differences between social media sites, which imply that companies will have to change their marketing techniques according to which social media site they are targeting. Overall, teenagers are a complex demographic that needs much attention in order to better understand their behaviors and attitudes towards online advertising and company relations.

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Introduction
The digital world has garnered considerable usage in the past few years by a wide array of users, including social media sites (e.g., MySpace, Facebook, and LinkedIn), virtual reality sites (e.g., Second Life), and online communities (e.g., Wikipedia, YouTube, and Flickr). When combined with online access found almost everywhere, these social media services provide constant connectivity with others. This report focuses on social media sites (SMS). According to boyd and Ellison (2007), a social media site is a "web-based service that allows individuals to 1) construct a public or semi-public profile within a bounded system 2) articulate a list of other users with whom they share a connection, and 3) view and traverse their list of connections and those made by others within the system". However, there are a many questions regarding the effect of the SMS platforms on business and communication. In this study, we investigate teenagers, a critical portion of the SMS user base, and their behaviors regarding their level of involvement with SMS, engagement with companies, and use of ecommerce on SMS. We believe teenagers are a special demographic because of their numbers, usage of SMS, influence on family purchases, and effects on future trends (Rutledge, 2000).

The current teenage demographic is the first generation to be raised with SMS being the norm; therefore, a large percentage of teens have SMS profiles. In this research, we investigate their level of engagement with these sites, since just creating an account does not mean the teen will use the service. There are many features to SMS, including profile creation, sending messages, posting status updates, uploading pictures, playing games, and more. Companies are also making a presence on SMS to reach this important demographic. Companies can create profiles, fan pages, and events and invite people to follow or fan them. Additionally, users of SMS can purchase gifts to send to friends. These gifts can be virtual and free (or with a virtual currency), and other gifts are real that are purchased with actual money. The use of SMS can be a great way for companies to reach specific people as well as use the sites as a customer management service.

Articles in many popular press outlets provide very interesting commentary about teenagers and their use of ecommerce and SMS. Rutledge (2000)writes that only about 20% of 16 to 22 year olds buy products online. Yet in 2002, they predicted the teen spending market to be $1.3 billion. This is created from the 21.9 million kids and 16.6 million teens with Internet access. In the article, they indicated that younger Internet users desire low-cost and convenient ways to purchase things like music, books, and apparel online. This article also touches on the fact that teenagers are highly interested in brands and brand image, potentially creating a very loyal customer base. In fact, in 2000, teenagers spent $153 billion on themselves and contributed to another $33 billion from input into their family's grocery shopping. An article from Business Week (Tapscott, 2008) talks to marketing professionals about their observations on teenage online spending. They noticed that teenagers do not spend a lot of money online yet, as many of them do not have credit cards, but they spend a lot of time on the Internet consulting about products. They also believe teenagers are a crucial part of online buying since in 2006 students earned almost $200 billion a year and purchased $190 billion worth of goods. In fact, people 21 and under influence "81% of their families apparel purchases and 52% of car choices(Tapscott, 2008)" They discuss how teenagers are turning to their friends for shopping advice online, and this makes it challenging for marketers who are trying to become "friends" with this market (Tapscott, 2008).

It is obvious that teenagers are a crucial demographic to investigate, and through the research presented in this paper we aim to present different segments of teens that are interested in company engagement and ecommerce through social networking sites in a way that marketers will understand teenagers behaviors on SMS.

In the research reported here, we create groupings or clusters of teenagers based on different commerce-related behaviors they exhibit on social networking services, specifically on myYearbook, Facebook, Twitter, and MySpace. These four SMS are very popular in the current market and provide a cross-platform picture of teenager's behaviors on SMS.

Review of Literature
Although online SMS started at least in 1997 with SixDegrees.com (boyd, 2008), it has been in recent years that it has truly exploded, with MySpace, Facebook, LinkedIn, Twitter, and myYearbook, among others. There has also been a great amount of media attention towards the different SMS in general and how they affect marketing and advertising online specifically. With the interest of the media and the explosion in users, many academics have begun researching SMS, especially as a marketing and branding platform.

Along with boyd and Ellison's definition of SMS, other researchers have added to the interpretation of what makes up a SMS. SMS are considered personal spaces used to enhance and develop friendships and relationships (Vogt & Knapman, 2007), as well as providing an outlet for personal creativity and self-expression(boyd & Ellison, 2007). As personal spaces, there may be questions on whether or not that are viable marketing platforms. However, Morrison and Weaver (2008) add that SMS are about a bottom-up creation of information and interaction, which has significant potential for marketers. Many SMS allow its users to create their own applications for the social network making personalization possible. Many SMS also reflect the user's identity, and they can affect social relationships or self-esteem (Kelly, 2008). Combined with the sharing of information, this social networking aspect makes these sites of interest to marketers, even if they are personal spaces. SMS tend to be a continuation of outside friendships, to solidify the relationship (boyd & Ellison, 2007). They are used to connect with friends that one has outside of the Internet as well as weaker ties such as acquaintances, friends from long ago and friends of friends (Ellison, Steinfield, & Lampe, 2007). Often, the desire to socialize with pre-existing friends is one of the main motivations for using the social networking sites (boyd, 2008; Choi, 2006).

Use and Motivations of Social Networking
In fact, motivations and behaviors are a major area of study for academics. Vogt and Knapman (2007) found five key motivations that lead people to use SMS: the need for personal achievement or recognition, the need to be individual or creative, the need for friendship or belonging, the need to discover, explore or have new experiences and finally the need for sex and relationships. Kelly (2008) modified Vogt and Knapman's (2007) motivations saying that the mood enhancement was also a way to relieve boredom. She also found that the need for recognition and attention from friends was an important factor as well as information seeking regarding their interests. Grant (2005) found similar motivations specific to the teenage demographic in that teens like to use SMS to enhance their mood, learn by experience, as a form

of passive escapism, as social interaction, and to find or give information and advice. These motivations reflect directly on how teenagers use and behave on SMS.

Li (2007) presented uses of active social network youth users. The top ten most popular activities are looking at profiles, updating personal profile, searching for someone, emailing someone, writing on someone else's profile, reading blogs, listening to music, requesting someone's friendship, and looking up someone's status. Most of these activities deal with managing friendships, connecting or reconnecting with friends and acquaintances, and participating in interest oriented activities.

Another report released by Li and Bernoff (2010) creates social groupings of adult users as a way to analyze the market's social technology behavior. They created a ladder of users. The bottom started off with *Inactives*. The next level up, and also the largest group, is the *Spectators*. They read blogs, listen to podcasts, watch videos, read customer reviews, and read tweets but they do not create or par take in the activities. *Joiners* are next. This group maintains profiles on SMS and visits other social networking sites. *Collectors*, the next step on the ladder, use RSS feeds, and add "tags" to web pages or photos. *Critics* follow up and post rating or reviews, comment on someone else's blog, contribute to online forums, and edit articles on wiki. *Conversationalists* (a growing group) actually updates their status on SMS and post updates on Twitter. Finally, the highest level on the ladder is the *Creators*. They publish blogs, publish web pages, upload personally made videos or music, and write articles. Although this research is cross-platform, the demographics are not clearly defined as to what characteristics actually comprise these groupings.

The research reported in this paper aims to provide a cross-platform analysis of just the teenage demographic. We use Twitter, Facebook, MySpace, and myYearbook as the SMS to compare. We are solely investigating SMS and not other types of online interactions such as Wikipedia or eBay. Much prior research investigating teenager's behaviors and motivations for using social networking sites has been either qualitative or simple descriptive quantitative statistics making it harder to present testable evidence. The qualitative research presented in this paper is crucial in understanding different insights into teenager behaviors and producing new findings. This article presents a quantitative exploration on the subject with the use of inferential statistics to provide testable evidence. An area that is lacking among the current academic research is the idea that there are different motivations for different social networking sites. Cook (2010) took note of the differing motivations between social networks. A cross-platform analysis is what we further investigate in this paper.

Advertising and Company Engagement on with Social Networking Sites
Another area of interest for academics and marketers alike is teenager's perceptions, attitudes, and behaviors towards advertising and companies on social media sites. Cheon and Cho (2004) studied advertising avoidance suggesting that people can avoid advertising because of too much clutter, when ads are disruptive of the goal at hand, and when there has been a previously negative experience. Their research applied to general online practices and not specifically to SMS. Kelly (2008) created a new model of avoidance for SMS based off of Cho and Cheon's research. The antecedents for advertising avoidance are slightly different for SMS in that ad relevance and skepticism has more influence than clutter and goal impediment. Kelly found that

instead of personally having a bad experience with advertisements (such as a virus), it was word of mouth that someone else had a bad experience that affected SMS users of advertising avoidance. Furthermore, SMS users needed to perceive the relevance of the advertisement message as well as the credibility of its claims. Users of SMS also do not see SMS as a credible place to advertise because they know anyone can make a page.

Gritten (2007) also investigated the market's saturation of advertising and people's exposure and perceptions of it. He suggests that marketers focus on niche marketing as well as one to one communications. Shavitt, Lowrey and Haefner (1998) investigated consumer's attitudes towards advertising finding that although there is a high level of skepticism, younger people are more likely to have a positive attitude and therefore are less likely to feel offended or insulted leading to a better message recall. Similarly, Dutta-Bergman (2006) studied how demographics and psychographics influenced consumer's attitudes towards advertising and suggested that younger people rely less on advertising for decision making than the older consumers.

Rappaport (2007) developed three new advertising models centered on relevance, instead of using the mass media "interrupt and repeat" model, that can all be used together to create the best marketing strategies for your brand: on demand, engagement, and advertising as a service. White (2009) developed characteristics that show the Internet as a viable medium for advertising. Kelly (2008), later enhanced White's list of characteristics to work for social networking sites. She defined eight characteristics that are important for marketers to know: SMS are targetable therefore they create the potential for niche marketing. They facilitate interactive advertising as well as the use of multi-media. Marketing on SMS allows for the reinforcement of traditional advertising on mediums like TV and Print. SMS allows for a high degree of flexibility allowing for changes and updates with a quick turnover.

Fortunately, SMS are also highly measurable. SMS are a social medium instead of a mass medium therefore it gives marketers the opportunity to develop relationships with the consumers. These sites are also considered a "personal space" and therefore must be treated differently than commercial spaces. Finally there is a perception of risk on SMS and therefore marketers need to find a way to deter this perception (Kelly, 2008).

This research examines how specifically teenagers like to interact with companies since SMS are personal spaces and not commercial in nature. Li (2007) investigated user's interaction with companies on social networking sites. Although the findings are very helpful in developing an idea of how consumers use the social networking sites, it only provides a descriptive analysis with percentages and does not use inferential statistics to apply their results to a larger population. Li found that users between 18 and 26 are more interested in a favorite marketer's profile with 27% of them saying they would be interested in seeing marketer profiles on SMS. Younger teenagers are not far behind with 31% showing interest. Li also found that adult daily users were significantly more interested in marketer profiles yet youths shared their interest in products or specific SMS pages with their friends more than are the adult users (Li et al., 2007). Our research will expand on this prior work, using a cross-platform approach as well as inferential statistics.

Use of ecommerce on Social Networking Sites
This research also explores teenager's role in ecommerce through social networking sites along with their level of SMS engagement and company engagement, three seemingly related topics. There has been much less academic research on ecommerce on social networking sites such as Facebook, MySpace, Twitter and myYearbook than on advertising and motivations. There is though, plenty of research proving that social influences have a large affect on people's purchasing decisions, especially online (Kim & Srivastava, 2007; Lam, 2004; Sinha, 2001). Sinha and Swearingen found that consumers are more likely to believe recommendations from people they know and trust. From this idea, Kim and Srivastava provide a general overview of social influences on ecommerce decision making. From their research, they concluded that ecommerce companies can increase sales by incorporating social networking into the decision making process through reviews since people believe recommendations from people they are connected to. Lam developed a recommender system that uses social networking information called Social Network in Automated Collaborative-filtering of Knowledge. Here the weight of users rating depends on the network distance between the users and the closeness they have with each other.

Furthermore, Swamynathan (2008) investigated whether or not social networking improved ecommerce through the online marketplace Overstock.com. This report found that a majority of Overstock.com users do not use the social networking features on the site, but those that transact with friends of friends generally obtain benefits in the from of higher user satisfaction. Therefore even though social networking did not improve the immediate amount of sales, it did improve the level of satisfaction which could create repeat business down the road (Swamynathan et al., 2008).

In fact, research by Hitwise found that SMS including MySpace and Facebook drive traffic to retail sites (6% of retail traffic in 2006); therefore they create a starting point for SMS ecommerce connections (Walsh, 2006). Other research targets teenagers specifically (Lueg, 2001; McLauglin, 2000).The average teenager has $90/week of discretionary income to spend on apparel, entertainment and sporting goods. They also have a great influence over their parents. 77% of teens urge their parents to buy specific brands, and younger teens have a great influence in grocery shopping. By 2002, it was estimated that teens would be spending $1.2 billion, just online (McLauglin, 2000). Leug investigated teenagers shopping behaviors online and at malls finding that having more accessibility to the Internet does increase teenagers use of ecommerce. Furthermore, Internet tends to be more influenced by peers more so than relatives. This directly corresponds with research done by Tootelian and Gaedeke (1992), when they found that friends were the main source of information for teenager's purchasing patterns.

From the research on motivations, behaviors, use of SMS, and ecommerce, it seems that there should be a relationship between these major factors affecting social networking online. Many of the behaviors on social media sites involve communicating with friends and sharing information. This type of communication, along with the interest of users to talk about brands and products, makes us believe that the higher level of engagement on SMS would lead to openness in communicating with brands and companies. And if teenagers are open to communicating with the corporate world, they would be willing to spend their large discretionary income on the

Internet as well, especially since friends have such a large influence on teenagers buying patterns.

This research shapes our investigations of teenagers on social networking sites, as outlined in the following table.

Past Research	Major Findings	Our Research
Motivational research: Kelly (2008), White (2009), and Vogt and Knapman (2007)	A Classification for motivations: • Mood Enhancement/ Relief of Boredom • To Belong/Social Interaction • Recognition/Attention from friends • A creative outlet/represent oneself • To have new experiences, relationships • To seek information.	We are going to investigate whether these motivations differ across SMS platforms. Do teenagers use one SMS for one reason and another SMS for another reason?
Advertising and Company Engagement Research: Shavitt, Lowrey and Haefner (1998) investigated consumer's attitudes towards advertising White (2009) and Kelly (2008) developed characteristics that show the Internet as a viable medium for advertising. Li (2007) investigated user's interaction with companies on social networking sites.	• High level of skepticism: younger people are more likely to have a positive attitude and therefore are less likely to feel offended or insulted leading to a better message recall. • 8 characteristics that are important for marketers to know: SMS are targetable, they facilitate interactive advertising as well as the use of multi-media, allow for the reinforcement of traditional advertising on mediums like TV and Print and a high degree of flexibility allowing for changes and updates with a quick turnover. • Teens share their interest in companies with their friends	We investigated teenager's interaction with companies on SMS across four platforms to further understand their willingness for commercial interaction. Do teens actually "friend" a company or follow company updates on SMS specifically?
Ecommerce and Teen Influence: Kim and Srivastava (2007), Lam (2004) and Sinha (2001) investigated on family purchasing behaviors, social networking on ecommerce behaviors and trust. Other research targets teenagers specifically Lueg (2001),,McLauglin (2000) and Tootelian and Gaedeke (1992)	• The average teenager has $90/week of discretionary • They also have a great influence over their parents. 77% of teens urge their parents to buy specific brands • By 2002, it was estimated that teens would be spending $1.2 billion • Friends are the main source of information for teenager's purchasing patterns.	We investigate teenagers openness to ecommerce specifically through SMS

Table 1: Summary of research, their findings, and how our research expands upon it

<u>Research Questions</u>
The major research question is: *Are there clusters among teenagers based on their use of social network services, their receptiveness to social network company engagement, and their behaviors concerning ecommerce?*

Many times in prior work, teenagers are lumped together as one demographic, one segment of users. Teenagers are explained as having a homogenous set of behaviors. We want to investigate whether this is true or whether there are different types of teenagers among social media site users. We believe that their level of engagement on the SMS could vary based on different factors, for example, their motivations, their receptiveness to a commercial presence online, and their friends. This research could have implications for many companies looking to target teenagers by helping them segment and narrow down their target markets.

From this research question, the following hypotheses determine if different clusters exist among the teenager participants.

H1a: *The number of social network profiles a teenager has positively relates to their level of engagement with social networks in general.*
H1b: *The frequency of status updates positively relates to teenager's level of engagement with social networks*
H1c: *The interest in sharing opinions via polls positively relates to a teenager's level of engagement with social networks.*
H1d: *A person engaged with more social media platforms will be more willing to act on the opinions of others via status messages.*

The reasoning behind these hypotheses is that different teenagers use social networks in different ways. A teen with multiple social networks, that updates frequently, and shares opinions, is highly engaged in social networks.

H2a: *The number of ways teenagers would engage with a company online (email or to fan company) or via cell phone positively relates to their openness to company engagement.*
H2b: *Actually "friending" a company via a social network positively relates to their desire to engage with companies.*
H2c: *Desire for friend's advice about products via status updates positively relates to higher engagement with companies.*

The reasoning behind these hypotheses is that those teens, who would interact with a company in multiple ways, and already desire advice from friends are the most open to engaging with a company via a social network and a cluster of these teens exist.

H3a: *Preference to buy flowers via a social network positively relates to a teenager's engagement with ecommerce on social networks*
H3b: *Purchase of sponsored gift positively relates to a teenager's engagement with ecommerce*
H3c: *Having a pay pal account positively relates to teenager's engagement with ecommerce*

The reasoning behind these hypotheses is that students who have bought a sponsored gift, or would prefer to buy flowers via social networks and has a pay pal account are highly engaged with ecommerce on social networks and create a cluster of teenagers.

H4: *Level of social network engagement positively relates to teenager's openness to engage with companies via social networks.*
H5: *Level of social network engagement positively relates to teenager's engagement with ecommerce.*

The reason behind these two hypotheses is that the more teenagers are engaged with social networks the more open they are to interacting with companies and using social networks for ecommerce.

Methodology
Data Collection Site (myYearbook)
The SMS myYearbook is similar to MySpace, but it is designed as a virtual place to meet people. The site founders, two teenage high school students, convinced their older brother to help them start what has grown into a 20 million member social network. Following the demographic of its founders, the site mainly attracts teenagers, but it is open to all ages.

Some of the features of the site include Causes (a way to support popular charities), Owned (a way to buy and sell users), Blind Date (a widget to find similar people), and Match (a way to find secret admirers), an example of this can be seen in Figure 1.

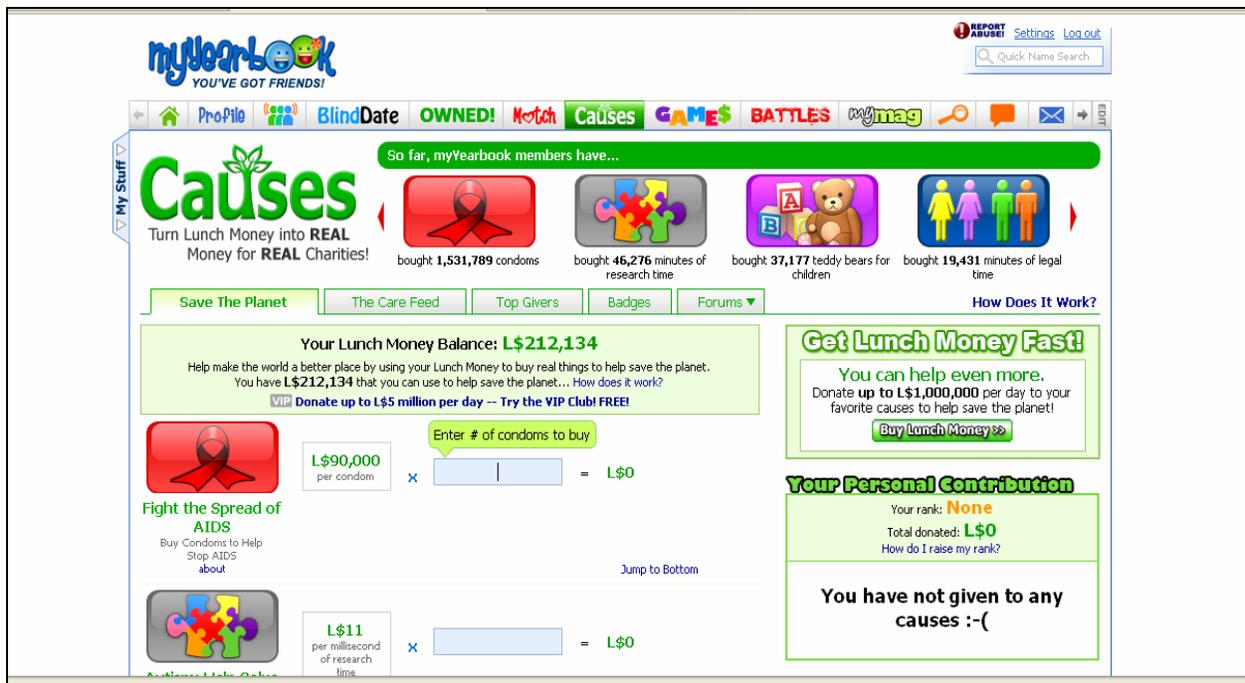**Figure 1**: A screenshot from myYearbook's Cause application.

Although myYearbook is not as well known as Facebook or MySpace, they are one of the 30 largest sites in the US measured by page views (Jansen, Sobel, & Cook, 2010). In only a short 5

years since its inception, myYearbook members are already one of the most active user bases, spending an average of 20 minutes on the site per visit. Impressively, this site is one of the few profitable social networking sites on the Web (Jansen et al., 2010).

Data Collection Sites
The survey used for this data collection was distributed to myYearbook members in exchange for "lunch money" – myYearbook's virtual currency. It consisted of 55 multiple choice questions, two of which were validity checks. Taking about 10 minutes to complete, the survey was administered on the website between the 14th and 17th of August 2009. The portion of responses we focused on is compiled from 27,805 responses from members aged 13 to 19. (See Appendix 1 for the complete survey).

Part of the Millennial generation (born between 1981 and 2000), this age group is important because it has major implications for commercial and technological patterns and behaviors, especially for predicting future trends. Unfortunately though, teenagers rely on more non-traditional channels to express themselves or find news. By understanding their behavior on these "non-traditional channels", rich as SMSs, we can better address advertising to reach out to this crucial teenage population.

Within this study, we mention four main SMSs: Facebook, MySpace, Twitter and of course myYearbook (this site is outlined above). MySpace was launched in 2003 in Santa Monica California (boyd & Ellison, 2007). Like myYearbook, it is a peer and media based social network. Users can create profiles including pictures, interest, and demographic information. A unique feature about MySpace is that they let users embed music and/or videos to their profile, along with creating customized backgrounds(Morrison & Weaver, 2008). Indie-rock bands and their fans were major users at first; in 2004, teenagers began joining in mass (boyd & Ellison, 2007).

Facebook was launched by Harvard students in 2004 and was originally restricted to Harvard students only, then a select group of universities, then all university students. Over the years, Facebook expanded its user base and now anyone over the age of 13 can partake. It is also a peer and media based social network where users create profiles and establish connections with other users. Facebook users tend to have higher education levels than MySpace users since the network started only for college students. Outside developers can also build applications and apply them to Facebook – this includes quizzes, games, and other tools. Facebook also has many privacy settings users can apply to their profiles. They now have over 100 million users (Morrison & Weaver, 2008).

Finally, Twitter is the youngest of the SMSs. It was launched in July of 2006. It is a micro-blogging and micro-communication service where users can send short updates to a social network from a variety of devices. Unlike other SMS, Twitter is mainly focused on these micro-posts of 140 characters or less, and less focused on the creation of a complete profile page. These updates can be sent from the Twitter site, text messages, smart phone applications, and other online places such as Twitterific or even Facebook. Twitter was one of the first SMS that could be used from such a large variety of platforms (Jansen, Zhang, Sobel, & Chowdhury, 2009).

Data Analysis
We conducted two rounds of data analysis: descriptive counts and frequencies and cluster analysis. Descriptive counts and frequencies are important ways to understand the data and start making it ready for further statistical analysis. Cluster analysis is a statistical method to find different groups among responses that have similar characteristics within the clusters but high variability across clusters. We used two different types of cluster analysis to find the best set of groupings, the K-Means algorithm and the Two-Step algorithm. The Two-Step cluster analysis was used when we had both categorical and continuous variables. The K-means technique is great because it uses as few clusters as possible and captures statistically and commercially important clusters. In the end, we had three different sets of clusters, one for each component of the research question. Clustering is a great way to segment a market and understand the different groupings.

The Two Step Cluster Analysis method is meant to investigate natural groupings among data. This technique is especially desirable because of its ability to handle categorical and continuous variables, as well as its ability to analyze large data files. This procedure assumes that each of the variables is independent. It begins by creating a Cluster Features Tree by placing cases at the root of the tree and adding each case to leaf nodes based on similarities. It uses a distance measure to measure similarity. These leaf nodes are grouped with an agglomerative clustering algorithm to produce a range of solutions. Using the Schwarz's Bayesian Criterion (BIC), we can choose the number of clusters best suited for the data (SPSS, 2010b).

The K-Means Cluster Analysis creates a cluster based on a fixed number of groups with unknown characteristics based on variables that you define. It is also very useful with large data sets because it uses as few clusters as possible. This method starts by calculating the initial cluster centers and then assigns cases to cluster based on the distance from the cluster center. The initial cluster centers are then adjusted with the mean value of the cases within the cluster. This process is repeated in what is called iterations. Then the final cluster centers are presented (SPSS, 2010a).

We created three different sets of clusters. The first one is to show the level of engagement teenagers have with their social networks and which ones in particular. The second set of clusters investigates teenager's openness to engaging with companies via social networks. The third set of clusters investigates teenager's behaviors towards ecommerce through social networks. Once we created the clusters, we used cross-tabs and other method to analyze the responses within the clusters, as well as a way to compare the clusters to each other. Below is a more detailed description of what variables make up each of the cluster sets.

Social Networking
Our first set of clusters defines the level of social network engagement among users. To define engagement, we used the following variables:
- The number social networks (1 to 4)
- Frequency of status updates for Facebook, MySpace and Twitter
- How often users share their opinions via sponsored polls.

Very high engagement means the members use multiple social networks upward to 3 or 4, updates their status multiple times a week or a day, and often shares their opinions via sponsored polls.

Openness to Engagement with Companies
The second set of clusters investigates user's openness to engage with companies via social networks. To define this we used five different variables:
- Whether users would give their cell phone numbers
- Whether users would give their email address to companies for updates
- If they would "fan" a company on a social network (following a company's updates)
- If they have previously "friended" a company on a social network
- Whether or not they want their friend's opinions about products that they post on their status updates.

Ecommerce Engagement
The third set of clusters investigates user's engagement with ecommerce through social networks. To define levels of engagement with ecommerce we used the following three variables:
- Whether or not the user has a Pay Pal account
- Whether or not they have ever bought a sponsored gift
- Does the user prefer to order flowers through a company website or a social network
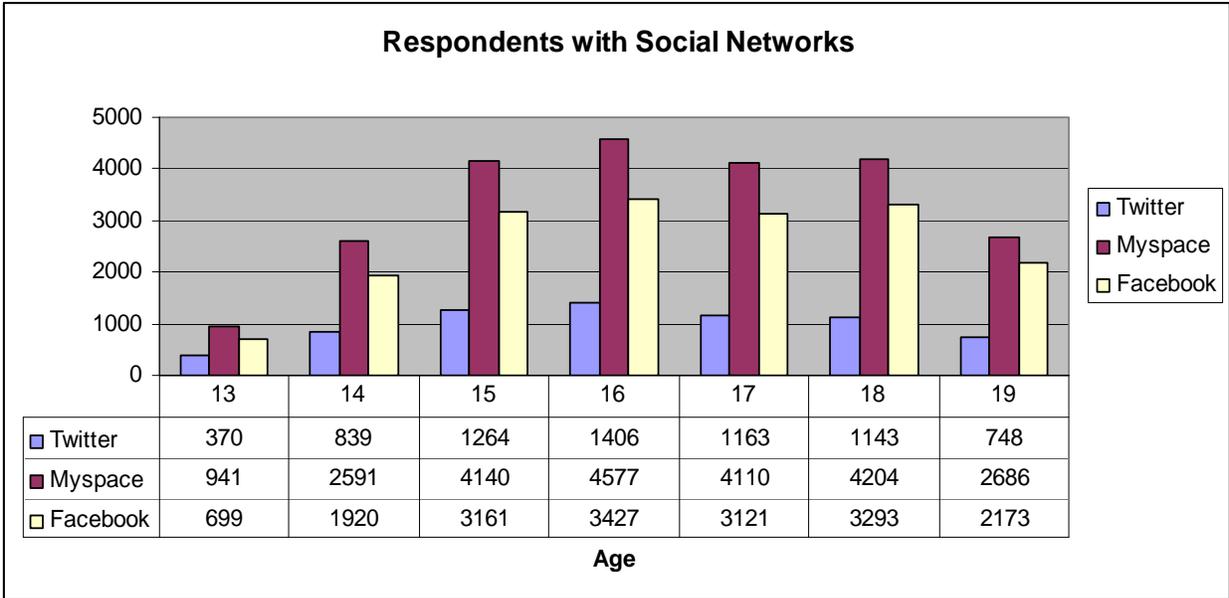
Results
Aggregate Results
Before addressing the research question, we provide some aggregate results describing our survey sample. Our results consist of 27,805 survey respondents between the ages of 13 to 19. Table 2 shows a breakdown of the ages. As we can see, the largest percentage of users is between the ages of 15 and 18 whereas the lowest age represented is 13 year olds.

Age	Count of Age	Percentage
13	1,419	5.1%
14	3,412	12.3%
15	5,036	18.1%
16	5,375	19.3%
17	4,713	17.0%
18	4,749	17.1%
19	3,101	11.2%
Total	27,805	100.0%

**Table 2**: Breakdown of ages by count and percentage

All of our respondents have myYearbook, but we saw that many of them have more than just one social network. From Figure 2 we can see that along with their MyYearbook accounts, most respondents also have MySpace accounts (nearly 84%).

Respondents with Social Networks

Age	13	14	15	16	17	18	19
Twitter	370	839	1264	1406	1163	1143	748
Myspace	941	2591	4140	4577	4110	4204	2686
Facebook	699	1920	3161	3427	3121	3293	2173

Figure 2: Respondents with Twitter, MySpace and/or Facebook Accounts

Facebook is the next most common social network among our respondents (other than myYearbook), with 64% also having a Facebook account. The last social network we are investigating is Twitter, the youngest of the four social networks. Only about 25% of our respondents have a Twitter account.

When we aggregate these results, we can see the distribution of users with multiple social networks. In Figure 3, we see that 7% of respondents had only myYearbook. This shows that most teenagers within our sample had multiple accounts. In fact, 43% of respondents have 3 social networks. Not only is this generation made up of multi-taskers, but it is also multi-networkers.
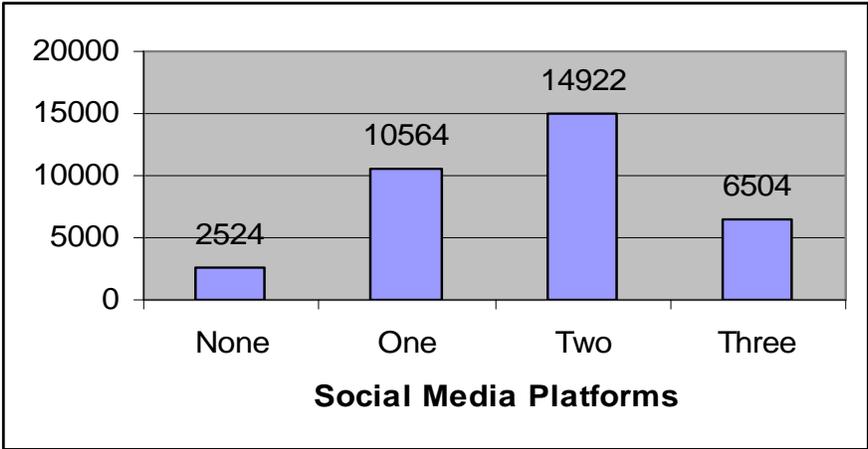
Figure 3: Respondents across social platforms

Since most of the respondents have multiple accounts, we were interested to see what types of motivations drive them to be apart of different types of social media networks. In Table 2, we

can see that the four social media networks do have different sets of motivations that drive users to choose one over the other. For example, myYearbook is the only site that a large majority of respondents were interested in flirting or dating with other users. Sharing photographs is a large motivation for using Facebook over the other networks. A motivation mainly present for Twitter is keeping up with the world. Yet there is one motivation to use social network sites that stay constant throughout – "to keep up with friends I know". Table 3 shows the top four motivations for each of the social networking sites. Are there different clusters of teenagers across or within these social networks? What are the behaviors of these teenagers and does it differ with their level of engagement?

MySpace	Facebook	Twitter	myYearbook
28% keep up with friends I know	27% Keep up with friends I know	18% Update my Status	24% Meet new People
15% Meet new people	12% Meet new People	15% Keep up with celebrities/musicians	14% Flirting/Dating
9% keep up with musicians/celebrities	10% Share Photos	14% Stay current with World	13% Play Games/Have Fun
9% express self	9% Discover Music	11% Keep up with friends I know	11% Keep up with Friends I know

Table 3: Top 4 motivations for each Social Media Network

Our survey identifies 14 different responses for respondents to choose when asked the question "Why do you use MySpace" (or for any of the four SMS). We categorized the 14 responses into Kelly's (2008) 7 motivations categories. Table 4 below details those responses that fit into the seven motivation categories.

Kelly Motivations:	Description	Survey Responses Categorized		
Mood Enhancement/ Relief of Boredom	*when you are feeling bored, entertainment components, feel relax*	listen to music	play games/have fun	
To Belong/Social Interaction	*interacting with peers, developing friendships, communicating with friends*	Be a part of a community	Receive/Share Advice	
Recognition/Attention from Friends	*the site provides attention to the teenagers*	because its cool		
Creative Outlet/ Represent Self	*updating and changing their profile, being creative*	update my status	express myself	share photos
New Experiences	*receiving new comments, adding new friends, discussing with friends, learning about friends/self*	meet new people	flirting/dating	
Relationships	*Engaging in conversations with friends/acquaintances, emotional connections*	keep up with friends I know		

| Kelly Motivations:	Description	Survey Responses Categorized		
Information Seeking	*information seeking regarding their interests, music, movies, causes etc*	discover music	Stay Current with World	Keep up with favorite musicians/ bands/celebs

Table 4: Survey responses categorized into seven motivations

We then applied these categories to each of the SMS. This better shows the differences in motivations for choosing one SMS over another. Table 5 below details each SMS. Facebook is used mainly for engaging in relationship conversations and as a creative outlet to represent oneself. MySpace is used for very similar reasons to Facebook. MyYearbook is primarily used for new experiences and enhancing ones mood. Finally, Twitter is used to express oneself as well as to seek information.

SMS	Belonging Interacting	Recognition/Attention	Info Seeking	Mood Enhancing	Relationships	Creative/Self	New Experiences
Facebook	8%	5.1%	9%	9.8%	**26.3%**	**26.4%**	15.5%
MySpace	3.3	5.3	13.9	11.4	**26.2**	**21.5**	18.4
myYearbook	7	7.7	3.4	16	11	15.5	**39.2**
Twitter	12.4	5.5	**30.9**	**2.2**	10.5	**29.9**	8.6

Table 5: Motivations broken down by SMS

Other questions in our survey dealt with teenager's behaviors on SMS such as teenager's openness to product discussions, ecommerce, and company engagement. At any age level, over 85% of teenagers said they would not use a social network as a payment method, seen in Figure 4. But of those that said they would use a payment account on a SMS, we saw a general pattern that teenagers would prefer to use MySpace over Facebook.
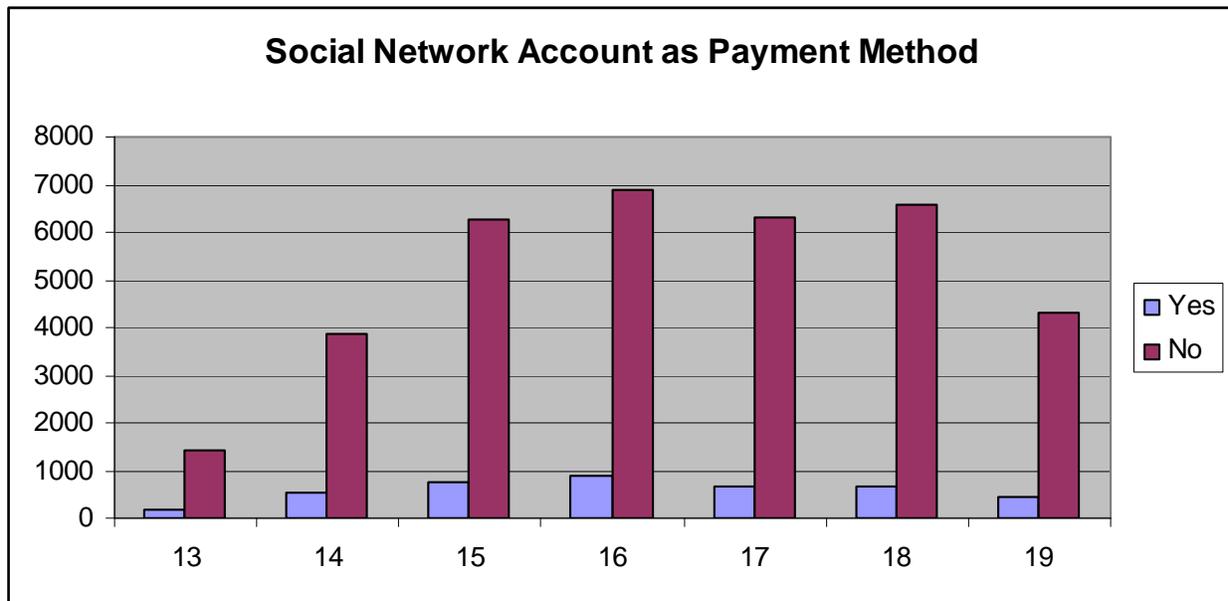
Figure 4: Whether a respondent would use a social network account (Facebook or MySpace) as a Payment method

Another interesting finding among our sample is that just over 25% of teenagers have posted a message on their status concerning a product or service to gain the opinions of their friends and family. Of these teens, 75% are influenced by their friend's advice or opinions showing that teens are highly influenced by their peer groups and desire their approval and attention.

To investigate groups among teenage social network users, we performed cluster analysis of the data set. We investigated three different sets of clusters: one dedicated to traditional social network engagement, one dedicated to respondents openness to company engagement, and the third dedicated to respondents engagement with ecommerce. Our clusters show that there are indeed different groupings of teenagers according to their social network behaviors.

Social Network Engagement
We found eight significant clusters dividing participants among their social network usage behaviors. The clusters can be seen in Table 6.

8 Clusters - K Means Cluster Analysis (31 iterations)								
	Cluster 1	**Cluster 2**	**Cluster 3**	**Cluster 4**	**Cluster 5**	**Cluster 6**	**Cluster 7**	**Cluster 8**
# of Cluster Members	1394 (5%)	2510 (9%)	4057 (14.6%)	2868 (10.3%)	4123 (14.8%)	4808 (17.3%)	3171 (11.4%)	4874 (17.5%)
MySpace	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MySpace Status Frequency	4	3	4	1	2	4	5	3
Facebook	No	Yes	Yes	Yes	yes	No	Yes	yes
FB Status Frequency	0	3	4	1	3	2	4	3
Twitter	No (24% Yes)	No (32% yes)	No (26% Yes)	No (14% Yes)	No (33% Yes)	No (21% Yes)	No (34% Yes)	No (19% Yes)
Twitter Update Frequency (frequency of those that have twitter)	5	1	1	1	1	1	4	3
Share Opinions	3 (47%) 2 (28%)	4(70%) 3(30%)	1 (58%) 0 (36%)	1 (54%) 0 (23%) 2 (22%)	2 (73%) 1 (14%)	2 (90%)	2 (75%) 3 (15%)	1 (45%) 2 (37%)
Description	MySpace High Social Network Engagement	High Social Network Engagement	Medium to High Social Network Engagement	Very Low Social Network Engagement	Medium Facebook Users	Medium MySpace Users	Very High Social Network Engagement	Medium Social Network Engagement

Table 6: Social Engagement Cluster characteristics and descriptions

We see that eight cluster emerge, which are:

- **High MySpace Users**. These users mainly have MySpace along with myYearbook. They update their statuses 1 to 2 times a day and sometimes like to share their opinions via sponsored polls. Those in this group, who have Twitter, update it very often, 3 or more times a day.
- **High Social Network Users**. They update MySpace and Facebook a few times a week and although they are not major Twitter users, they like to share their opinions always or at least often.

- **Medium to High Social Network Users**. These users update MySpace and Facebook 1 to 2 times a day.
- **Very Low Social Network Users**. Even though they all have Facebook and MySpace they only updated them a few times and then stopped. Almost all of them do not have Twitter and rarely to never share their opinions via sponsored polls.
- **Medium Facebook Users**. This group updates their Facebook accounts a few times a week whereas they only update their MySpace accounts a few times a month. They also sometimes like to share their opinions via sponsored polls.
- **Medium MySpace Users**. All of these users have and update their MySpace account 1-2 times a day but not everyone has a Facebook account and those that do only updates their Facebook account a few times a month. They also only share their opinions sometimes via sponsored polls.
- **Very High Social Network Users**. This group updates their MySpace and Facebook account multiple times a day, and those in this group that have Twitter update it multiple times a day as well. They also sometimes to often like to share their opinions via sponsored pools.
- **Medium Social Network Users in General**. This group is similar to cluster 2 in that they update their MySpace and Facebook account a few times a week, but those in this group that have twitter also update it a few times a week. They also only share their opinion via sponsored polls rarely to sometimes.

Table 6b further groups the levels of engagement into high, medium and low levels of engagement for an easier interpretation of the data. As we can see, only about 10% of teenagers who use SMS have a low level of engagement, meaning that about 90% are active users.

Engagement Level	Clusters	Size in Percent
High Range	7, 2, 1	25.45%
Medium Range	3, 5, 6, 8	64.24%
Low Range	4	10.31

Table 6b: Further defines the level of engagement in three areas by the size of the clusters

H1a: *The number of social network accounts a teenager has positively relates to their level of engagement with social networks in general*.

A test of between subjects effects showed that significant fixed factors were MySpace ($F(1) = 39.42$, $p < 0.01$), Twitter ($F(1) = 179.40$, $p < 0.01$), while Facebook was not a significant factor in sharing opinions via sponsored polls. Also, the interaction of MySpace * Twitter ($F(3) = 21.33$, $p < 0.01$) was significant, while MySpace * Facebook, Facebook * Twitter, and MySpace * Facebook * Twitter were not significant. So, if a respondent had a MySpace or a Twitter account, they were more likely to share their opinion via sponsored poll. If the respondent had both a MySpace and Twitter account, they were even more likely. An account on Facebook had no effect on openness to sharing opinion via a poll. In all cases, though, the more social media accounts, the more willingness to share opinions.

A test of between subjects effects showed that significant fixed factors were MySpace ($F(1) = 39.42$, $p < 0.0$), Twitter ($F(1) = 179.40$, $p < 0.01$), while Facebook was not a significant factor.

Also, the interaction of MySpace * Twitter ($F(3) = 21.33$, p< *0.01*) was significant, while MySpace * Facebook, Facebook * Twitter, and MySpace * Facebook * Twitter were not significant.

As shown by clusters 7 and 2, the number of social media accounts is important to how engaged teenagers are with their networks. Even though this is true, it is not a distinguishing factor. This is shown by clusters 3, 4, 5, 6, and 8. These clusters also have 3 or more social networks but still have a medium level of engagement because of other important factors. This generation has grown up with social networks being apart of their culture; therefore, it is perhaps not surprising that a majority of them have multiple networks and still have differing levels of engagement. One can draw an analogy to having more than one email account for different purposes.

H1b: *The frequency of status updates positively relates to teenager's level of engagement with social networks*

In order to evaluate H1b, we performed a statistical evaluation to determine if there is a difference of means (*frequency of status updates*) with level of engagement with social networks. We used a one-way ANOVA statistical analysis to compare means and variance between the groups. The ANOVA analysis tests the null hypothesis that group means do or do not differ.

The results indicate that there is a significant difference among the groups ($F(4) = 43.58$, p< *0.01 for Facebook;* $F(4) = 27.93$, p< *0.01 for MySpace;* $F(4) = 20.32$, p< *0.01 for Twitter;*). This indicates significant effects among the group, and the group means differ more than would be expected by chance (experimental error) alone.

We found frequency of status updates to be much more of a distinguishing factor than the other variables. As shown in Clusters 2 and 7, these users update their social networks much more often meaning they are on the social networks multiple times a week or day using at least one of the social network features. As shown in Cluster 4, very low SMS users, they have multiple social networks but rarely use the status feature – this more likely indicates a lower level of engagement, especially if we look at another important factor.

H1c: *The interest in sharing opinions via polls positively relates to a teenager's level of engagement with social networks.*

A chi-square test shows a statistical difference on seeking opinions on potential product purchases (chi-square(6) = 935.41, p<*0.01*). Investigating layering factors (i.e., Just myYearbook, MySpace, Facebook, and Twitter), all platforms were significant, but the symmetric measure evaluating the strength of each was low. This indicates that the difference among each platform was small and the key factor was just that the respondent had profiles on different platforms.

As we can see in clusters 2 and 7, these users, who have multiple accounts and update them frequently, also sometimes share their opinions. This shows that they not only use the status feature on their social network, they also interact with other features such as sponsored polls proving they are more engaged than others who do not like to share their opinions. We can see

this in cluster 3. Although users in this group update their statuses frequently and have multiple accounts, they rarely or never share their opinions. This shows that they might not use as many social network features as those who like to share their opinions via polls.

H1d: *A person engaged with more social media platforms will be more willing to act on the opinions of others via status messages.*

A chi-square test shows a statistical difference on seeking opinions on potential product purchases (chi-square(6) = 795.01, p<*0.01*). Investigating layering factors, all social media platforms were significant, but again, the symmetric measure of each was low. The key factor appears to be the level of engagement with social media platforms.

Openness to Company Engagement
We found 5 significant clusters dividing participants among their openness to engagement with companies on social networks, as shown in Table 7.

Openness to Company Engagement on Social Networks					
	Cluster 1	**Cluster 2**	**Cluster 3**	**Cluster 4**	**Cluster 5**
# of Cluster Members	5347	8244	2727	6984	4503
Cell Number	100% No	61% No	100% No	87% No	100% Maybe
Email Address	100% No	47% Yes	50% No	49% Maybe	62% Maybe
Fan a Company	100% No	61% Yes	60% No	54% Maybe	72% Maybe
Previously Friended Company	100% No	62.5% Yes	100% No	100% No	100% No
Want friends opinions on Status	100% No	60% No	100% Yes	100% No	69% No
Description	No Company Engagement: This group does not want to interact with a company on a personal level or through social media. They also do not want their friends opinions	Engaged with Company: They have a high interest to engage with a company. The majority would give email or fan a company. 62% have previously friended a company	Low Company Engagement, Trust in Friends: In general this group does not want to engage with a company: 50% might give email and less would fan a company, yet they all want their friends opinion on products	This group would definitely not give their cell phone but they might give their email or fan the company. But large portions still say no	Medium Interest for Company Engagement: All might give cell phone, most might give email (some definitely would) most might fan a company

Table 7: Openness to Advertising Cluster characteristics and descriptions

To determine the respondent's openness to company engagement, we used the following variables: whether or not they would give a company their email, phone number, or fan them on a social network, whether or not they have previously "friended" a company via a social network, and whether or not they want their friend's opinions about products.

- **Unbranded Users** is made up of no openness to company engagement users. This group does not want to interact with a company on a personal level via social media nor do they want their friend's opinions.
- **Brand Connected Users**, on the other hand, have a high openness to company engagement. Out of all the respondents, they have the highest amount of maybe response

to giving cell phone numbers even though the majority would still not do this. The majority of this group would also give email or fan a company. In fact, about 2/3 of this group has previously "friended" a company. Interestingly though, this group is not interested in gathering their friends opinions about products via status messages.

- **Friended Users,** has a low openness to company engagement but seem to trust their friend's opinions. Most of this group would not give their cell phone, email, or fan a company, but all of them responded that they do post information in their status messages looking for their friend's opinions.
- **Low Branders** has a low to medium openness level to company engagement. All most all of them would not give their cell phone, while about 50% might give their email or fan a company. None of them want their friend's opinions nor have they previously "friended" a company.
- **Brand Hesitant Users**, Everyone in this group said they might give their cell phone number, while over 2/3 said they might give their email or fan a company. Around 30% of this group also wants their friend's opinions. They are very hesitant group but most seem willing to consider company engagement.

Table 6 gives more description of the clusters.

H2a: *The number of ways teenagers would engage with a company online (email or to fan company) or via cell phone positively relates to their openness to company engagement.*

In order to evaluate H2a, we performed a statistical evaluation to determine if there is a difference of means (*number of ways to engage with a company*) with openness to company engagement. We used a one-way Chi Square statistical analysis to compare means and variance between the groups. The Chi Square analysis tests the null hypothesis that group means do or do not differ.

The results indicate that there is a significant difference among the groups (chi(*4*) = 3312.38, $p<$ *0.01*). This indicates significant effects among the group, and the group means differ more than would be expected by chance (experimental error) alone.

As we can see from the clusters created above, Cluster 2 shows that teens that would interact with a company in multiple different ways tend to interact with a company via social networks. This cluster had the most willing to give their cell phone number, their email, and fan a company. They were also the only cluster to have previously "friended" a company proving their openness to interacting with companies on social networks.

H2b: Actually "friending" a company via a social network positively relates to their desire to engage with companies.

The results indicate that there is a significant difference among the groups (chi(*4*) = 3312.38, $p<$ *0.01*). This indicates significant effects among the group, and the group means differ more than would be expected by chance (experimental error) alone.

As shown again by Cluster 2, the cluster that had the most teens that actually friend a company, also had the highest openness to giving personal information to companies via social networks. The other clusters all have less willingness to give personal information.

H2c: Desire for friend's advice about products via status updates positively relates to higher engagement with companies.

The results indicate that there is a significant difference among the groups (chi(*1*) = 11020.50, p< *0.01*). This indicates significant effects among the group, and the group means differ more than would be expected by chance (experimental error) alone. Although there is a difference among group means, our hypothesis that friends advice leads to a greater connections with companies was not proven.

This hypothesis was not proven through our cluster analysis. In fact, those people who wanted their friend's opinion the most are also some of the least likely to interact with a company via a social network. Maybe through their interaction with their friends, they do not have the motivation to also interact with a company.

Ecommerce Engagement
As shown in Table 8, we found 4 significant clusters dividing participants among their engagement with ecommerce via social networks.

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
# of Cluster Members	5466	5964	3429	12682
Buy Flower: Social Network vs. Company's Website	100% Social	100%Company	76% Company	100% Company
Sponsored Gift	55% Yes 45% No	100% Yes	74% No	100% No
Pay Pal Account	100% No	100% No	100% Yes	100% No
Cluster Descriptions	High Interest in ecommerce through Social Network Sites	Medium Interest in ecommerce through Social Network Sites – has bought gifts, but not interest in flowers	Low social network ecommerce engagement, all have pay pal	No social network ecommerce engagement, no pay pal

Table 8: ecommerce Engagement Cluster characteristics and descriptions

Once again, the variables used to determine ecommerce engagement are whether or not a participant has bought a sponsored gift on a social network, whether or not they prefer to buy flowers via a social network or the company's website, and whether or not the users have Pay Pal.

- **Ecommerce Networkers** is made up of users with high interest in ecommerce through Social Media Sites (SMS). This group would prefer to buy flowers via a social network

than through the company's website, and over half of them have actually bought a sponsored gift on a social network.
- **Partial Ecommerce Networkers** is made up of users with Medium Interest in ecommerce through Social Networks. They are would prefer to buy flowers via a company's website, yet all of them have bought a sponsored gift from one of their social networks. Therefore, there are probably some products they would buy through a SMS.
- **Unlikely Ecommerce Networkers** is made up of low ecommerce users. Most of them are more interested in buying flowers via the company's website and most have not bought a sponsored gift previously. Interestingly, everyone in this cluster has a pay pal account, yet most do not use it via social media networks. This cluster is also the oldest group which makes sense since people must be 18 or older to have a pay pal account.
- **Non-Commercial Networkers** is made up of non-ecommerce users. They only would purchase flowers off of a company website, have not bought sponsored gifts, and do not have pay pal accounts.

H3a: *Preference to buy flowers via a social network positively relates to a teenager's engagement with ecommerce on social networks*

The results indicate that there is a significant difference among the groups (chi(1) = 8201.41.50, p< *0.01*). This indicates significant effects among the group, and the group means differ more than would be expected by chance (experimental error) alone.

As shown in Cluster 2, the desire to buy flowers via a social network does not necessary indicate a teenagers willingness to use social networks for ecommerce. Everyone in Cluster 2 has actually used ecommerce on social networks through the purchase of a sponsored gift, yet none of them would prefer to use social networks to buy flowers. Interestingly, everyone in Cluster 1 claims they would like to use social networks to buy flowers, yet a little over half have actually purchased a gift on a social network previously. This is where our survey might have some draw backs. Although members of Cluster 1 said they preferred to buy flowers on social networks, their behavior shows slightly differently. Theoretically they would be a great group to market towards for the use of ecommerce on a social network, but Cluster 2 is the only group in which all the members have actually used it previously.

H3b: *Purchase of sponsored gift positively relates to a teenager's engagement with ecommerce*

The results indicate that there is a significant difference among the groups (chi(1) = 8201.41.50, p< *0.01*). This indicates significant effects among the group, and the group means differ more than would be expected by chance (experimental error) alone.

As shown in Clusters 1, with over half of their members having previously bought a sponsored gift, they all would prefer to buy flowers via a social network.

H3c: *Having a* PayPal *account positively relates to teenager's engagement with ecommerce*

The results indicate that there is a significant difference among the groups (chi(1) = 15,617.35, p< 0.01). This indicates significant effects among the group, and the group means differ more than would be expected by chance (experimental error) alone.

As shown through Cluster 3, the presence of a PayPal account does not necessarily mean that teenagers will use ecommerce on a social network. Everyone in this cluster has a PayPal account yet ¾ of them would not use a social network to buy flowers. Furthermore, ¾ of them have also not bought a sponsored gift. These teenagers may use ecommerce in other ways, for example through company sites like Barnes & Noble's, or through sites such as Amazon, but the use of ecommerce through sites like Facebook and MySpace do not seem to be in their interest zone.

Analysis of Combined Three Clusters

H4: *Level of social network engagement positively relates to teenager's openness to engage with companies via social networks.*
H5: *Level of social network engagement positively relates to teenager's engagement with ecommerce.*

In Table 8 below, we present a cluster formation using the three sets of clusters as the variables to investigate our 4th and 5th hypotheses. From this we can see how each of the clusters relates to one another and whether or not high levels of engagement are clustered with high levels of company engagement and ecommerce use.

We found that these clusters were not what we expected.

- **Opposites Attract** is made up of almost 40% medium to high SMS users. These users update SMS frequently but are not interested in sharing opinions. Another large portion of this cluster is contrastingly very low SMS users. They have SMS but do not use them. Interestingly, almost 50% of this group is engaged with companies, but another 45% are not engaged at all. Finally, everyone in this group does not par take in ecommerce through SMS. This cluster also has the highest percentage male compared to the other clusters at 41%.
- **Engaged Ecommerce Networkers** is made up of highly engaged users with a slight leaning towards MySpace. 37% of this cluster would engage with a company yet another 25% are much more hesitant towards companies. Interestingly, this cluster is made up of users with high interest in ecommerce on SMS. They have either purchased a sponsored gift, or would prefer to buy flowers via a SMS.
- **Branded Ecommerce Networkers** is made up of heavy SMS users with a slight leaning towards MySpace. They are also mainly engaged with companies or willing to engage with companies. On the other hand, Cluster 3 is mainly made up of non-ecommerce users.
- **Mild Networkers** is made up of medium users of MySpace and Facebook. They sometimes offer their opinions on sponsored polls, and have a medium to very low level of engagement with companies. They have a very low interest in ecommerce.
- **Hesitantly Branded Ecommerce Networkers** is made up of medium social network engagers leaning towards MySpace. These users also have a small but frequent presence on Twitter. This group is hesitant towards company engagement in the sense that they replied maybe to most of the communication questions. Yet, they have a high interest in ecommerce.

This group consisted of those who have previously bought sponsored gifts and those that prefer to use a social network over a company website to order flowers.

- **Hesitant Non-Commercial Networkers** is made up of medium to high social network users but with very little presence on Twitter. This group is hesitant towards company engagement in the sense that they replied maybe to most of the communication questions. Furthermore, this group has little to no interest in ecommerce activities on SMS.
- **Mildly Branded Ecommerce Networkers** is made up of medium MySpace and medium Facebook users. Almost 60% of this group are engaged with companies on SMS but about 1/3 had not interest in engaging with companies. This cluster has users that are highly interested in ecommerce through SMS.

As we can see, the clusters are quite varied and do not follow a specific pattern. We cannot prove our final two hypotheses.

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7
Cluster Members	4899	3423	5161	4794	3557	2215	3756
Gender Percentage	41% M, 59% F	36% M, 64% F	36% M, 64% F	39% M, 61% F	39% M, 61% F	34% M, 66% F	39% M, 61% F
Social Engagement Clusters	3 (39% 3, 26% 4)	2 (36% 2, 31% 3, 20% 1)	8 (60% 8, 23% 7, 17% 6)	5 (35% 5, 33% 6, 22% 4)	8 (40% 8, 28% 6, 22% 7)	3 (49% 3, 30% 2, 21% 1)	6 (36% 6, 33% 5, 19% 7)
Company Engagement	2 (48% 2, 45% 1)	2 (37% 2, 25% 4)	2 (47% 2, 28% 1)	4 (57% 4, 33% 5)	4 (47% 4, 44% 5)	4 (47% 4, 44% 5)	2 (58% 2, 33% 1)
Ecommerce Engagement	4 (72% 4, 15% 3)	1 (60% 1, 37% 2)	4 (77% 4, 13% 3)	4 (71% 4, 15% 3, 14% 2)	1 (45% 1, 37% 2)	4 (71% 4, 15% 3, 14% 2)	1 (49% 1, 35% 2, 16% 3)

Table 9: Cluster descriptions of the three clusters grouped together

Discussion and Implications

This research offers interesting insights into teenager's behavior on social networks as an important demographic for marketing and public relations of brands and companies. There are also implications for how a company can better target teenagers based on their social network engagement levels, their interest in communicating with a company, and their engagement with ecommerce via social networks.

First of all, we can easily say there is a division among teenagers based on which social network site they choose and how engaged they are with that social network site. It is important to note for a company that teenagers, in general, will have more than one social network, but their motivations for using those social networks differs. To advertise the same way on each social network would be inappropriate. Teens use myYearbook more for meeting people for the first time online, flirting, and possible dating, as well as playing games. These behaviors affect a teenager's mood. Twitter is distinctly different since it is mainly used to update ones status, keep up with celebrities, and to stay current with the world. It is used to satisfy teenagers' need to seek information as well as a creative outlet to express oneself. Facebook and MySpace are used

mainly to keep up with friends already known. Also, Facebook is distinctly used for sharing photos, and MySpace is used to express ones self. These two sites are used to create relationships and as self expression.

At the same time, marketers need to be aware of the level of engagement teens have with each of their social networks. We found eight distinct groups, some being more involved with their status updates across all social networks, but others tend to focus more on one network over another. The majority of teenagers, 64.24%, are categorized in a medium level of engagement – they have multiple accounts and update their status multiple times a month or week and sometimes share their opinions. Just over 25% of teenagers fall into the high level of engagement meaning they update multiple times a day and often share their opinions via sponsored polls. Only 10% of teenagers involved in social media are in low engagement with social media. This proves that the social media sphere is a great medium to reach teenagers online and communicate with them.

For marketers and companies who really want to communicate with teenagers via social networks, they should also divide the market by those who are willing to engage with companies on their personal social networks. Through this research, we discovered that we could divide teenagers into five distinct groupings based on their openness to company engagement. In general, teenagers are not open to giving out their cell phone numbers, but they are willing to interact with companies either via email or social networks. Based on our survey respondents, 30% of teenagers are engaged with companies online either through email or "friending" on a social network. Those that are very interested to engage with companies on social networks are the groups that companies should focus on at first during a marketing campaign or for customer service.

We can think of them as "initiators" – then if these teens spread the word of your company, their friends might catch on, trusting their friends opinions. For example, one of the clusters we found is more interested in getting their friends opinions about products by posting information on their status updates but would not give their email or fan a company. If a company targets the group that is engaged with companies, then this cluster might be a good channel to attract the other cluster which trusts their friends. By creating different segments of teenagers, companies can better direct their messaging. An article on eMarketer (2010) details research stating that social friends and followers have a stronger inclination to purchase from brands they are fans of. They found that more than 50% of Facebook fans, and 67% of Twitter followers, are more likely to make a purchase for at least a few brands for which they follow (eMarketer, 2010). Combining this information with our research, it is clear that teenagers who are willing to engage with companies on social networks could be a viable source of new customers or reinforced previous customers.

Another way of segmenting that we investigated was through teenager's receptiveness to ecommerce on social media networks. Since we found that teenagers can be divided by their interest in ecommerce use on social network sites, marketers who have an interest in selling their products through social networks know which segments to target. Social media networks do not seem to be the best way to reach a majority of teenagers for online spending. One group of teenagers, **Ecommerce Networkers**, was keen on the idea of using a social network over a company website for ecommerce. This group consisted of 19.8% of our sample. This cluster,

along with **Partial Ecommerce Networkers** (21.7%), also had previously purchased a gift via a social network while the other three clusters (the majority of our respondents at almost 59% combined) had not. This information corresponds with some of our descriptive analysis which told us that most teenagers would not use a social network account as a payment of method. Luckily, 41.5% of teenagers who use social networks are still a large number. According to an article in mediapost.com {Bradford, 2010}, Facebook has over 100 million American users as of January 2010 and over 11% were teenagers (that is over 11 million teenagers just on Facebook). Overall, 41% of these Facebook teenage users are 4.6 million teenagers ready to use Facebook as some source of ecommerce.

Although our final two hypotheses were not confirmed, we can still present the segmentation of teenagers among these three important factors regarding teen's social networking site behaviors: their level of engagement with the sites and other users, their interest in company engagement, and their actions towards ecommerce. There are many factors influencing teenager's behaviors and motivations towards social networking sites, such as social status, geography, friends, family, and many other factors. It is so multi-dimensional and complex that we cannot boil down all of their behaviors to the three factors we are investigating. It is still important to understand teenagers to the best of our abilities and through our research we have been able to narrow down our understanding.

In integrating our three research themes together, in Table 10 we present the TEENS model. This model allows one to examine teenagers and social media on five different levels: technology, ecommerce, engagement with companies, inspiration and motivation, and social networking site engagement.

Major Element	Description
Technology	There are distinct differences among social networking sites. Some sites allow teenagers to create full profiles, send status updates, play games, promote causes, and/or follow celebrities companies. SMS are also different from other social networks online such as Wikipedia or Blogs because SMS are more focused on creating communities and one to one relationships.
Ecommerce	Through our research we noticed that ecommerce is a real differentiator between teenager's behaviors on social networking sites. Some teenagers have never and do not want to use social networking sites as a commercial place. Many teenagers see SMS as a personal space, while others are open to purchasing gifts. Companies should investigate their market to see whether their teenage market falls into an ecommerce segment or not. This could be a way of violating their personal spaces or it could be a great way

Major Element	Description
	to reach teenagers incomes.
Engagement with Companies	There is a wide division among teenagers on how they want to communicate with companies on social networking sites, if at all. Companies should be aware of the perceived risk of company sponsored information and try to change the perceptions. Some teenagers might be more willing to ask for friend's advice through a social network before communicating with a company. These differences are important to incorporate in strategic planning.
I**N**spiration and Motivation	There are differences among teenagers and their reasons behind choosing different social networking sites. Each social networking service is developed for specific reasons and should be treated as different mediums. Some networks are more focused on information sharing and searching while others are focused on meeting new people and developing relationships. Furthermore, motivations seem to vary across levels of SMS engagement.
Social Networking Site Engagement	The social networks and the people teenagers are interacting with have an impact on behaviors as well as their level of engagement with the site itself. As we saw from our descriptive statistics, teenagers are influenced by their friends when they are given advice on product information. Furthermore, most teenagers who are very active on one social network tend to be highly active on other networks.

Table 10: Description of TEENS Framework

Using this model, marketers and business professionals can better reach their target market.

Conclusion and Future Research
In this research, we investigated teenager's use of social networking sites on three major aspects: level of engagement with the SMS, engagement with companies on SMS, and engagement with ecommerce on SMS. From our large sample of teenagers from a popular social network service, our research provides insights into a few, of the many, factors affecting teenager's use of SMS.

The implications of this research is that it is possible to segment teenagers based on five areas, technology, ecommerce, company engagement, inspiration and motivations, as well as social networking levels of engagement. We have integrated these five factors into the TEENS model of teenager use of social networking services. We have shown that SMS are a large area for teenager's to spend their time as well as their disposable income. It is a personal space where

they form relationships with past friends, new friends as well as companies. But there are differences among the various SMS based on motivational research and ecommerce behaviors. Within the teenage demographic, there are still the initiator types, people who rely on friends for advice, and those who are interested in multiple networks. It is important for companies to be aware of the different ways teenager's behavior on SMS as it is becoming a daily part of this generation's lives.

Future research should investigate different factors that influence teenager's ecommerce and company engagement; factors such as social status, income, education, friendship levels etc. There are many factors involved that still need further examination. Since SMS are seen as a more personal space, it will be interesting to see how teenagers interact with companies and which strategies work the best (fan pages vs. company profiles vs. events vs. sponsored gifts etc.). Further research in this area will help companies realize what a valuable space SMS are for the teenage demographic and how to utilize them without irritating the users.

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Appendix I Customer Survey

Customer Survey
Lifestyle
Thank you for participating. The entire survey should take approximately seven minutes. You must complete the survey in order to receive your Lunch Money reward.
Page 1 of 14
Customer Survey

Social Networking
1. Have you ever registered an account on one of these sites? (Required)
MySpace
Facebook
Neither Site

2. Why do you use MySpace (choose 3)?
Receive and share advice
Keep up with friends I know
Play games and have fun
Update my status
Meet new people, make new friends
Express myself
Share photos
Flirting or dating
Keep up with my favorite musicians, bands or celebrities
Stay current with what's going on in the world
Be part of a community
Because it's cool
Discover music
Listen to music

3. Why do you use Facebook (choose 3)?
Receive and share advice
Keep up with friends I know
Play games and have fun
Update my status
Meet new people, make new friends
Express myself
Share photos
Flirting or dating
Keep up with my favorite musicians, bands or celebrities
Stay current with what's going on in the world
Be part of a community
Because it's cool
Discover music
Listen to music
Page 2 of 14
Customer Survey

4. Why do you use myYearbook (choose 3)? (Required)
Receive and share advice

Keep up with friends I know
Play games and have fun
Update my status
Meet new people, make new friends
Express myself
Share photos
Flirting or dating
Keep up with my favorite musicians, bands or celebrities
Stay current with what's going on in the world
Be part of a community
Because it's cool
Discover music
Listen to music

5. Please pick the color green from the questions below to help us ensure the quality of this survey. (Required)
red
blue
green
yellow
orange
purple

6. How often do you update your Facebook status on average?
3 or more times a day
1-2 times a day
A few times a week
A few times a month
Updated a few times, then I basically stopped
Never

7. How often do you update your MySpace status on average?
3 or more times a day
1-2 times a day
A few times a week
A few times a month
Updated a few times, then I basically stopped
Never
Page 3 of 14
Customer Survey

8. What do you think of these sites? (Required)
Lame
Cool
Neither
Facebook
MySpace
Twitter
myYearbook

9. Do you have a Twitter account? (Required)

Yes
No

10. Why do you use Twitter (choose 3)?
Receive and share advice
Keep up with friends I know
Play games and have fun
Update my status
Meet new people, make new friends
Express myself
Share photos
Flirting or dating
Keep up with my favorite musicians, bands or celebrities
Stay current with what's going on in the world
Be part of a community
Because it's cool
Discover music
Listen to music

11. Why aren't you on Twitter?
It's too open
I update my status on Facebook, don't need to do it twice
It doesn't help me do anything
It's not safe
I don't understand it
140 characters is not enough
It's lame
My friends don't use it
It eats up too many texts for my mobile plan

12. Do you think you'll eventually get a Twitter account?
Yes
No
Page 4 of 14
Customer Survey

13. What words would you use to describe Twitter (choose 3)? (Required)
difficult to use
easy to use
hard to understand
geeky
cool
too much work
easy to stay current
not for me
perfect for me
waste of time
addictive
interesting
boring
vibrant community

pointless
great for news
full of crap
friendly

14. How often do you Tweet on average?
3 or more times a day
1-2 times a day
A few times a week
A few times a month
Sent a few, then I basically stopped
Never

15. Do you think Twitter is a passing fad? (Required)
Yes
No

16. Do text messaging charges or limited texting plans effect whether or not you use Twitter?
Yes - I don't want to Twitter because I'm worried about going over my monthly limit of text messages
No - I wouldn't use Twitter anyway

17. Why do you think some of your friends use Twitter (check two)? (Required)
Like to follow celebrities
Compulsive status posters
To share and express themselves
They're geeks
Because it's the latest thing
To meet new friends
To keep up with existing friends
To be part of a big community

18. Have you ever bought a sponsored gift for your friends in a social network (like myYearbook, Facebook or MySpace)? (Required)
Yes
No

19. If you were to buy flowers for a friend, would you rather buy those flowers on a company's website (like 1800flowers.com) or on a social network (like Facebook)?
Company's website
Social Network

20. If you were to buy something for a friend, would you ever put money into your Facebook account in order to use Facebook as a payment method?
Yes
No

21. If you were to buy something for a friend, would you ever put money into your MySpace account in order to use MySpace as a payment method?

Yes
No

22. Do you have a PayPal account?
Yes
No

23. If Facebook launched their own payment solution, do you think you might use it instead of PayPal?
Yes
No

Status Message Questions
24. Have you ever posted information about something you want to buy as a status message or on your profile page so that you could get your friends' opinions? (Required)
Yes
No

25. Was the product you were posting about something you would buy online or in a store?
Online
In a store

26. Did you actually receive any advice from your friends/followers after posting to your status looking for advice?
Yes
No

27. Did your friends' advice influence your decision of what to buy?
Yes
No

28. What types of products would you ask your friends about in a status message before making a purchasing decision? (Pick 3) (Required)
Appliances
Clothing
Cars
New computer
Shoes
New home
Flowers
Video games
Video game systems
Cell phones
Movie recommendations
Music recommendations
Other electronics
Restaurant/dining
Vacation Destinations
Airlines

Other

29. Do you like to share your opinions by answering sponsor polls on social networks (like myYearbook, Facebook, or MySpace)? (Required)
Always
Very Often
Sometimes
Rarely
Never

Shopping - Advertising
30. Has the amount you have spent on these things changed in the last year? (Required)
Increased
Stayed
the same
Decreased
Clothes
Movies
Dining-out
Music

31. Would you click on a banner ad if it rewarded you with virtual currency? (Required)
Yes
No

32. When spending a long time on a website like a social network (Facebook, MySpace), or a video streaming site (YouTube, HuLu) would you prefer? (Required)
A 30 second video ad every 10 minutes
A 1 or 2 minute video or interactive ad every hour
Pay money for an ad free experience

33. Do you prefer banner ads or ads that engage you in some way like a Sponsored Gift? (Required)
Banner Ads
Engaging ads (sponsored gifts, featured flirts, profile widgets, etc.)

34. What is most likely to make you consider going to a new movie? (Required)
Watching the trailer
Seeing banner ads for the movie
Neither would make me more likely to see it

35. What do you think is more likely to positively influence your opinion of a product? (Required)
Watching a 30-second commercial on your television
Watching a 30-second full-screen video on your computer and receiving a virtual currency reward
Both are equally likely to influence me, there is no difference

36. Do you think advertising on the web should be engaging? (Required)
Yes
No

37. When watching TV, how often do you skip a commercial? (Required)
Always
Very Often
Sometimes
Rarely
Never

38. When you watch TV, are you generally also doing something else -- browsing the web, listening to music, etc.? (Required)
Yes
No

39. Do you mind receiving these things from companies you care about? (Required)
Yes
No
Email
Text Message
Stream/Feed entries

40. Would you give your cell phone number out to a company or brand that interested you so that they can text you new products, deals, or special offers? (Required)
Yes
No
Maybe

41. Would you give your email address out to a company or brand that interested you so that they can email you new products, deals, or special offers? (Required)
Yes
No
Maybe

42. Would you become friends with or fan a company or brand that interested you so that they can publish new products, deal or special offers to your stream or feed? (Required)
Yes
No
Maybe

43. Have you ever friended or fanned a company, brand or product? (Required)
Yes
No

44. Which ones?

45. Do you think you should receive some reward (like virtual currency or Lunch Money) for viewing an ad on the web?
Yes
No

Leisure
46. How much time do you spend online per day? (Required)
0 min
15 min
30 min
1 hour
2 hours
3 hours
4+ hours

47. In the last seven days have you ... (Required)
Yes
No Read a
print version of a
newspaper
Read a print version of a magazine
Visited a website to read the news

Teen Lifestyle
Complete this section only if: "age" less than or equal to 18
48. From most to least, how do you spend your freetime? Click the arrows to change your response. (Required)
(Please mark each option in the desired order: 1 to 5)
Watching TV
Playing Video Games
Using the Internet
Reading
Sports

49. What type of video game consoles do you own (check all that apply)? (Required)
Wii
Playstation 2
Playstation 3
XBox
XBox360
I don't own a video game console
Other

50. What do you worry about the most (choose 3)? (Required)
My boyfriend/girlfriend
Divorce

Other Family Issues
My appearance
My friends
Finding a good job
Getting into college
Getting good grades
What my classmates think of me

Mobile Phones
51. What type of mobile device do you own? (Required)
I don't own a mobile phone
Basic cell phone
Blackberry
iPhone
Other smart phone (Windows Mobile, Google Android, etc.)

52. Do you want an iPhone?
Yes
No

53. Do you have a cell phone data plan that allows you to send unlimited text messages?
Yes
No
Don't Know

54. How many text messages do you send per day on average?
Less than 25
Between 26 and 50
Between 51 and 100
Between 101 and 150
Between 151 and 200
More than 200

55. How many text messages do you send a day on average?
More than 400
Between 301 and 400
Between 201 and 300
Between 101 and 200
Between 51 and 100
Less than 50

Appendix II Importance of Variables by Cluster using a Chi Square test statistic
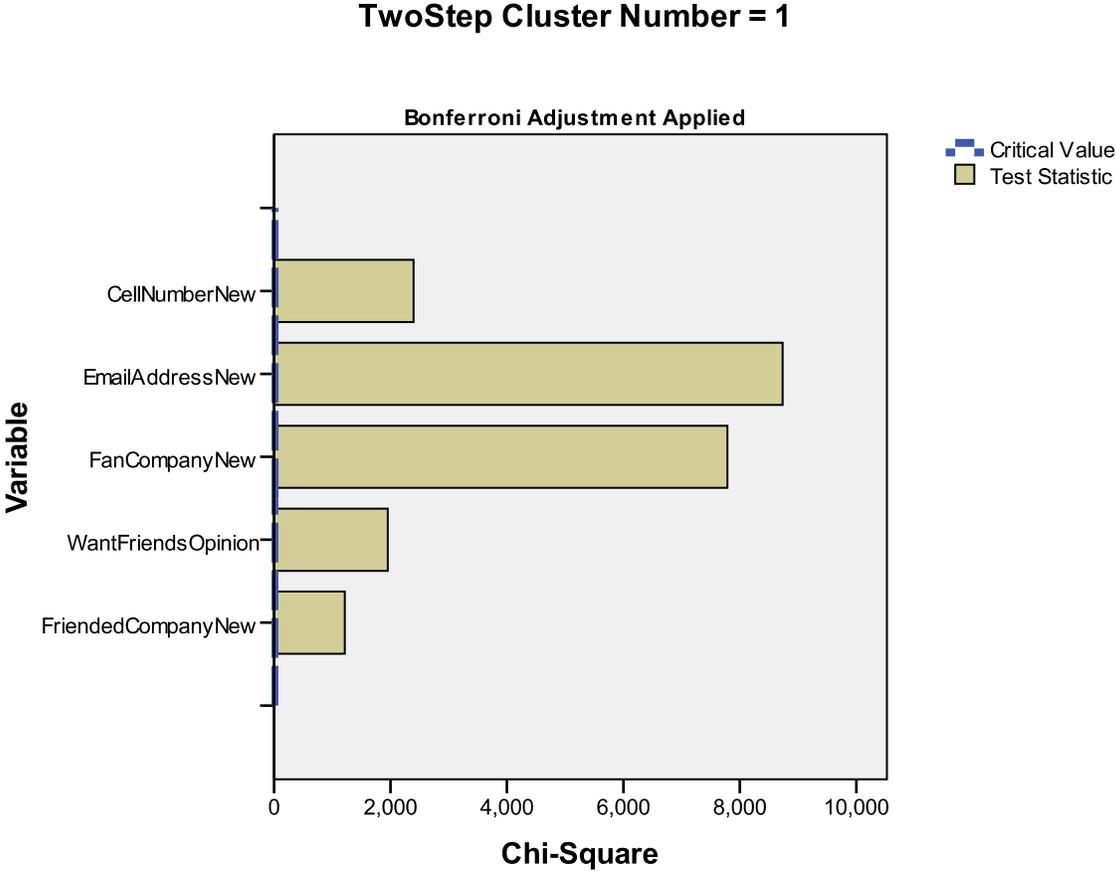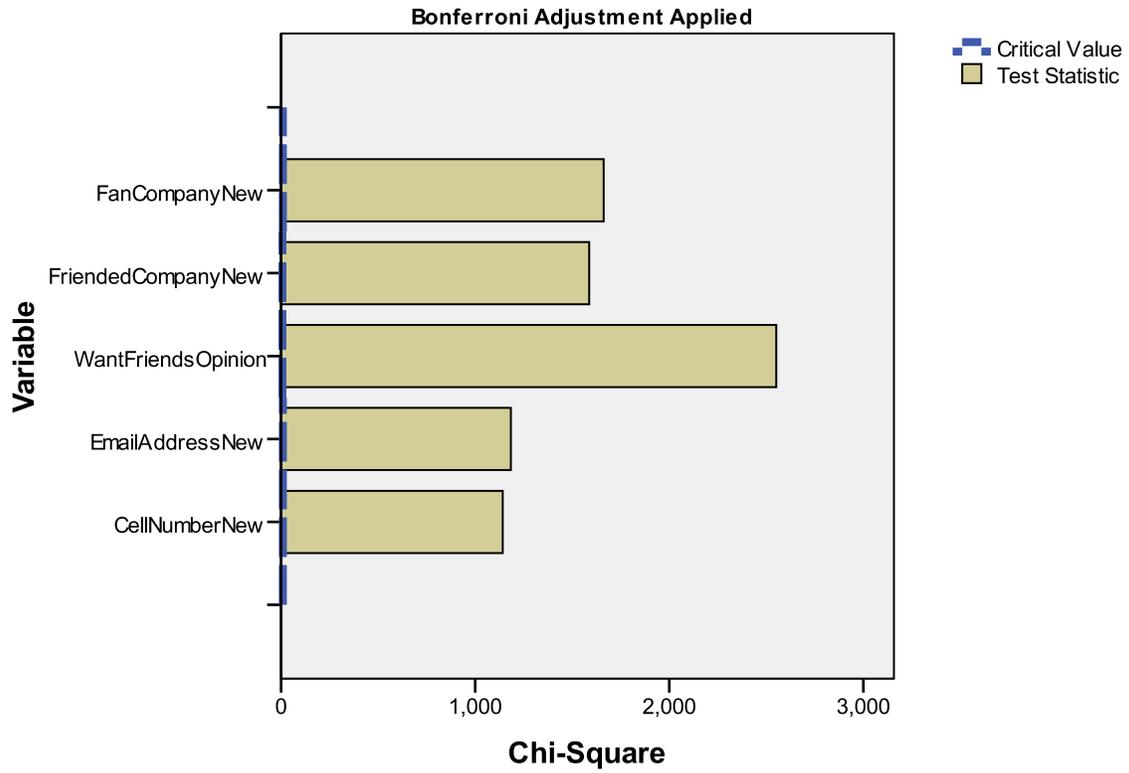

Company Engagement Clusters – significance of variables within Cluster

TwoStep Cluster Number = 2

Company Engagement Clusters – significance of variables within Cluster
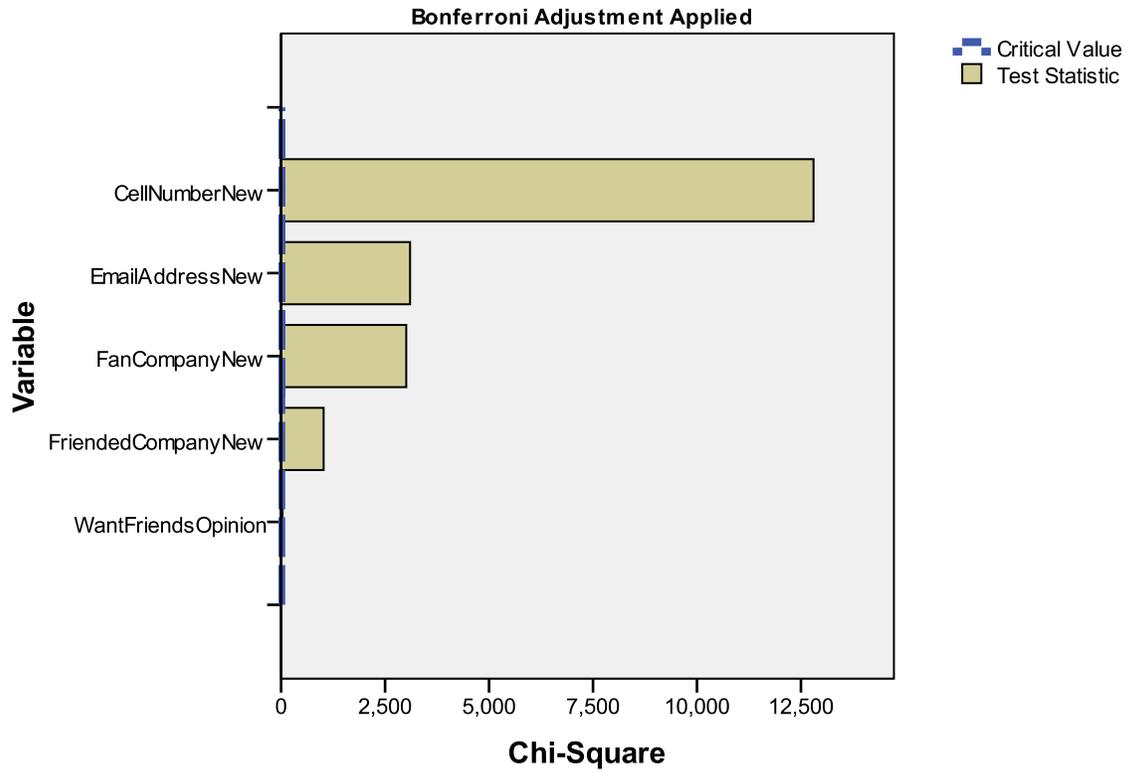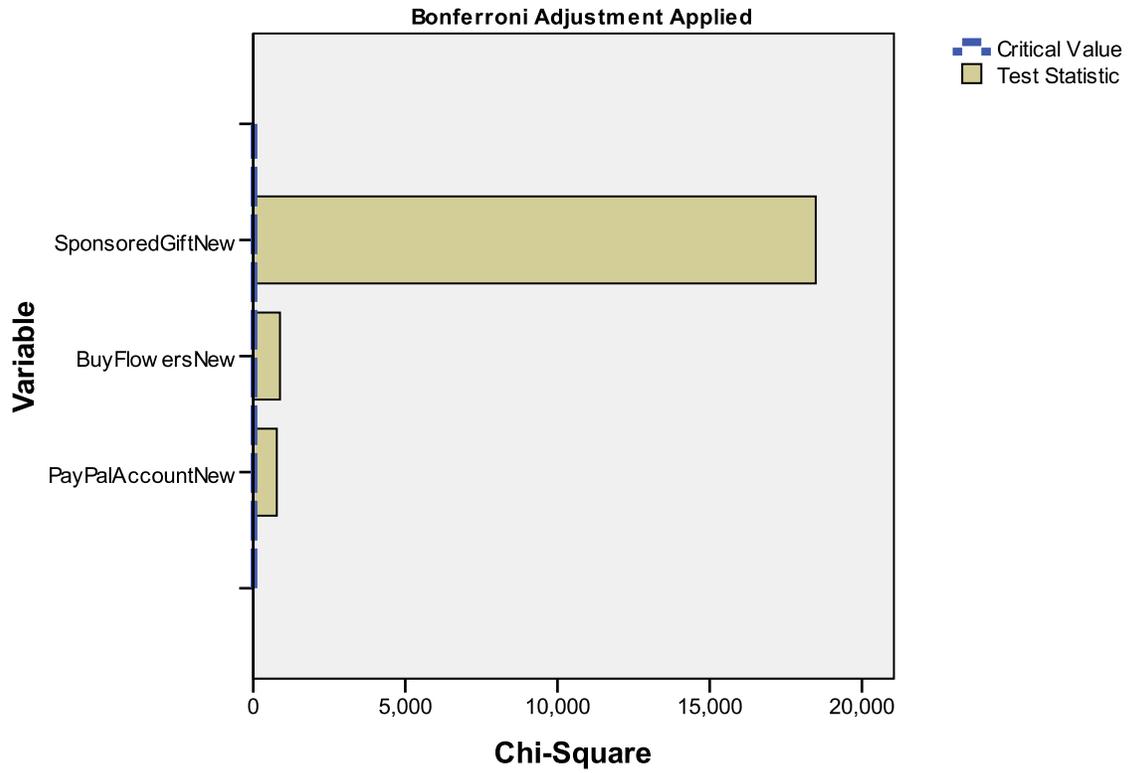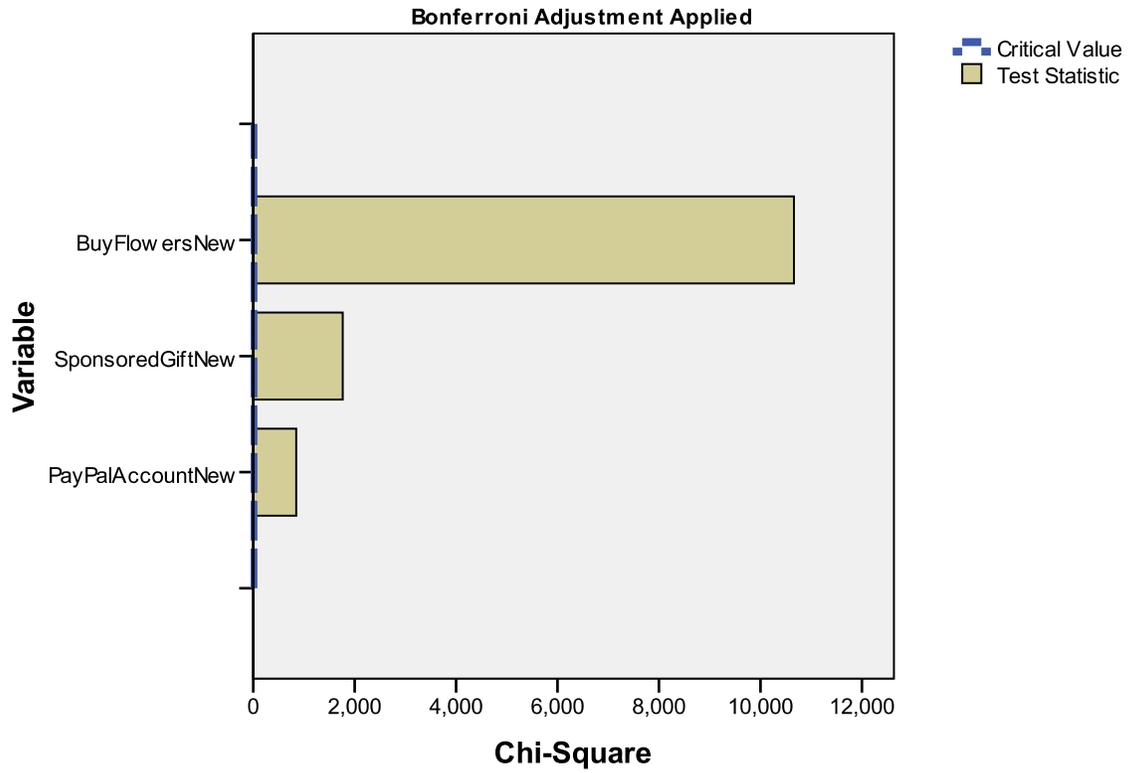
TwoStep Cluster Number = 3

Bonferroni Adjustment Applied

Company Engagement Clusters – significance of variables within Cluster

TwoStep Cluster Number = 4

Bonferroni Adjustment Applied

Company Engagement Clusters – significance of variables within Cluster

TwoStep Cluster Number = 5

Bonferroni Adjustment Applied

Company Engagement Clusters – significance of variables within Cluster

TwoStep Cluster Number = 1

Bonferroni Adjustment Applied

Ecommerce Clusters – significance of variables within clusters
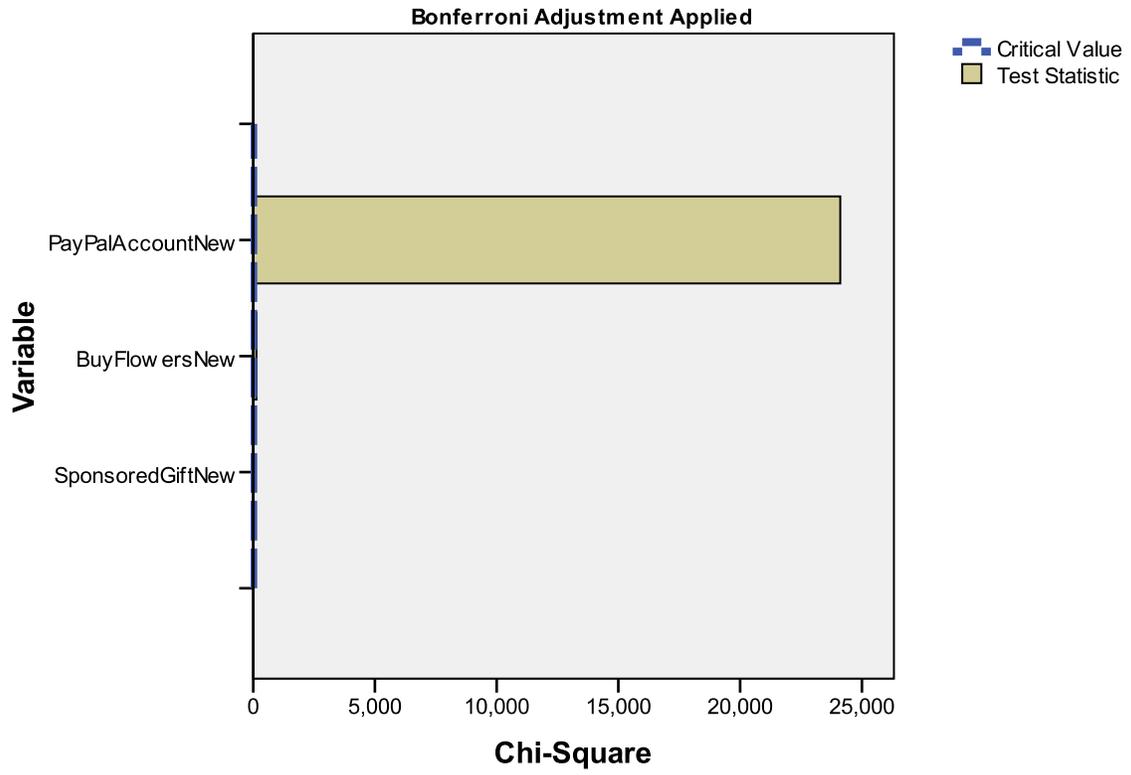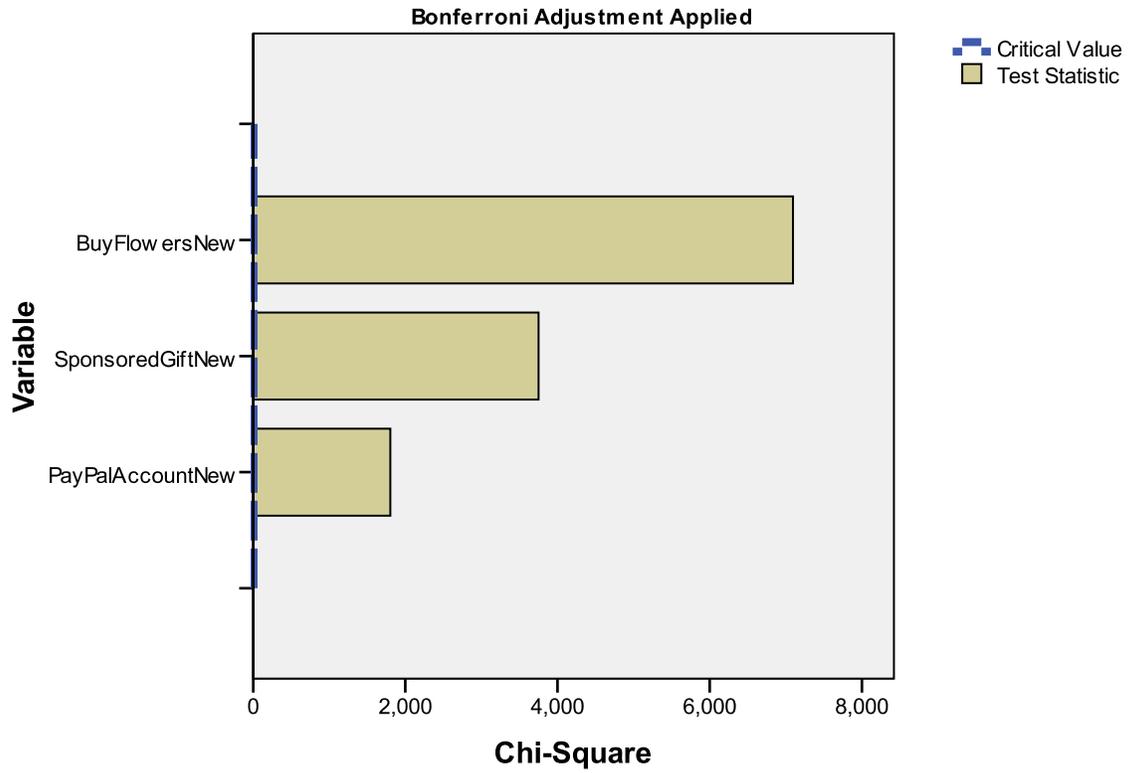
TwoStep Cluster Number = 2

Ecommerce Clusters – significance of variables within clusters

TwoStep Cluster Number = 3

Ecommerce Clusters – significance of variables within clusters

TwoStep Cluster Number = 4

Ecommerce Clusters – significance of variables within clusters

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