Social Computing Methodologies Used Amongst a Changing Business Landscape

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Abstract

Over the last couple of decades, social computing has taken root in almost every facet of business. Social computing involves the interconnectability brought about by the Internet and Internet-wielding devices. As customer preferences and technologies change and advance, social computing methodologies remain viable tactics to improve one's business. Some of these tactics include viral marketing, influencer marketing, and social media analysis. Ensuring consumer engagement has become harder over the years as market saturation is now starting to become a problem. To keep customers coming back, companies must look to constantly be evolving to customer preferences. A major way companies can ensure this is to remain engaged and aware of potential technologies that can advance social computing. Over time these strategies have developed and shaped to fit the technological landscape of the time. Employing these tactics alongside industry-disrupting technologies like AI and blockchain, can ensure continued competitiveness. Learning from the past while focusing on breakthrough technology can ensure the longevity of social computing methodologies.

Introduction

Social computing is the science behind the interaction of individuals with computers and the various networks that result from the connectability of these machines. This type of computing comes in various forms including social media analysis, viral marketing, and social engagement. Reduced costs, increased speeds, improved employee relations and increased productivity are all associated benefits of social computing on practicing companies (Eliaçık, 2022). How businesses utilize these various types of social computing to realize potential benefits is imperative in the current digital landscape.

Over the last few decades, social media apps like Instagram, TikTok, and Facebook have become avenues for companies to engage with both employees and customers. Companies who failed to adapt to these changes saw a lag in success compared to earlier adopters. This is mainly due to an increase in the potential target audience on these platforms. Worldwide social media users amounted to about 2.73 billion in 2017, with a projected number of users more than doubling to 5.85 billion in 2027 (Dixon, 2023). As these numbers continue to rise, more traditional mediums for media have seen a decline. U.S. daily newspaper circulation sits at around 25 million while these numbers reached upwards of 59 million in 2000 (Pew Research Center, 2021). It is important to note that these numbers include both print and digital forms of newspaper. That is to say that customer preferences are shifting towards other forms of media and different ways of receiving their news. One study found that 80% of consumers make buying decisions based on a friend's social media post (Kowalewicz, 2018). As will be discussed later on, this isn't the only way customers make purchasing decisions however. Due to the popularity of social media, companies are more visible than ever to target customers. CEO's, IT specialists, stakeholders, and anyone involved in a social network should understand the effects of social computing on businesses as well as the consumers these efforts are targeting.

Viral Marketing

The first method of social computing deployment to discuss is the idea of viral marketing. Viral marketing has been defined as "the process of encouraging honest communication among consumer networks" and as a marketing strategy "that causes intentional consumer -to- consumer sharing of information" (Motoki, K. et al., 2020, pg 100). Viral marketing intends to take advantage of the increasing digitalization of the world and treat consumers and their devices as hosts similar to that of bodily viruses, in which the term is derived from. The goal of marketers who use such a technique is to encourage individuals to share information to others and seek exponential exposure to new recipients as a result (Kagan, 2022).

Throughout the years viral marketing practices have improved. One of the earliest adopters of this technique was Hotmail, who in 1996 included an embedded advertisement to join their email

service in each of their current users' outgoing messages (Kagan, 2022). Due to this campaign, Hotmail saw an increase in users from about 20,000 to 1 million in under a year. By 2001, the email services company had 30% of the market share with nearly 85 million active users (Rivier University). This type of promotion seems archaic especially with the amount of viral marketing attempts seen today. However a more recent example of a viral campaign can be seen with The ALS Association and their use of the 'Ice Bucket Challenge'. The ALS Association is a nonprofit organization whose goal is to research and ultimately cure amyotrophic lateral sclerosis, a disease that affects nerve cells in the brain and spinal cord. In order to raise awareness for the disease, The ALS Association attached the name of the disease to an already existing viral internet challenge. The result was millions of videos posted on social media calling attention to the disease as well as nearly $115 million in donations to the association (Kagan 2022).

Some of the benefits of these campaigns are obvious; increased awareness, engagement, and donations. However viral marketing has been known to have several advantages over traditional marketing as well. Ewing et al. claims that viral marketing is more cost effective and has a greater ability to reach niche consumer groups than traditional marketing does (Ewing et. al, 2014). This comes from the very nature of viral marketing. Within viral marketing strategies, organizations no longer have to identify their specific target audience. The information is simply relayed to them through their customers' connections which gives the companies the ability to reach markets not specifically set out to attract. Although companies don't set out to do business with these customers, because of the connections to targeted audiences, these customers are more likely to engage with their business. Companies that employ viral marketing over traditional methods receive a cost advantage as well. These organizations are only responsible for creating the initial information/advertisement and simply let the viral network take over.

These benefits, however, may only be realized by companies who deploy the information the correct way. In the wake of the ALS Ice Bucket Challenge, Forbes listed reasons for its global success. Keeping the advertisement simple and memorable, focusing on the goals of the organization, and mixing in celebrities were a few listed (Olenski, 2014). The success or failure of a viral marketing campaign is completely dependent on the way the organization goes about it and the customers' response to it. Motoki et al. state that "value, self, and social factors underlie consumer sharing behaviors" (Motoki, K. et al., 2020, pg 100). This is because people tend to share information with others because they see it as valuable for others or value it themselves. Sometimes, viral content increases awareness of a brand but doesn't correlate to business advantages. This is either due to a negative outlook from customers or a disingenuous following (Rivier University). Although the low-cost aspect is appealing to most, companies need to understand both the goals of their organization and the perception of advertisements on potential customers before engaging in viral marketing.

Influencer Marketing

A related marketing phenomenon that has gained momentum over the last few decades is the idea of influencer marketing or the use of popular social media users to promote goods and services. Due to the prevalence of the Internet and specifically social media platforms, this acts as a form of viral marketing through the targeting of influencers' follower base. These partnerships have been occurring since the early stages of social media but have been increasingly used ever since. Governance on such partnerships also had early roots; by 2009, such partnerships elicited a response from the Federal Trade Commission (FTC). The response came in the wake of the 'Mommy blogger' craze (McKinsey & Company, 2023). This time period is generalized by mothers blogging about family life and motherhood which slowly turned into a business of promoting related products over blogging websites. Users who relied on 'Mommy blogger' product reviews sought honest and independent opinions about the products they were considering buying. The FTC's rule in 2009 required bloggers to be more transparent with their reviews. The rule stated that: "reviewing products online without disclosing that they were given to you for free could result in a slap on the wrist, or even a hefty fine" (Friedman, 2009, para. 1).

Since the time of 'Mommy blogs', new forms of media have taken over but the idea of influencer marketing has stayed. Influencers on social media platforms like YouTube and Instagram have taken the place of bloggers and expanded the industry dramatically. Over the past 5 years, the influencer marketing industry has seen an increase of over 50% (McKinsey & Company, 2023). In 2023, companies spent $16.4 billion on influencer marketing initiatives (Santora, 2023). Number of influencers engaged with each company has also seen an increase. A global survey from 2022 found that 46% of companies surveyed were engaged with upwards of 10 influencers while about 3% worked with 1000+ influencers (Dencheva, 2023). It is important to note however that these influencers are different from typical celebrity endorsements. Using influencer marketing is more than just attaching a well known figure to a brand; influencers are trusted figures in a niche community that have some sort of knowledge and/or experience about the type of product they are advertising (Mathew, 2018). Unlike celebrities, social media influencers (AKA micro-celebrities) tend to have or appear to have three characteristics: reliability, reachability, and trustworthiness (Sevil, 2021). These characteristics contribute to the benefits realized by companies that implement influencer marketing strategies.

The influencer marketing gives companies advantages not available through traditional viral marketing or celebrity endorsement. This form of marketing allows companies to locate and specifically target their desired audience (Matthew, 2018). By contracting an influencer, marketers get to choose the origin of where their 'virus' begins, allowing their advertisements to spread freely amongst people more likely to purchase their products. Influencers also can: "increase consumers' attachment to a product by linking their own status and emotional

attachment to the product, thereby increasing its hedonic value" (Hudders et al., 2021). As stated previously, micro-celebrities appear more reliable, reachable, and trustworthy as opposed to A-list celebrities. These efforts are also extremely cost-effective. Companies are making $6.50 for every dollar spent on influencer marketing (Zhang, 2021).

There are plenty of examples of influencer marketing successes. One of the largest campaigns in recent years however is Dunkin' Donuts (Dunkin) use of TikTok star Charli D'Amelio in early 2021. In an effort to drive social media engagement and increase overall sales, Dunkin paired up with one of the most famous influencers on TikTok, Charli D'Amelio, to create a signature drink. Charli was a perfect target for Dunkins influencer campaign as she had amassed a following of over 100 million on TikTok and had already been posting clips of herself with Dunkin products (NeoReach, 2021). The campaign was launched under the hashtag #CharliXDunkinContest along with the release of a signature drink, "The Charli" (Bowen & Guide, 2023). The campaign was a massive success as it allowed Dunkin access to Charli's huge following. This partnership led to a 57% increase in Dunkin app download, one of the main goals of the effort (NeoReach, 2021). The campaign also saw a 20% increase in cold brew sales on day one of the campaign, a 45% increase on day two, and 240.6M views for the #CharliXDunkinContest hashtag (Bowen & Guide, 2023). Other successful campaigns include the likes of NordVPN on YouTube and GymShark on Instagram and TikTok.

Although there are many influencer success stories, there are some cautionary examples and best practices for picking the right influencer. Yesiloglu and Costello suggest that there are three main factors when it comes to selecting influencers: reach, relevance, and resonance (Yesiloglu & Costello, 2021). Reach refers to the amount of potential people that can see the influencer's content. An obvious metric for this category is the number of followers they have on their social media accounts. Forbes further explains this factor as including both direct followers and indirect engagement through social media apps' discovery features (Forbes, 2022). The second factor, relevance, refers to the level of agreement between the values of the company and the engaged influencer (Yesiloglu & Costello, 2021). As mentioned previously, a major component of this facet is the idea of trustworthiness and expertise that the influencer has on the related subject. Similarly, Leung et al suggest that follower characteristics also play a role in which influencers they choose. If a company believes that an influencer's followers are likely to find the content valuable, they are more likely to engage with that influencer (Leung et al., 2022). Lastly, the idea of resonance refers to the influencer's ability to make their audience react or act on the content that is displayed. Not performing thorough due diligence on potential influencers could lead to a major hit on brand name and overall company performance. Ensuring that there is strong alignment between influencers and companies surrounding their opinions on the companies products is key.

Making sure that influencer 'expertise' is retained throughout the process is also very important. One prominent example of an influencer marketing fail came in 2016 with English supermodel Naomi Campbell. In a relationship with clothing and sports-wear brand, Adidas, Naomi was to post a picture of herself holding up a pair of Adidas shoes. However, when she made the post, the caption included the set of instructions from the Adidas team (Palacpac, 2023). Although many social media followers expect paid-for posts from their favorite influencers, including these instructions provides audiences with a glimpse into the inner workings of the industry. In this case, the disingenuous nature of the post would lead some followers to distrust the influencer and even the brand. It also presents the company and marketing of Adidas' as lazy and manipulative. As stated previously, influencers are meant to have more expertise and a strong advocacy for the products that they advertise, when this is compromised, the benefits of using influencers are lost.

Social Media Analysis

The use of data analysis in social media is changing how brands are marketing to consumers in a rapidly changing digital environment. With billions of social media users, there is an immense amount of data that can be collected and analyzed for dozens of different industries and use cases far beyond consumer retail marketing and brand awareness (Zachlod et al., 2022). Some of these broad industries include agriculture, banking, disaster management, education, government, public health, tourism, and others. Due to the vast array of industries using social media analytics and the relative youth of this area of research, the manner in which various analytical methods are applied varies greatly even within similar fields. To aid in the implementation of social media analytics for organizations, Zachlod et al., 2022 developed a four-stage theoretical framework to guide this implementation among the various disciplines in which it may be useful. The first stage, discovery, seeks to clarify the object of study and purpose for which the analysis is to serve. The second stage, tracking, is determination of the ways that data will be collected and stored for later analysis. The third stage, preparation, crucial for any analysis, is to ensure data quality and usability for valid results. The fourth stage and general focus of this section is analysis where a wide range of methods can be used.

Among these many different organizational spaces that can benefit from social media data, there are some broad applications that are generally advantageous to most industries. One which has already been a staple in the business world for years is identifying trends and patterns in consumer preferences and behavior to provide an ideal offering of products and services (Ruhi, 2014). Social media analytics can also be used to more efficiently monitor brand/consumer sentiment which would traditionally be understood through things like polls, focus groups, or simply sales numbers while also providing additional context and insights. Given the interactive and networked nature of social media, it is an excellent point of contact between businesses and consumers to improve customer service procedures using data to measure effectiveness of those

efforts. Something that is easier than ever to determine with social media analytics is brand personality which can ensure that how a brand may generally be perceived is in accordance with business strategy and values. Ruhi, 2014 stresses the importance of adopting social media analysis not as simply a performance indicator but as an imperative part of executing a business's high level strategy.

In addition to traditional methods of analysis, the mainstream explosion of Artificial Intelligence tools has placed a spotlight on companies using them to carry out social media marketing objectives (Darbinyan, 2023). Although businesses have been using AI in various forms for over a decade, advancements in the past few years have allowed marketers to bring that technology to social media platforms in ways that were not previously possible. A frequent use of the rapidly accelerating generative AI is to create branded content that is often indistinguishable from human created content. While this most often takes the form of written blogs or images and designs through AI tools like ChatGPT and Midjourney, some companies have taken it beyond the scope of what would fit a traditional marketing strategy. One example of this was an instagram account known as Lil Miquella, an influencer entirely created by AI (Klein, 2020). While this was intended to be a viral social experiment type move, it showcased what the future of artificial intelligence in social media could become. The method more companies have been utilizing AI to incorporate influencers is through network analysis, ROI prediction, and content effectiveness to understand how to best use the firm's resources to focus on target markets and successfully convert customers (Darbinyan, 2023). Things that would have previously been impossible to monitor even with a very large marketing team are now within the capabilities of just a handful of analysts that are trained in how to effectively deploy AI frameworks. Managing and optimizing hundreds of different advertisements or using computer vision to review millions of consumer social media posts and interactions opens up opportunities for business to consumer interaction as well as brand management in ways that have never been previously possible. Investing in artificial intelligence can completely transform how businesses are able to reach the markets they want and increase profits while doing so.

Due to how recently social media analysis has become seen as not only valuable, but a critical part of marketing strategy, there is not a significant amount of good data publicly available to analyze at a macro level to attribute to its merits. As these practices become more widely used among more types of organizations it is likely that additional data will be released to the public and further insights will be discovered so as to refine social media practices. Currently, social media analysis provides a major competitive advantage to almost any companies that implements it as part of a plan to achieve their high-level strategic goals so it is in their best interest to keep their data analysis strategies private while continuing to adopt new methods and procedures to work with an ever increasing amount of data. Investing in data analysts to work not just with the marketing department, but specifically with a social media team is a great way for organizations

to stay ahead of the curve when it comes to best utilizing the valuable data they have available to them.

Short-Form Videos & Social Media Marketplaces

One customer preference that has slowly taken a hold over the market in the past few years is the idea of short-form video content. These videos are often referred to as mobile short-form videos (MSFV). The clips, typically 5-15 seconds long, are creating waves in the e-commerce space. An early example of a social media app using this form of video was Vine, which launched back in 2012 but has since gone inactive. Vine gained popularity extremely fast and was quickly bought out by Twitter for $30 million in October of 2012 (Wong, 2022). At the time, Vine had a 6-second time cap, which was one of the reasons it initially gained its popularity. This however, would ultimately be the reason for its deactivation. Around June of 2013, Instagram introduced 15-second clips to their app (Wong, 2022). With the team at Vine refusing to budge on their video time limit until 2016, Instagram quickly took over, forcing Vine out of the picture. This in of itself, highlights the necessity for companies to stay adaptable. The style of short-video media didn't start with Vine however. One of the earliest examples of this format of video came from the Miller beer brand. During the Super Bowl in 2009, the company experimented with multiple one-second advertisements throughout the event. Due to these efforts, the company avoided the $3 million price tag for a TV spot and saw sales increase by 8.6% (Potrel, 2022). This was mainly due to the disruptive nature of the ads as it had never been done before on live television.

Since the time of Vine, TikTok has taken its place as the major player in short-form video media. TikTok is a Chinese brand, known as Douyin in China, that has had extreme success over the past few years. Due to this success, it is estimated that by 2025 TikTok will approach 1 billion users (Yuen, 2023). Platforms such as Facebook, YouTube, and Instagram have all capitalized on the popularity of MSFV through implementation of their own versions of the medium. MSFV provides companies and creators with an interesting set of benefits over traditional sales. Firstly, MSFV, promotes creator and viewer participation (Potrel, 2022). Due to how short these videos are, they are inherently easier to make, edit, and produce. This allows creators and brands to stay up to date on trends and post accordingly while also encouraging active participation. And it's not just users that typically interact with social media. The ease at which these videos are made makes participation more common from all types of users. Another reason for this heightened engagement is the idea of content tailoring. Machine learning and complex algorithms allow each viewer to get a curated feed that they are more likely to interact with (Potrel, 2022). This type of content is also generally free and universally accessible. These benefits along with the exponential growth of the market in recent years has attracted businesses to look for e-commerce opportunities within these apps.

This increase in popularity has led companies like TikTok to expand their: “e-commerce activities to sell products and provide services and other forms of content” (Yang, 2022, pg. 1). In the case of TikTok/Douyin, this is done through a multitude of features that they have incorporated into their app. Users can easily be directed to a products page through both a MSFV or a hashtag. Similarly, these users can then purchase these products from the Douyin store, pay for the transaction using Douyin’s e-wallet, and immediately share about their shopping experience with built in sharing tools (Yang, 2022). Although not as intensely integrated, American companies like Instagram and Facebook have also incorporated marketplace features into their apps. Companies that are looking to stay prominent and in the public eye need to monitor changes in customer preferences. This involves understanding how customers are buying products, what content they enjoy receiving, and where they are spending most of their time online.

Psychology of Social Computing

Utilizing social computing techniques are important for companies to stay ahead of the curve when it comes to newer technologies and customer preferences. This ‘adapt-or-die mindset’ was expedited by the onset of COVID-19. Every industry was forced to adjust to a completely virtual work environment, which in turn led to an exponential increase in social computing deployments. One industry that was especially hit was the education field. Deribigbe, et al. state that COVID-19 has: “accelerated and increased the use of social computing software and active learning strategies” (2022, pg 2). Some clear disadvantages exist because of this physical disconnect. In the case of the schooling example, for students in younger grades, socializing and physical interaction is a major part of early development. 85% of public schools reported COVID-19 negatively impacting student socio-emotional development during the 2021-2022 school year (National Center for Education Statistics, 2022). The devices that make up these social networks: “can enhance learning and building community, they can also interfere with everything from sleep to creativity” (RUDER, 2019, para. 1). In fact, this brings light to a more general issue with the extensive use of devices as the primary way of engaging socially.

Studies have shown that problematic use of electronic devices poses a threat to a users mental health, sleep quality, and interpersonal relationships (Joshanloo, 2021). This problem is better contextualized by the amount of screen time users are exposed to. A study from the American Academy of Child and Adolescent Psychiatry states that on average, children from the United States aged 8-12 have an average screen time of 4-6 hours while teens spend up to 9 hours (2020). This is extremely important with the rise of the social media trend mentioned above: short-form videos. Due to the personalization and curation of content in these applications, users remained engaged for longer periods of time. Although addiction is hard to define, the idea of Internet addiction has been cited in recent publications. Many sources claim that this addiction may derive from a psychological process of positive reinforcement which encourages continued

engagement (Zhang et al., 2022). Therefore, although the use of short-form videos and social computing in general is beneficial to companies, addiction and other underlying psychology problems could result. Companies should care about the way they are affecting their customers due to the importance of environmental, social, and governance (ESG) factors. These factors have become increasingly important for companies in recent years as consumers are becoming more aware of the underlying values of the companies they do business with. It is important for companies to remain aware of the impacts social computing and increased virtualization are having on their stakeholders.

Trend Analysis

Although marketing spending as a percentage of revenues has remained relatively consistent in recent years at around 10-13%, total US digital advertising spending has rapidly increased more than 100% in the last five years up to over $200B (The CMO Survey, 2022; PricewaterhouseCoopers, 2021). With more than 2 billion people using social media more than ever, many companies are following the age old marketing adage, “go to where the people are” (Kemp, 2023). In the most recent CMO Survey, respondents said that on average, 14.5% of their entire marketing budgets are dedicated solely to social media marketing and that number is only increasing (The CMO Survey, 2022). As social media platforms have become increasingly commercialized, consumers have grown more disdainful for the amount and subject of advertisements they are being shown. 74% of users believe there are too many ads on social media, 63% say they see the same things advertised constantly, and 44% say that the ads they see are irrelevant to them (Gitlin, 2022). Despite this, they are very effective, 64% of internet users admit that they typically find out about new products from social media and 48% say they have bought something after seeing a social media advertisement (Gitlin, 2022; GWI, 2022). This presents an issue of balance for both social media platforms and their advertisers. Advertising is one of the primary ways that these platforms make money, but their users do not like them despite the effectiveness of advertising. Companies must either identify this balance, or find a way to change consumer perception of advertising.

Two potential pathways toward a more user-friendly social media marketing strategy are to either try to make ads that your target market wants to see, or to make ads that users might not even perceive as ads in the first place. Research from GWI identifies some of the properties of advertisements that US internet users feel positively or negatively about. Almost 50% of consumers say they want ads that provide information about a product while one-third want an ad to teach them something new, reflecting the previously discussed data about ads being shown too often (GWI, 2022). About 40% want ads to save them money through discounts or special offers and 38% want to be entertained. On the other hand, the top factors that negatively affect brand likeability for consumers are seeing too many ads for a company (51.9%) and ads that block the content they are trying to access (39.4%). In a world of personalized advertising and

social-media users being more online than ever before, all of these different properties can be a minefield for companies hoping to improve brand image and bring in more revenue.

Recommendations

So how can businesses push info to their target markets without bombarding social media users with advertisements? Given the interconnected nature and shareability of social media, a clear choice seems to be some form of viral marketing. Whether it is a challenge that encourages others to join in and share like the ALS Ice Bucket Challenge, or a campaign that uses more guerilla tactics such as sponsoring influencers and creators to promote products, these kinds of strategies have become commonplace on social media today. These under-the-radar approaches have, whether sponsored by the company or not, have seen dozens of products go viral on platforms like Tik-Tok and subsequently sold out everywhere (Morris, 2021). Many of these viral videos are eerily similar to television infomercials of the past and often follow some traditional marketing principles. They all tend to demonstrate at least perceived product quality, or, with many of these videos being made by actual customers, highlight the consumer need that is fulfilled with a specific product. When it comes to B2C products, this framework could be exploited to massively increase sales if done carefully and genuinely.

Businesses must also stay up to date on trends that potential customers are engaging in. Advertising through a strong social media presence and through short-form videos will keep consumers engaged and allow companies access to a huge pool of consumers. Staying up to date on the latest trends is made possible through keeping up with the latest technologies. Companies must use newer technologies like AI powered social media analytics to continue to improve their relationship with their customers and ultimately their sales. The connection and transparency between businesses and their customers is another focal point for companies looking to deploy social computing methodologies. Studies have shown that overtime, too much social media interaction can lead to addiction. Ensuring that the pursuit of revenues is done in an ethical manner while promoting ESG initiatives is a key point for businesses utilizing social computing.

Although lots of marketing data tends to be kept tight under lock and key by companies, we are hopeful to be able to find sufficient information to gain an understanding of how cutting edge businesses are utilizing viral marketing and social media analysis to meet customer demands in a quickly changing social media environment.

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