



Impact of Data Mining and Social Media Marketing to Enrich Customer Satisfaction

Mohamed A. Hamada and Adejor E. Abiche
International Information Technology University
Manas St. 34/1, Almaty, 050040
Kazakhstan
m.hamada@iitu.edu.kz (M.A. Hamada)
egaemmy@iitu.edu.kz (A.E. Abiche)
ID: 0000-0002-0442-3663 (M.A. Hamada)

ABSTRACT

Data mining techniques are intensively utilized to process all the collected data quickly and support firms in being competitive in different markets. Customer satisfaction rate is highly dependent on the ability of businesses to manipulate huge amounts of information and make appropriate decisions based on such manipulation. Supplying a unique algorithm for targeted advertisement and account promotion based on Big Data analysis has allowed Instagram to become a company that successfully meets the demand of both its B2B and end-consumers. This research aims to demonstrate how social media uses data and data mining to bring value to the customers and increase their satisfaction level on the example of Instagram. Quantitative and qualitative study is conducted to support research with primary data input. The sample size for quantitative analysis is 106 Instagram users, aged 16+, living in Kazakhstan. Google form questionnaires were used to collect answers. During the research, several study development and opportunity areas were revealed to continue the in-depth investigation of the case. One such question is data privacy which can also be studied on the example of several social networks.

Keywords: Social Media, Instagram, Target Advertisement, Data Mining, Customer Satisfaction, Social Media Marketing (SMM)

1. Introduction to the Research Topic

The harsh reality of the 21st century dictates new rules for companies to survive, maintain their competitiveness and become successful market leaders. Markets are oversaturated with different offerings, progressive globalization, the impact of the global pandemic and digital transformation drastically increase the importance of understanding and measuring customer satisfaction. Deeper customer insights and precise information about their preferences and needs are key elements conditioning a company's marketing strategy. Due to the change in customer habits and

Received: 10 November 2023

Revised: 14 January 2024

Accepted: 22 January 2024

Copyright: with Author(s)

increased consumer consciousness, customers nowadays are not satisfied with simply buying goods or services of high quality, they seek for interactive customer journey, personalized approach and exceeding of their expectations. Fortunately, today's world brings not only challenges but opportunities as well. Data mining as a way of getting deeper customer insights and achieving customer satisfaction is gaining popularity with more sophisticated methods and tools. Modern technology, geospatial analytics and social media presence made huge amounts of worldwide customers' data available for business at any time.

The influence of social media cannot be undervalued. According to the Insider Intelligence Social Media Update Report, the number of social media users in 2021 reached 3.78 billion people with a 5% increase from the previous year [1]. Every day millions of terabytes of data are exchanged, stored and processed by the users on different social platforms in the format of video, photo, audio, text and graphics. As social media becomes an integrated and inseparable part of people's lives, business analysts face the need to analyze, summarize and extract practical information about consumer behaviour from the raw social media data. The answer is 'data mining', which applies statistical analysis, machine learning and artificial intelligence [2]. Because online presence has become a crucial factor for business survival, most companies have changed their strategy from offline to online. Social media platforms allow companies to build their brand image, receive customer feedback, organize marketing campaigns and social interaction with their buyers. Based on these data, businesses monitor such metrics as customer and post engagement rates, impressions and reach, click-through rate (CTR) in ads and posts, lead conversion rate, and response rate, and receive a 360-degree view of online performance based on interaction with other social media users. These data can be classified as received as the result of user activity.

At the same time, each user gives applications and websites consent for certain data collection and processing. Such permission assumes collecting information on age, gender, preferences, geolocation, social interaction, list of purchases, things you search for, ads you click, websites you visit and even devices you use to access the site. Furthermore, some applications use the microphone and location history. Gathering such data, companies use data mining to get a broader understanding of customer profiles. The result of thorough customer data analysis is an example of successful marketing campaigns and effective social media interactions and presence. Such examples include two international companies - e-commerce giant Amazon and multinational beauty retailer Sephora, and two local companies - fintech firm, Kaspi, and internet corporation Yandex.

One of the first companies to effectively utilize social media and data mining in combination is Amazon.com. The company is in the range of first movers to build interactive and diverse social media strategies. Amazon's website platform is user-friendly, easy to navigate and sensitive to consumer behaviour. Amazon is one of the pioneers, which started to introduce service/goods recommendations based on users' previous orders, clicks and overall behaviour. The company became a leader in the online retail sector because it was successful in understanding the opportunity of e-commerce and personalized approach and could implement it using online platforms. Currently, Amazon.com uses data mining techniques and continuously refines its social media marketing to meet complicated customer demands and tastes.

In addition, Sephora is an international retailer, which accurately develops its social media marketing, which has brought more of its brands onto Instagram checkout to make clients' shopping faster, easier, and more reliably convenient. It has a wide social media presence having a website, mobile app, and social networks. The main feature of its social media marketing (SMM) strategy is that all the components are smoothly operated together which leads the company to one goal. Successful social media presence allowed Sephora to build a strong brand community which contributes to the higher clients' retention and satisfaction rates.

The most demonstrative examples of prosperous companies in the Kazakhstan market, that use data mining and social media to deliver value and increase customer satisfaction level are Kaspi. kz and Yandex. kz. Kaspi. kz uses several sources which collect data about consumer behaviour, such as websites, mobile applications and social networks. Kaspi mobile applications for end-users and B2B are popular among the population because they are convenient to use

and personalized. Kaspi was the first bank in Kazakhstan to introduce the application, which combines many services for the consumer, such as money transfers, payment transferring, online shopping, and online deposit/credit opening. Having all these services inside the mobile phone helps to solve several issues and make the clients' lives faster and easier. Kaspi at the same time gained the tool for reliable data collection, which further is analyzed by data mining techniques to visualize the data and use it for decision making. The Kaspi consumers are satisfied and the number of users is increasing, meaning that the company is now on the right way, but it should always be on track to save its superiority. The recent step to meet customer demand from the Kaspi side was to introduce mobile POS for B2B to accept payments from end-consumers. As a result, the bank is gaining a bigger pie of market share by introducing more convenient products to customers and expanding its social media presence.

Yandex is another example of a company that tries many different fields of digital business. Yandex is a competitor of Google in the post-soviet market. It has such services as a search engine, cloud data storage, taxi mobile app, food delivery service, carts etc. On the local Kazakhstani market, Yandex is well-known for its mobile app, which combines several services in one - taxi and food delivery. Yandex is using geo data to determine the location of an individual. It uses previously obtained data about consumer behaviour to recommend products and services for future requests. Yandex is always testing new products, sometimes innovations become successful, and some of them fail. However, the company itself is advanced in terms of using Big Data and data mining to support its business decisions.

The companies described above have their accounts on various social networks. It is suggested that 72% of people will access the global network using only smartphones by 2025 [3]. Companies need to be present in social networks to effectively communicate with their consumers. Almost all thriving companies have pages on Instagram, as it is one of the most popular social networks. Instagram opens opportunities not only to its end-consumers but also to B2B clients. End-consumers can share photos, and videos, purchase necessary services/goods. B2B clients receive the marketplace to sell the products and get the chance to have all the needed statistics about their consumers. Instagram developed its business model, which combined entertainment and commercial concepts in one place satisfying many types of customers at one time. Kazakhstan is in first place on Instagram reach worldwide - 72% of all the internet users in Kazakhstan are Instagram users [1].

This paper aims to analyze how Instagram uses data collected from its users to increase their satisfaction with the product.

2. Literature Review

The major challenge for a business is the accurate planning of new product launching and forecasting its further lifecycle. Before product launching, a company should find out the key features of targeted audiences. These findings will help to set up appropriate pricing politics and forecast sales. The next step is to develop forecasting actions based on prediction analysis to ensure that the product will stay relative to the target audience. Modern technologies such as Instagram assist with this challenge, solving it most efficiently and effectively [4].

Business analytics is a process that is essential for modern business development. The point of business analytics is organizing quantitative data and transforming it into information for decision-making purposes. Business analytics assumes converting data patterns into visualization and reporting formats. Implementing this practice gives managers a clear view of what happened in the company with the reporting date and what is going to happen in the future. Reports can be created and visualized from any perspective, including financial, operational etc. [5].

One of the advanced tools of business analytics is data mining. Data mining can be used for any field of study; however, this research covers the effectiveness of data mining in obtaining and measuring client satisfaction. Data mining is a powerful technique for understanding

customer satisfaction patterns and predicting future customer behaviour in various business fields. For example, using data mining tools such as decision trees and neural networks for the fast-food sector gives accurate results for identifying key customer satisfaction criteria with 80% correctness [6] Tama. At the same time, the banking system is one of the most dynamic and competitive big data user industries, experiencing high demand for data mining techniques. As a result, banks are prosperous in utilizing data mining applications, they usually use more than two mining tools to analyze vast amounts of big banking data [7]. In the retail business field, building a marketing strategy with a focus on customer experience and preferences is key to increased sales and better company performance. Data mining facilitates client-oriented marketing in retail companies, which helps not only attract but also retain consumers [8]. Finally, businesses reduce costs and increase customer satisfaction and brand equity. Based on the information above it can be concluded that data mining techniques are vital for many industries. Furthermore, companies from diverse business sectors are willing and able to implement these tools to build a comfortable, delightful and interactive consumer journey.

As social media plays a significant role in building general marketing strategy, the most successful companies are actively engaged in creating effective social media marketing (SMM) strategies. It has proven that properly implemented SMM has a drastic impact on perceived brand value and as a result leads to higher client satisfaction levels [8]. Social media analytics becomes a powerful tool in establishing the main marketing framework based on previous consumer behaviour. Such kind of analytical data is collected from the first source and gives a reliable foundation for further analysis. E-business particularly e-commerce as recently developed business models, contribute to the fast collection of huge amounts of initial data. The challenge is that analyzing high volumes of data without appropriate tools becomes difficult [9].

Data collected from social media is used for customer analysis. Customer analytics is a key process for making crucial business decisions through marketing segmentation and predictive analysis. The collected information includes such data as customer lifestyle, demographics, preference values, location information, goods purchased, and payment methods. It is a major benefit for companies in respect of monitoring market fluctuations and trends. Innovative marketing strategies are developed based on customer analysis, giving a company a competitive advantage over competitors. From the client's perspective, customer profiling assists with achieving common values and expectations between the company and the customer, and in turn, increases the accuracy of customer satisfaction [10].

As a result of customer analysis, the company establishes customer profiling, which defines a description of the ideal customer for its business. Using this tool, a company understands its customers better and targets them in the most effective way [11].

One example of social media data mining is text mining which allows the identification of the specific topics and themes discussed in the text based on keywords and terms. In the text mining techniques review of two huge social networks Facebook and Twitter, it was revealed that data in the English language is easier to be interpreted and analyzed [12]. Based on the analysis it can be concluded that the success of the decoding process highly depends on the language. In general, data provided for data mining should be gathered in a universal format.

Based on customer profiles companies launch target advertisements for their products and services. Data mining with cluster analysis indicates two clusters - price-caring and product caring - based on customer's reactions and buying behaviour once they see the advertisement [13].

Company profile/image in social media has a direct impact on the level of customer satisfaction as brands are no more abstract ideas, they have people behind them and a story that is broadcasted via their internet pages. Research showed that the highest correlation between social media analytics and customer satisfaction is found in the case of a company operating in a highly competitive local environment [14]. This is conditioned by the huge amount of local unknown companies while building brand image in social media allows one of them to stand

out and build strong relationships with customers and create a positive brand image.

Big data gathered from social media goes further than just a tool used for determining the advertising content, marketing campaigns or customer profiles. It does not end with promotions and interactive content based on views and likes. Social networks can give enough information to governmental organizations and international corporations. Researchers and statistical agencies also mine profiles on different social networks. Based on such data agencies can market political ideologies, sociocultural changes, and religious groups [15]. Based on the location and migration of people during natural calamities rescue groups managed to find the victims and save them.

The effective methods of using social media and data mining were identified and evaluated in the educational sector to improve the level of customer satisfaction through analyzing reports and collecting data about opinions on adopting data mining and social media [16].

3. Research Methodologies

The relationship between data mining, social media and customer satisfaction has been actively studied since businesses shifted from the standard business model due to technological disruption. Social networks and advanced technologies were successfully integrated into almost every sphere of everyday life. This paper aims to understand the phenomenon of Instagram - one of the most favoured social networks that had a great influence on the B2C business model in Kazakhstan. Instagram was launched in 2010 and within only 10 years has fully changed lives. Instagram uses data mining for two main purposes: (i) Instagram as a company: a social network using big data to increase the customer (user) satisfaction rate and number of users and (ii) Instagram as a platform: profiles (business and private) using the Instagram algorithms and big data to interact with customers and increase the customer satisfaction rate.

These two topics will be studied and researched based on the available information and statistics and previous studies of the related issues using the case study methodology. Case study is one of the most popular research methods in the business field. The case study allows investigating the specific issues within the boundaries of the particular example of the individual, situation or organization. In this research, the topic of data mining to increase customer satisfaction will be studied based on the example of a huge social network - Instagram. An in-depth analysis of the Instagram phenomenon will be investigated in a real-life context.

As it was mentioned above this social network uses big data to successfully fulfill two roles - as a Company itself and as a platform for other companies. During the past 10 years, technological innovations stepped a lot forward. Also, Instagram consumers' (users) preferences shifted to the inclination to see more personalized content. Instagram created a new business model making companies shift from internet website platforms to social media profiles. If 5 years ago most of the content in this social network had an entertaining context, now it serves as a business, educational, and informational platform. Instagram uses two types of analysis: content-based and structure-based. Content-based analysis is based on content posted by a particular person (images, videos, text), and his/her responses to the content posted by other people (likes, reposts, comments). The structure-based analysis is used to track geolocations, social links, and communities based on users' internet behaviour without any obvious clicks.

Instagram closely monitors its users' behaviours and reactions. It constantly updates an application with new features based on the audience's interests and needs. During the pandemic in Spring 2020 new feature of "Co-Watching" was added that allowed people to share posts over video calls as many people stayed at home and needed to share their leisure time with their families and friends.

It is hard to imagine any company that does not have a business account on Instagram as it provides a variety of useful tools and functions for the owners to get the full picture of the

target audience, their profile, preferences and behaviour. As described in the picture below there is a constant flow of personal data, publicly available data and personalized offerings and ads. System infrastructure represents several data servers, 3rd party applications, user profiles and interconnected search engines.

The community of Instagram users in Kazakhstan is one of the largest worldwide. There are a lot of small and medium enterprises that fully base part of their business processes including sales, marketing, customer relationship management, and inventory management on this social platform. The application provides businesses with great opportunities to save money on data gathering as it is already available with real-time statistics in the context of each post, profile and product.

Instagram stores big amounts of data and in this research, authors aimed to identify the effect of social media data mining on customer satisfaction. To understand the issue, both qualitative and quantitative research approaches are used for in-depth insights into the case related to the research topic. The qualitative approach relies on data received from the primary sources. Data for the research purposes will be gathered through first-hand observations and interviews with individuals identified as the target audience interested in the case. Observations provide an understanding of the situation and change in the circumstances and conditions and show the direct relationship based on user experience. Interviews with representatives of different audiences allow for receiving an opinion from various angles. The type of quantitative approach to data gathering used is a questionnaire with closed questions where respondents can only choose their answer from the suggested options. Considering the time limits, the questionnaire is the most suitable way to reach a greater number of users in a shorter amount of time and at zero cost. Results will be provided in a structured format and then will be transformed into statistical and graphical data for visualization and representation of users' opinions.

Research methodology is developed in such a way that the main idea described by the Instagram case study supporting the fact that customer satisfaction is quite dependent on the quality and amounts of data mined from social media is further investigated and studied by the researchers in the context of Kazakhstan. Data collected from the primary sources will give opportunities for further research, showing if the opinions are challenging or supporting the case idea.

4. Research Design

The main objective of the research is to find out if Instagram uses i) data mining to increase the customer (user) satisfaction rate and number of users from the perspective of a social media company and ii) the Instagram algorithms and big data on Instagram platform to interact with customers and increase the customer satisfaction rate for business and private users.

The chosen research method combines qualitative and quantitative approaches. The goal of a mixed approach is to expand and strengthen the research's conclusion. The element of the qualitative method is conducting the interviews, while the quantitative one is a questionnaire. Also, the case study was applied [17].

The quantitative method is usually applied for acquiring statistical data, numerical data from specifically designed surveys, questionnaires and other structured research instruments. These research instruments are accurately designed for the representatives of certain target populations. The target audience is initially set by the research team. A target audience is a defined group of people with common criteria, demographics, location or other factors. Generally, representatives of the target audience are chosen randomly. Thus, the answers collected are assumed not to be biased. Selecting the target audience is one of the key points for useful data for the research, which is why this step requires an accurate assessment from the research team. Before launching the designed questionnaire or survey for the target audience, it should be tested by the research team, to be sure that the target audience does not face any challenges related to understanding and completing the questionnaire. Using the questionnaire tool is helpful for its rapidity, meaning that the results are obtained very quickly

in a short period, without any tough efforts for both the research team and the target audience. Moreover, there is an opportunity to cover a wide range of representatives from the target audience without any significant costs.

In this research, the research team chose an online questionnaire as a structural research instrument. Questionnaires were designed to understand if the Instagram algorithm adapts to customer needs and values and raises customer satisfaction and interaction. The questionnaire was designed via Google Forms. During the process of designing the survey instrument for the research, the main goal was to keep it simple, not to use technical terminology, not to add too many questions, but to collect all the necessary information required. The team managed to expand the number of representatives from the target audience. The target audience is users of Instagram social media who are age 16+, and living in Kazakhstan. The research team designed the questionnaire to be anonymous. The reason for anonymous questionnaires is to inspire responders to disclose sensitive information. The questionnaire was published on the Instagram and LinkedIn profiles of every member of the research team, to make it publicly available. The total number of respondents is 106. Results are described in the Research design part, and the questions designed for the questionnaire are attached in the appendix of this research paper.

A qualitative method is an approach that is aimed at acquiring results via open-ended questions and conversational communication. Qualitative methods assume using in-depth interviews, case studies, content analysis, focus groups, ethnographic research, and observation. The qualitative method allows the research team to acquire a non-numeric and more detailed view of the target audience. To ensure that qualitative data acquired makes a valuable input for future findings, the data sources should vary.

This research team chose in-depth interviews and case studies as methods of qualitative approach. In-depth interview methods give more detailed findings in selected research topics.

Next, Instagram as a social media company was selected as a case study approach. A case study is one of the methods of the qualitative approach. The success of Instagram as a social media company from the perspective of customizing and increasing customer satisfaction is a major research goal. Since the research team selected two data sources for a qualitative approach, it is assumed the results to be accurate, precise and reliable.

5. Research Results and Analysis

The results of quantitative research based on collected primary data from questionnaires are described below. Figure 1 shows the results of the percentage of different types of accounts represented in the population sample of the research. The proportions do not describe the real picture as the sample size was collected from the followers of the research team.

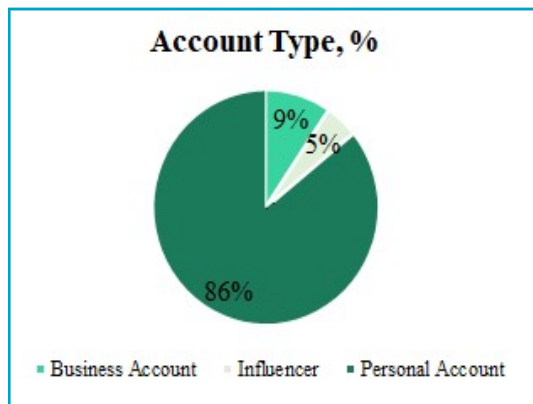


Figure 1. Types of user accounts in Instagram social network

The information in Figure 2 shows the frequency of purchases made by respondents on Instagram. 71% of users from the sample use Instagram to buy something. 65% of respondents stated that Instagram advertisement (including both target and influencer ads) affects their decision to buy the product. 52% of individuals purchased an ad of the product demonstrated on the Influencer's account. 95% noticed that Instagram offers ads for a particular product after they discussed it or one of its complementary goods loudly during real-life conversations.

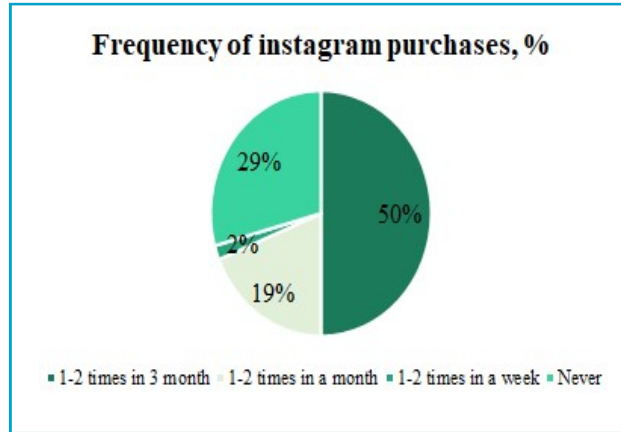


Figure 2. Frequency of purchases via Instagram social network

Respondents were asked about the aspects of Instagram they like and dislike the most. The top 3 features people enjoy about Instagram are the content itself (including stories, posts, and recommendations), the opportunity for socializing (for example, chatting with friends and sharing information with them) and the convenience of the interface (simplicity of use and functions). 3 main drawbacks of using this social network according to the respondents' opinion are advertisements (too high frequency, sometimes the ad is useless for the particular person in a given period), worthless content (not unique, or content without an interesting topic or with low quality) and social issue (mainly including the problem of insincerity). Data protection issue concerns the users of Instagram. 59% of respondents answered that they think their personal and behavioural data is in danger because Instagram collects it to use for further algorithms.

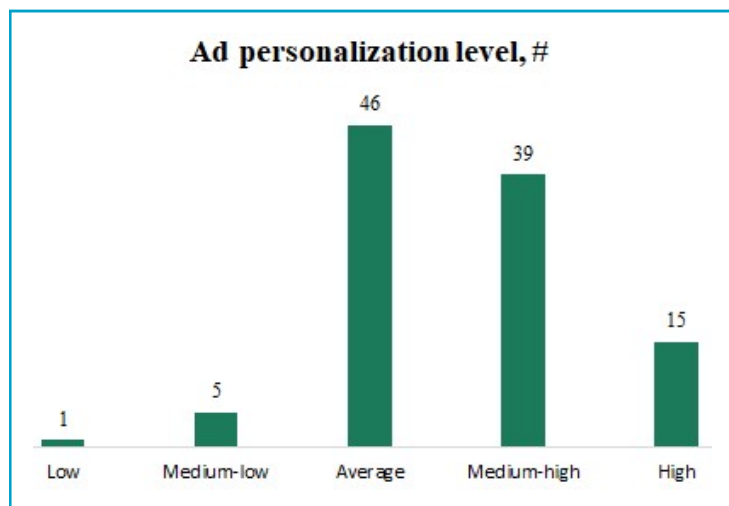


Figure 3. The degree to which users consider Instagram advertisements to be personalized

The sample was asked to rate their satisfaction level with the services provided by Instagram.

Figure 4 visualizes the results, as it is shown no one indicated his satisfaction level as low.

Instagram offers interesting posts for each account individually, and 73% of individuals claim that they would spend less time on the social network if there was no Instagram suggestion of interesting posts and other content but 27% of people will not be affected by this change.

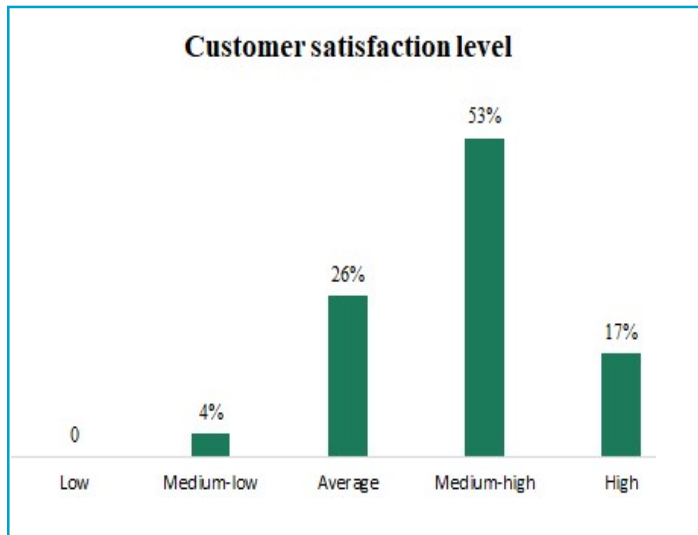


Figure 4. The degree to which Instagram users believe they are satisfied with the social network

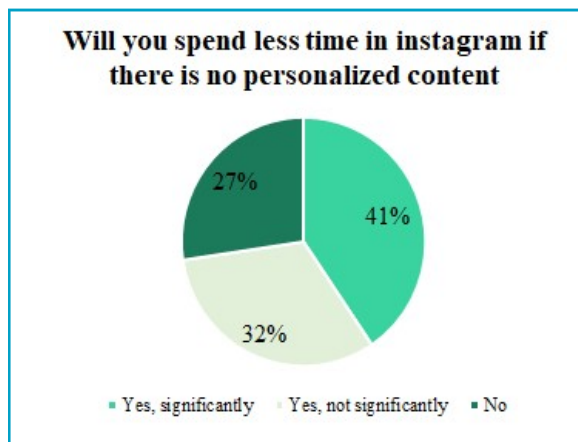


Figure 5. Answers of respondents about their decision to spend less time on Instagram if there were no personalized content spend times

Users do not utilize Instagram just for entertainment, many accounts are generating useful content. According to the research, 64% of respondents read news, 48% use information found online for their offline hobbies or free time, 10% visit accounts for education purposes, while only 7,5% consider Instagram only for entertainment.

98% out of 106 respondents will remain Instagram users in the future and they have no intent to stop using it or shift to the other network.

The main outcomes from interviews are demonstrated below, they show the results of the qualitative research.

Instagram Influencer

According to Influencers' opinion, Instagram is a great platform for self-promotion. They state that for so many years of being an Instagram bloggers, they had collected the audience which is inspired by their Instagram web pages. In turn, Instagram bloggers are happy to share with people their daily lives, products and services that satisfy their expectations and values. Also, they get a stable income from being Instagram bloggers. With the appearance of Instagram, a new term "Influencer" emerged and it allowed them to start to earn more money. Being an Influencer is a real job, it takes time, resources and energy. However, the further the more difficult it is for people to become an influencer, because of high competitiveness. Simple lifestyle content is not enough to become a successful blogger - consumers want something new, creative and interesting.

Instagram Business Account Owner

Given the fact that Instagram has become one of the most popular e-commerce platforms, more and more businesses enter this marketplace. Instagram is affordable for selling and promoting both goods and services for various companies. There is a possibility to create an Instagram account for the small firm and sell effectively on this platform without a physical store location and with a limited budget. Instagram allows information about followers and gives the full statistics. Using this data businesses can better understand their customers and with the use of appropriate marketing tools affect their satisfaction level. What is more important is that with the help of Instagram, it is possible to launch target advertisements which are cheaper than, for example, TV ads. Target ads make it possible to spend money to attract a particular group of buyers rather than waste the budget and show an ad to a huge uninterested pool of people. First of all, business page owners consider Instagram as the most effective platform for target reach and data analysis.

End-User

Instagram 10 years ago and Instagram today are two different platforms - everything has changed starting from the design to the overall concept. It seems that now this social network is more about commerce. It is easy to search for needed products on Instagram by hashtags, geotags, and company account names. All the information is there including photos, videos, and feedback from other clients - this is convenient. Search engines, such as Google are used less for shopping purposes because Instagram is more fun, it integrates shopping and entertainment. Instagram ads are another interesting tool as they show exactly what was talked about or written about in a message. It makes life easier and faster by offering the goods that are needed promptly. However, when the advertisement appears too frequently it becomes annoying. Especially when ads were just for introduction. It is also a pleasure to observe incremental changes and improvements in interface and functionality from time to time.

Marketing Specialist of Corporation

Huge corporations with experienced sales and marketing teams, extended budgets and aligned strategies use Instagram accounts not just to sell their product but also to build effective communication with consumers. Instagram is used mostly as a data collection tool, rather than a marketplace. Geospatial analytical data is widely used by retail companies to organize customer journeys online and offline. Information about clicks, reactions, and comments is used not only to promote products on Instagram but also to design new products or make changes to existing ones. Large businesses, like retail use various types of advertisement including target, opinion leaders, sponsorship and collaboration to increase the visibility of products. More and more firms understand that people spend all their lives on social networks and are trying to increase their social media presence. Instagram encourages companies to enter it by creating user-friendly accounts and functionality. With the help of

Instagram statistics sales are increasing because companies can understand their customers directly.

6. Research Discussions and Analysis

"Instagram isn't necessarily a photo company or a communications company as I like to say; we're also going to be a big data company" - As quoted by Kevin Systrom, CEO of Instagram. With Instagram's exponentially growing popularity and ever-growing number of users, it's only fair to ask what is their secret. We say most of it comes from its strategic use of big data.

By analyzing both qualitative and quantitative methods' results and the reviewed literature, the research team got a clear finding regarding two main research goals: i) implementing data mining to increase user satisfaction and the number of users from the perspective of a social media company and ii) the Instagram algorithms and big data usage and processing on the Instagram platform to interact with customers and increase the customer satisfaction rate for business and private users.

The research team made the following assumption for further observation: Does Instagram express itself as a big data company and how they use data that millions of its users around the world generate daily to create personalized feeds and explore pages that users will most likely "like", target ads that users will most likely click as well as bots and systems that clear spams and block sensitive contents or comments further increasing customer satisfaction among users. Also, the research questions covered the effectiveness of Instagram features for reusing its vast data and finding a way to be beneficial to both businesses and end customers.

Finalizing the results of quantitative research, we can see Instagram does affect buying patterns due to its personalized advertisements and has very high user satisfaction level. The research team found that 65% of respondents stated that Instagram advertisements (including both target and influencer ads) affect their decision to buy the product. 52% of individuals purchased an ad of the product demonstrated on the Influencers' accounts page. The most interesting part is that almost all the respondents said that the Ads were not some random products but a specific thing that the user previously discussed or looked on the internet to find or somehow was interested in. As a result of implementing this algorithm, Instagram gives each user a very personal and specific experience. Using data mining tools Instagram identifies each user and creates a specific portfolio for each one of their users. By analyzing liked posts, visited pages, searched things, visited places, used hashtags, followers, and customers' demographic factors, Instagram offers very customized content. Personalized ads and customized recommendations make each customer's Instagram usage experience unique. As a result, customer satisfaction rises and makes them want to come back and get more offers. One of the things mentioned by respondents is that they don't like the fact that usage of Instagram leads to addiction. Once a user wants to check his page, he stays online for hours scrolling the feeds and suggested publications. The management of individuals gets worse, but on the other hand, business accounts make more money from increased visitor numbers. The more time people spend in this social network, the more engaged they are. Consequently, high engagement is equal to a high satisfaction level. Users that consider Instagram as an interesting platform and have a positive perception of it, tend to be easily influenced and attracted by promotions, ads and other offerings.

To sum up the research results, the first major fact claimed is that Instagram as a company does collect personal data to offer customers very personalized content. As it turned up from the questionnaire results, this point is the main Instagram advantage to maintain and enhance customer satisfaction. This is applicable not only for entertaining content and chatting but also for learning different courses, news reading and other educational purposes. The majority of legal claims regarding sharing people's data with third-party companies in 2019.

The second major finding is that the Instagram platform is a helpful and impactful tool for business accounts and marketing specialists from the industries. According to the result of the indepth interview, there is a great opportunity for small business accounts to promote

the business online without significant costs, for example, rent expenses. The major finding from both qualitative and quantitative methods is that Instagram collects data for further marketing assumptions. There is an opportunity for big corporations to acquire data, set correct target audiences and promote their services. Moreover, it is proven by questionnaire results that majorly Instagram algorithm recommends promoted services and products to the right audience. This effect is achieved mostly by the "hearing" function of the algorithm when products appear in ads after discussing them in real life. On the other side, the research team found out that sometimes ads do not appear for the right audience, and it annoys end users. Thus, Instagram should update the algorithm to a more sensitive one to increase and maintain customer satisfaction.

Imagine that your company has great expertise in big data management that, in a couple of years, turns into something more - Customer Value Management (CVM) and truly big data. This is exactly what happened with Instagram: they learned how to manage churn, effectively predict the sales of products and conduct campaigns to promote and offer personalized offers to each client.

This expertise and data analytics consider hundreds of parameters related to subscribers: their socio-demographic profiles from gender and age to region of residence, number of family members and personal interests. The same expertise requires maximum personalization of any message, contact with a subscriber, and an exclusive offer here and now. And Instagram is one of the best examples of usage of such analytics. The research team believes that if Instagram follows its data-driven strategy, it will enhance the company's leading position.

7. Research Conclusions

Today's customers want companies to treat them as unique individuals, anticipate their needs and wants, remember their peculiarities and preferences and know their purchase history. All this has a positive effect on user and customer experience and as a result, leads to increased customer satisfaction. The era of consumer society ended several years ago and brand significance level declined with time. Companies are now focused on a personalized approach to each client, tracking the history of purchases and product recommendations based on experience. According to the customers' opinion, they are ready to provide their historical and geospatial data if it will increase their overall experience with the company and create more relevant content.

Instagram is one of the most successful companies actively using big data to increase the satisfaction of its users (individuals and businesses) as well as providing other companies with an opportunity to use customer data for business development purposes. This is the main idea of the research case study which is supported by the results received from surveys and interviews. Time spent on Instagram is increasing due to content recommended based on personal interests. This means that this platform is satisfying the needs of its users as an entertainment platform. However, at the same time, this social network managed to realize itself as an e-commerce platform. Results show that 8 out of 10 people use Instagram to buy something at least once in a couple of months. In Kazakhstan, Instagram became an effective platform for paid advertisement as well as organic content. This network helps foster intercommunication and interactions with brands and companies due to its well-designed functionality. 98% of users tend to continue using this social platform which is an extremely good indicator of user loyalty.

Research results could provide deeper insights if the number of respondents is increased up to 1000 with the diverse sample including a greater number of business accounts and bloggers. Also, it might be interesting to see the sphere of each business profile. Spending more time researching the topic would allow going through each Instagram metric and using an experimental approach (i.e., checking the quality of content offered in the result of audi people. Research provides valuable data on how different types of Instagram users perceive data mining and how it influences their interest in the businesses and the social network itself.

References

- [1] Enberg, J. (2021). Social media update. *Insider Intelligence*, 1(1), 26. <https://www.businessinsider.com/global-social-network-users-report>
- [2] Pushpam, C. A., Jayanthi, J. G. (2017). Overview of data mining in social media. *International Journal of Computer Sciences and Engineering*, 5(11), 147-157.
- [3] Handley, L. (2019, January 24). Three-quarters of the world will use just their smartphones to access the internet by 2025. *CNBC*. <https://www.cnbc.com/2019/01/24/smartphones-72percent-of-people-will-use-only-mobile-for-internet-by-2025.html>
- [4] Sudarshan, V. R. (2017). A data mining approach to modeling customer preference: A case study of Intel Corporation. *Arizona State University*, 1(1), 1. https://repository.asu.edu/attachments/194145/content/Ram_asu_0010N_17584.pdf
- [5] Shmueli, G., Bruce, P. C., Yahav, I., Patel, N. R., Lichtendahl, K. Jr. (2018). *Data mining for business analytics: Concepts, techniques, and applications with JMP Pro*. Wiley.
- [6] Tama, B. A. (2015, May 10). Data mining for predicting customer satisfaction in fast-food restaurants. *Journal of Theoretical and Applied Information Technology*, 75(1), 19. <https://www.jatit.org/volumes/Vol75No1/3Vol75No1.pdf>
- [7] Hassani, H., Huang, X., Silva, E. (2018, June 27). Digitalisation and big data mining in banking. *Big Data and Cognitive Computing*, 2(3), 20. <https://www.mdpi.com/2504-2289/2/3/18/htm>
- [8] Chen, D., Laing Sain, S., Guo, K. (2012, August 27). Data mining for the online retail industry: A case study of RFM model-based customer segmentation using data mining. *Journal of Database Marketing & Customer Strategy Management*, 19(1), 197-208. <https://link.springer.com/article/10.1057/dbm.2012.17>
- [9] He, W., Tian, X., Tao, R., Zhang, W., Yan, G., & Akula, V. (2017, November 13). Online information review. *Emerald Insight*, 41(7), 1468-4527. <https://www.emerald.com/insight/content/doi/10.1108/OIR-07-2016-0201/full/html>
- [10] Kushnazarov, F. (2019). Consumer life cycle and profiling: A data mining perspective. *IntechOpen*. <https://doi.org/10.5772/intechopen.85407>
- [11] Hassan, M. M., Tabasum, M. (2018). Customer profiling and segmentation in retail banks using data mining techniques. *International Journal of Advanced Research in Computer Science*, 9(4), 24-29.
- [12] Salloum, A., Al-Emran, M., Monem, A. A., Shaalan, K. (2017). A survey of text mining in social media: Facebook and Twitter perspectives. *Advances in Science, Technology and Engineering Systems Journal*, 2(1), 127-133.
- [13] Boonjing, V. (2017). Data mining for positive customer reaction to advertising in social media. In *Information Technology for Management. Ongoing Research and Development* (pp. 83-95). Springer.
- [14] Wang, Y. (2020). Unpacking the impact of social media analytics on customer satisfaction: Do external stakeholder characteristics matter? *International Journal of Operations & Production Management*, 40(5), 647-669.
- [15] McCourt, A. (2018). Social media mining: The effects of big data in the age of social media. *Yale Law School or the Media Freedom and Information Access Clinic*.
- [16] Hamada, M. A., Abiche, A. E. (2022). Adopting data mining and social media analytics to achieve customer satisfaction. In *7th International Conference on Digital Technologies in Education, Science and Industry (DTESI 2022)* (Vol. 3382).
- [17] Brannen, J. (Ed.). (2017). *Mixing methods: Qualitative and quantitative research*. Routledge.