An Overview of Facebook's Journey to Meta - A Case Study

Laiby Thomas 1 & 2 & Subramanya Bhat 3

¹ Research Scholar, Institute of Computer Science and Information Science, Srinivas University, Mangaluru - 575001, India.

OrcidID: 0000-0002-2608-3866; E-Mail: laibymary@gmail.com

² Assistant Professor, Dept. of Computer Science, NIMIT, Pongam, Kerala, India.

³ Research Professor, Institute of Computer Science and Information Science, Srinivas University, Mangaluru, India.

OrcidID: 0000-0003-2925-1834; E-mail: itsbhat@gmail.com

Area of the Paper: Computer Science. **Type of the Paper:** Research Case Study.

Type of Review: Peer Reviewed as per |C|O|P|E| guidance.

Indexed In: OpenAIRE.

DOI: https://doi.org/10.5281/zenodo.6479236

Google Scholar Citation: IJCSBE

How to Cite this Paper:

Thomas, Laiby, & Bhat, Subramanya, (2022). An Overview of Facebook's Journey to Meta - A Case Study. *International Journal of Case Studies in Business, IT, and Education (IJCSBE)*, 6(1), 268-287. DOI: https://doi.org/10.5281/zenodo.6479236

International Journal of Case Studies in Business, IT and Education (IJCSBE)

A Refereed International Journal of Srinivas University, India.

Crossref DOI: https://doi.org/10.47992/IJCSBE.2581.6942.0164

Paper Submission: 20/03/2022 Paper Publication: 25/04/2022

© With Authors.



This work is licensed under a Creative Commons Attribution Non-Commercial 4.0 International License subject to proper citation to the publication source of the work.

Disclaimer: The scholarly papers as reviewed and published by the Srinivas Publications (S.P.), India are the views and opinions of their respective authors and are not the views or opinions of the S.P. The S.P. disclaims of any harm or loss caused due to the published content to any party.

An Overview of Facebook's Journey to Meta - A Case Study

Laiby Thomas $^{1\,\&\,2}$ & Subramanya Bhat 3

¹ Research Scholar, Institute of Computer Science and Information Science, Srinivas University, Mangaluru - 575001, India.

OrcidID: 0000-0002-2608-3866; E-Mail: <u>laibymary@gmail.com</u>

² Assistant Professor, Dept. of Computer Science, NIMIT, Pongam, Kerala, India.

³Poscorch Professor, Institute of Computer Science and Information Science, Scie

³Research Professor, Institute of Computer Science and Information Science, Srinivas University, Mangaluru, India.

OrcidID: 0000-0003-2925-1834; E-mail: <u>itsbhat@gmail.com</u>

ABSTRACT

Purpose: Facebook has far more than 2.91 billion users worldwide, as of October 2021 by following its commitment to "Give people the power to build community and bring the world closer together". Machine learning as well as applied Machine learning helps people to get new contents and related stories. Machine learning (ML) is a technique for recognizing and drawing conclusions from data connections. Speech recognition systems can caption videos on Facebook using machine learning, making them more accessible. The Facebook research team is working with Machine learning technology to give its users the best services. Here an analysis has been done on the history of Facebook, major acquisition of Facebook, applications of AI in Facebook and Financial plans and challenges. The entire Facebook company will now be known as Meta. The Facebook app, on the other hand, will keep its name, and other apps will not be affected. Facebook is now known as 'Meta' because of its new focus which means 'after' or 'beyond' in Greek. However, Instagram, Facebook, WhatsApp, and Messenger are now all part of the 'Meta' company, much like Google's products are all part of the Alphabet company. Artificial intelligence, AI is really essential to Facebook.

Approach: For this analysis, a sophisticated survey strategy based on secondary data was applied.

Findings: Based on the findings, it is clear that to provide high-quality service, Facebook uses leading edge artificial intelligence/machine learning technologies.

Originality: To identify the methodologies employed in the organization's services, a study is conducted based on the existing resources.

Paper Type: Descriptive Case Study Research

Keywords: Facebook, Meta, Acquisitions, Machine learning, Artificial intelligence, SWOC Analysis

1. INTRODUCTION:

Facebook is one of the social networking platforms in America, that allows people to get connected over a wide area. It has over 3 billion users. For many people it is not just a one -stop shop for all communication but its purpose is to "go where the eyes are" [1]. For the past 10 years, Facebook has led in terms of overall downloads. Facebook Messenger, WhatsApp, and Instagram are also there behind Facebook as second, third and fourth respectively [2]. More than 3 billion people across the world use Facebook's products to exchange ideas, lend assistance, and contribute to the greater good. Principles of Facebook are: Serve Everyone, Promote Economic Opportunity, Give People a Voice, Keep People Safe, Build Connection and Community, and Protects the Privacy [3]. Machine learning is one of the powerful technologies and Facebook has hundreds of people working on AI. In Facebook, Machine Learning can be considered as a method to reach conclusions from data. It deals with more than 2 billion stories each day, so that people can get connected together. All the research team of Facebook work together to solve all the technical issues.

Facebook relies heavily on machine learning and Applied Machine Learning. It allows users to find

fresh material and link to the stories that interest them the most. Facebook's machine learning and applied machine learning engineers and researchers produce new text understanding algorithms to keep spam and misleading information at bay, as well as machine learning algorithms such rank feeds, advertisements, and to search results. Facebook uses latest algorithms to read images and videos as well as speech recognition system for news feed. It also creates a new visual experience with interactive online photos [4].

2. RESEARCH RELATED WORK:

Several studies on Facebook services have been conducted. The following table shows the list of related research works.

Table 1: Review of related works

S. No	Concepts analysed/Contribution	Year	Reference
1	A comparison study of staff and students is done to see how often they are to use Facebook for personal or educational purposes in higher education. Students are much more likely than professors to use Facebook, and they are lot more amenable to using Facebook and related technologies to help classroom work, according to the findings. Faculty members are more likely to utilise "classic" technology like email.	2010	[5]
2	This article is a case study that shows how strategic leadership has a huge impact on business operations and online services. This article also examines the different Facebook's current position with that of Google, which is attempting to enter the social networking business.	2011	[6]
3	This article compares and contrasts the user interfaces of Facebook and LinkedIn. LinkedIn focuses on professional self-promotion whereas Facebook's focus is personal self-presentation.	2013	[7]
4	In this research a critical overview of Facebook has been conducted by conducting a literature review. Authors provide future directions to researchers as well as organizations and articles selected for review is between 2006 and 2012.	2013	[8]
5	In this work through questionnaires and survey on social networking sites, the authors try to investigate the actual behavior of users on social networking sites based on social psychology aspects.	2014	[9]
6	A summary of social networking's history, a detailed study on various aspects of social media addiction and Facebook addiction and how it influences the interpersonal relationships are discussed here.	2014	[10]
7	The main focus of this paper is on Facebook's uses and abuses. Authors pointed that people use Facebook for a lot many reasons like maintaining relationships, new connections and to spend their leisure time. They also state that people use Facebook to overcome stress and for mental and sociological well-being.	2014	[11]
8	The factors that influence people's perceptions of trustworthiness on social media platforms are investigated in this study.	2015	[12]
9	The effect of Facebook use on student academic achievement is investigated. Examine how Facebook usage is influenced by	2015	[13]

	socialisation. Through a study, researchers looked into the relationship between academic performance and Facebook use among students.		
10	The purpose of this article is to look at how people use different types of social networking sites. It will look on the effect of social media on teaching and learning. The findings reveal that there is a significant role for social media in student learning process.	2016	[14]
11	The use of social networking sites (SNSs) for behavioural change was studied in greater depth. The problems that social media can have to one's health are also investigated here.	2016	[15]
12	This research paper focuses mainly on the positive and negative aspects of social media. They emphasized how social media platforms will have a broad impact on society especially how they influence health, business, education, society and youth.	2017	[16]
13	The study's goal was to look into the impact of Facebook usage on staff performance. The analysis revealed that using Facebook during work hours has a considerable impact on employee productivity.	2017	[17]
14	This paper presents various approaches followed by Facebook using Machine learning as well as Deep Learning techniques. By applying these techniques user experiences can be improved and many researches are done by Facebook in this area. In this paper authors also try to provide an overview of various design challenges as well as opportunities in this field.	2019	[18]
15	The main goal of this research is to find out how faculty members in a higher education institution use social media, and how they use it to benefit their teaching style. A survey of faculty members at two separate Indian central institutions was done. The findings reveal that social media, particularly Facebook, has grown extremely popular among college teachers and is mostly utilized for communication.	2019	[19]
16	This study outlines the evolution and concept of academic social networking sites, as well as a detailed assessment of empirical studies on the same. Their work also discusses the issues in using such sites as well as their unique contribution towards higher education.	2019	[20]
17	According to the findings, using online social media for blended learning had a substantial influence on teaching learning process. Students become more dynamic, innovative as a result of using online social media platforms for learning.	2020	[21]
18	Based on a survey, the authors describe the findings of their research on the digital skills obtained by young people from Facebook. It is found that students would be more engaged and determined in their academics if more social networking sites were used in their classroom.	2020	[22]

SRINIVAS
PUBLICATION

`	, , , , , , , , , , , , , , , , , , ,		
19	The authors explored the impact of Facebook addiction on productivity, as well as physical and social health. The impacts of specific personality traits on Facebook addiction are moderated by mental health.	2021	[23]
20	This research is a first approach to understand the business model transfer from Facebook to Meta. Meta is putting a lot of effort into developing hardware and software to make the metaverse more accessible to the general public. Facebook's remarkable rise over the previous two decades has shaped one of the most well-known corporate success stories. Meta has once again exhibited great entrepreneurial activity by saying that the firm will employ its existing capabilities, processes, and alliances to shift the adjacent BM into a more virtual future by advancing a bold vision to develop the metaverse.	2022	[24]
21	In this research various data mining techniques are applied on Facebook data and various machine learning techniques are used to analyse various attributes of the datasets.	2022	[25]

The contributions of various researchers on Facebook are shown in the table above. The rise of technology and the global expansion of the internet have both aided in the widespread use of social networking sites. The constant increase in users was influenced by an increase in smartphone users, reduced internet pricing, and other factors. The review focused on empirical publications about Facebook that were published in scholarly journals or publications. We conducted a thorough analysis in this domain from 2010 to 2022 to find the major topic areas to structure our evaluation. Our background research is primarily focused on an overview of Facebook, Machine Learning applications in Facebook, and the usage of Facebook in the Education sector, along with other fields.

3. RESEARCH GAP:

This case study investigates the publicly available data about the Facebook firm and its applications. Many researchers have researched and studied it from many perspectives, yet there is still much to be explored. This research intends to do a research on various areas like history of Facebook, their competitors as well as major acquisitions.

4. RESEARCH AGENDA:

The following is a list of potential research agenda:

- (1) What is the significance of understanding the history and major acquisitions by the company?
- (2) What suggestions do you have for improving corporate responsibility?
- (3) What is the role of artificial intelligence in its services?
- (4) What are Meta's advantages, disadvantages, opportunities, and challenges?

5. OBJECTIVES OF STUDY:

This research looks into the numerous publicly available information on Facebook as well as Facebook-owned services.

The study's goals and objectives are as follows: -

- (1) To study the history and development phases of Facebook.
- (2) To familiarize major acquisitions of Facebook.
- (3) To get a better understanding of how machine learning applications work with the most popular Facebook services.
- (4) To investigate Facebook's corporate social responsibility (CSR) policies and operations in this area.
- (5) To evaluate Facebook as an organization through SWOC analysis.
- (6) To provide recommendations and suggestions to improve the services and products by Facebook.

6. OVERVIEW OF FACEBOOK:

6.1 Mission and Vision:

Facebook's general objective is given by the statement that follows - Give people the power to build community and bring the world closer together. The vision statement is - People use Facebook to stay connected with friends and family, to discover what's going on in the world, and to share and express what matters to them. New tagline for Facebook is "bring the world closer together" [26] and over 3 billion people worldwide utilize their services to share ideas, lend assistance, and create a change [3].

6.2 History of Facebook:

Facebook is a social network that has millions of users, connecting with each other around the globe. It was originally launched in the name "Face Mash" in October 2003 and afterwards changed to "The Facebook" in February 2004. "The Facebook" was founded by Mark Zuckerberg, one of the students in Harvard University, with the help of his fellow roommates in that college. At first, it was only given access to the students in Harvard, but then expanded its access to the colleges nearby in Boston, and then generally expanded to most of the universities and colleges in the USA and Canada. After this expansion, a person along with his email address was able to login into the website. The only requirement was to be above 13 years of age. At the beginning, it was just a student directory which featured photos and basic information of the student. A "facebook" is a common web directory which universities have which store information about the student [27]. Mark Zuckerberg declared the rebranding of Facebook Inc. as Meta in October 2021.

6.2.1 2003-2006:

While at Harvard University in yr.2003, Zuckerberg create a web site Facemash. The site used pictures culled by the online face books of 9 Houses, displaying 2 next to each other at a moment and asking viewers to select the hotter individual, similar to Hot or Not. Facemash received four-hundred and fifty visitors and twenty-two-thousand photo views in its initial 4 hours. The website was shared to various campus groups before being taken down by Harvard administration some days later on. Zuckerberg faced expulsion and have been charged with security breaches, copyright violations, and invasions of personal privacy. The charges have been ultimately withdrawn [28]. Zuckerberg formed The Facebook on February 4, 2004, with the domain name thefacebook.com [29]. After obtaining the website name as Facebook.com in yr.2005 for 2.0 lakh US dollars, the firm eliminated "the" from its name [30]. About Face Corporation has previously owned the domain. Accel Partners financed 12.7 million dollars in Facebook in May 2005, with Jim Breyer [31] contributing 1 million dollar of his personal account. In September 2005, a high-school edition was created [32].

6.2.2 2006-2013:

The transition to Facebook's second phase as a media text occurred in the 2006. In this phase Facebook increased access to the world outside of education. In addition, starting in 2006, a rush of new features was released that drastically changed Facebook. By 2006 May Facebook had opened up to workers of some specific firms including Microsoft and Apple, at the same time it ceased to be a purely educational platform. It became open to anybody above the age of 13 in September that year. Facebook was defined as a social utility which connects you with the community around you, on the welcome page. Moreover, Facebook was made available in languages other than English such as Spanish, German, Japanese, Chinese, and Korean in 2008. Facebook has been available in over 70 languages since 2009, which include Latin, and has an existence on every continent except Antarctica. When Facebook became public on New York Stock Exchange on 18th of May, yr.2012, the company's structure changed as well [33].

Facebook stated on November 15, 2010, that it had paid the American -Farm -Bureau -Federation an undisclosed fee for the domain name fb.com [34]. During February in yr.2011, the Facebook declared its plans to shift its offices to the former Sun Microsystems site at Menlo Park, in California [35]. In March 2012, Facebook launched App Center, a marketplace that sells Facebook-based applications. The store has been supposed to work on Android phones, mobile web browsers and iPhones [36]. Zuckerberg declared at the beginning of October yr.2012 that Facebook has 1.0 billion monthly users [37], with mobile users of six-hundred million, photo uploads of 219.0 billion, and friend connections

of 140.0 billion [38].

6.2.3 2013–2014:

Facebook Graph Search was launched on January 15, 2013, and it contains information of its site to present customers with a precise answer instead of a link to an answer [39]. In 3rd April, yr.2013, Facebook announced Facebook Home, a user-user interface layer for Android handsets that allows for more in-depth interaction with the site. In yr.2013 and yr.2014, Facebook purchased Atlas, an advertising platform and LiveRail a video marketing platform. Instagram which was bought in yr.2012, WhatsApp in yr.2014, Oculus VR in yr.2014 and LiveRail in yr;2014 are a few of Facebook's high-profile acquisitions (2014) [40].

6.2.4 2015-2020:

The Ads API was renamed the MAPI (Marketing API) in 2015, which might be regarded as an attempt by Facebook to widen the scope of its marketing goals by emphasizing the site's function as a marketing development platform [41]. In 12'th of April, yr.2016, Zuckerberg unveiled his ten-year strategy that was based on priority areas: global connectivity, artificial intelligence, and virtual and augmented reality [42]. Sheryl Sandberg, Facebook's COO, declared plans to open Station F, a business incubator campus in France, Paris, on January 17, 2017 [43]. Facebook released Portal and Portal Plus (Portal+) smart displays in November 2018. They are (intelligent personal assistant service) Alexa-enabled. The smartphone comes with a video chat features that works together with Facebook Messenger [44]. The corporation presented its new vision on May 2, 2019, at F8, with the motto "the future is private" [45]. On October 25, 2019, Facebook News was established, which offers chosen stories from news organizations [46]. Facebook began merging Instagram's directly messaging service with its personal Messenger for both Android devices and iOS on August 14, 2020 [47].

6.2.5 2020-present:

Facebook briefly enhanced the importance of ecosystem quality in its news feed algorithm after the 2020 US presidential election [48]. As it switches its attention to constructing the metaverse, Facebook owner, Inc. changed its corporate name to Meta Platforms, Inc., or simply Meta, in October 2021. This transformation, which is similar to the founding of Alphabet as Google's parent firm in yr. 2015, will not change the name of the Facebook social networking site [49]. On November 2, 2021, Facebook declared that it would stop working its facial identification technology and delete data from over a user's of billion [50].

7. MAJOR ACQUISITIONS OF FACEBOOK:

Facebook is a social networking platform that allows users to connect with one another. It was initially intended primarily for college students, but in about 10 months, it had grown to one million users. In the year 2021, Facebook will have approximately 3 billion members! This figure excludes Facebook's acquisitions such as WhatsApp and Instagram. Mark Zuckerberg has bought nearly 92 companies during this period of rapid expansion. WhatsApp Messenger was the company's largest acquisition to date, and it also bought Instagram and Oculus Virtual Reality.

The Facebook's minor acquisitions include fb.com the domain name which it acquired for \$8.50 million in November yr.2010, and the other platforms Drop.io, which it bought for \$10 million in October yr.2010. However, in January yr.2018, Facebook acquired confirmo.io, a Boston-based government-provided ID verification platform, as well as Bloomsbury AI and RedKix in July 2018. In 2019 there were only two acquisitions GROKSTYLE and Chainspace in February. In 2019 Sept. to Nov. yr.2020 Facebook made several large-ticket purchases, like CTRL-Labs and Giphy [51].

By using Facebook's products, people may share their thoughts, ideas, images, and videos, as well as stay connected. Facebook's products are Facebook, Messenger, WhatsApp, Oculus and Instagram, and much more. Facebook allows people to connect, explore, share, and communicates with each another on computers and mobile devices. People can interact with each other through Facebook and using Instagram people can share their photos and videos. Through Messenger users can communicate with each other, among groups through many platforms as well as devices. Through WhatsApp people can send messages across the world so that they can keep in touch. People can use the Oculus virtual reality system and tools to start a truly interactive and immersive environment to learn, play games, train,

consume material, and communicate with others. Facebook's corporate culture is defined by creativity, dramatic changes, and new innovations [52]. The following are just a few of the top firms that Facebook has acquired.

7.1 Instagram



Instagram have been started by Mike Krieger and Kevin Systrom in yr.2010 as a social media platform for sharing videos and photos [53]. The Instagram app allows users to edit, publish, and tag videos and photos. Until Meta bought it in 2012, the company remained autonomous. When Meta bought Instagram, the photo-sharing site was the key draw for many other investors. Instagram, according to some estimates, gets larger revenue from ads than its main business. Meta when purchasing Instagram, they decide to work as a separate platform. According to Meta's decision at the time of acquisition Instagram is working independently as a separate platform [54].

7.2 WhatsApp



WhatsApp, a text-messaging service, was invented by Brian Acton and Jan Koum, who had done together at Yahoo for twenty years. WhatsApp joined with Facebook in yr.2014, with a cost of \$19.0 billion and yet it continues to exist as a standalone app with the objective of building a global messaging service that works swiftly and consistently. Users can now send and receive lot of data, including text, photos, videos, documents, and location data, and also to make and receive phone calls, using their software. WhatsApp provide end-to-end encryption and hence it can be used to share user's personal moments as well. Its main aim is to allow people to freely interact each other across the world [55].

7.3 Oculus VR



The Oculus Rift, a virtual reality headgear designed specifically for video games, was released in 2012. Facebook Inc. bought this virtual reality technology business in March 2014, shortly after it bought WhatsApp and it cost \$2.0 billion to buy it. In November 2015, they joined along with Samsung to develops a Samsung Gear VR for Samsung Galaxy smartphones. Facebook wants 1 billion VR headsets with people by 2020[53]. Meta's acquisition of Oculus VR gave them a quick presence in the virtual reality market at a time when interest in the technology was exploding among developers [54].

7.4 Onavo



Onavo is an Israeli firm that does web analytics on other mobile applications to detect client

consumption. It was founded in 2010 and in October 2013, Meta purchased Onavo for an undisclosed sum believed by some experts to be between \$100 million and \$200 million. Onavo was a stand-alone company at the time of the acquisition. Despite the fact that Onavo was not one of Meta's larger investments, its expertise could well have allowed Meta to make crucial assumptions about which additional companies and apps to obtain. On a few cases, Onavo was labeled as spyware, prompting Meta to pull the programme by both the Android and iOS app stores in the face of protest [54].

7.5 Beluga



Meta bought Beluga, a texting software service provider which was founded in 2010. It is a Messaging service acquired on March 2, 2011 and its cost is undisclosed. It was purchased by Meta for an undisclosed value during the startup's funding process. Facebook acquired the technology that would later become the hugely popular Messenger platform when it purchased Beluga. Meta was able to extend its offerings while also eliminating a possible competitor [54].

8. APPLICATIONS OF MACHINE LEARNING TECHNOLOGY ON FACEBOOK:

To function, the whole business depends on data. Data-driven decisions are becoming more important in making sure that the company stays competitive or not. Machine learning has the ability to unlock the value of consumer and corporate data and allow companies to get decisions that keep them prominent [56]. Many firms have effectively adopted artificial intelligence (AI) and machine learning to raise and enhance customer satisfaction by over 10%, demonstrating that machine learning is transforming the marketing field. According to Forbes, 57% of enterprise leaders feel that increasing customer experiences and support will be the most critical growth benefit of AI and ML [57]. Machine learning is a growing technology that serves all types of businesses in all industries. The applications are endless. From transportation to cyber security, healthcare to financial services and marketing to government, machine learning can assist any business react to go towards an adaptive way [58].

Facebook's classification, ranking, and content interpretation capabilities all rely on machine learning. These include things like your news feed, advertisements, search, categorizing goods, recognizing people's faces, and translation from one language to another. You'll need to cooperate with the company's internal divisions to accept their use case and also have the AI/ML experts identify the best ML algorithms for said use case to build a platform like Facebook's. The best model is determined by factors such as interpretability, simplicity, accuracy, speed, and scalability [59].

Figure 1 depicts Facebook's AI ecosystem in action. The first layer entails the integration of key machine learning technologies like PyTorch, ONNX and Caffe2. Workflow management and FB learner deployment are included in the second tier, while server administration, storage management, and network strategy are included in the third layer [60].

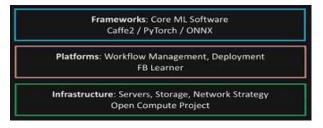


Fig. 1: AI in Facebook [61]

Today, Facebook is the most popular social networking platform, and it collects a large amount of data from its users on a daily basis, which it must store, process, and analyze, additionally based on user profiles and interests, present friend recommendations and events. The sort of behavior as well as the ML/DL algorithm used in Facebook are shown in Table 2.

Table 2: ML/DL Algorithms used in Facebook [61]

Kind of activity	ML/DL algorithm used		
Newsfeed, ads, search and sigma	Multilayer perceptron		
Sigma	General Classification and Gradient Boosted Decision Tree		
Lumos	Convolutional Neural Networks (CNN)		
Text understanding, translation and speech recognition	Recurrent Neural Networks (RNN)		
Recommendation to users	Collaborative Filtering		
Textual analysis	Tool Called DeepText		
Facial recognition	DeepFace		
Targeted advertising	Deep Neural Networks (DNN)		

Facebook uses machine learning and Artificial intelligence to enhance its products and services all over the industry. They update and build a model such rank feeds and search result, creates new text-understanding algorithms to avoid spam and false. These attempts work as a binding agent between science, research, and Facebook connections [61]. Hazelwood et.al [62] in their paper give a view on various ML based applications in Facebook. A list of Facebook products and services that use machine learning is described in the subsections below.

8.1 News Feed ranking:

The News Feed ranking algorithms assist individuals view news that interests them more whenever they visit Facebook. Basic systems are taught to recognize a wide range of users and contextual elements that should affect how material is ranked in the end. When a user visits Facebook again, the model is used to create a customized selection of the finest posts, photographs, and other items from dozens of applicants, and the best media layout.

8.2 Advertising:

Machine learning is used by Adverts to decide the ads for particular user. Advertising models are built to know how user context, traits, interactions, previous and ad quality may best predict whether a person would click on an ad, visit a website, and/or purchase a product. If a user visits to Facebook later, their inputs are placed into a trained system, which chooses which advertisements to display instantly [63].

8.3 Sigma:

The classification and anomaly detection system that is used for many of internal applications which consists of integrity, spam detection, transactions, membership, authorization, and recommendations is termed as Sigma. Sigma uses hundreds of distinct models every day, most of it has been developed to do certain tasks.

8.4 Language Translation:

Language Translation is the system that manages the globalization of Facebook content. Facebook translations are available in a variety of languages. Each language pair has its own model at the moment, and multi-language models are being investigated.

8.5 Speech Recognition:

Speech Recognition is a service that transforms audio data into text which allows video captioning to be done automatically. The majority of broadcasts are currently in English; however, more languages will be added in the future.

9. FACEBOOK FACTS AND FIGURES:

Facebook was launched in yr.2004 by Harvard undergraduate Mark Zuckerberg as a social networking website. Originally developed for Harvard university students, it gets popularity among other universities before being released to the general society in yr.2006. Facebook has overtaken Twitter as the globe's extremely popular social media network. By the end of 2021, Facebook took over 2.9 billion

worldwide active users per month, with 3.580 billion users gain access to any of the firm 's core services on a regular basis, including Facebook, WhatsApp, Instagram, and Messenger [64]. The following graphs illustrate the rise in revenue and net income of Facebook until 2021, based on the statistics presented in "statista.com".

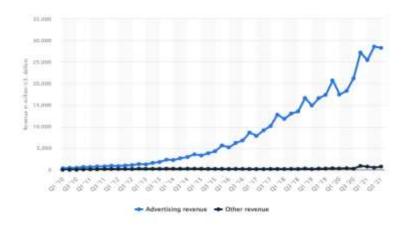


Fig. 2: Global revenue by segment for Facebook as of the third quarter of 2021(in million U.S. dollars) [64]

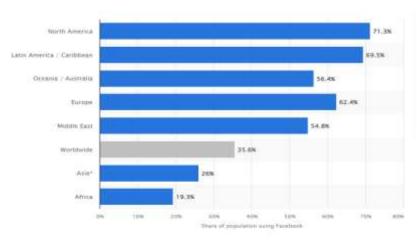


Fig. 3: Percentage of global population using Facebook as of March 2021, by region [64]

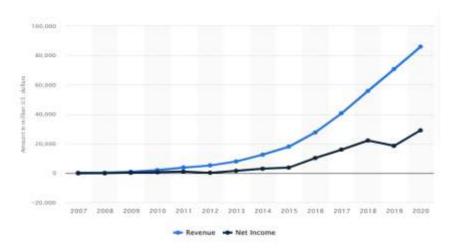


Fig. 4: Revenue and net income of Facebook from 2007 through 2020 (in million US dollars) [64]

10. BUSINESS PRINCIPLES OF FACEBOOK:

Facebook's administrative structure is a variation on the conventional corporate structure. This structure was modified to meet the requirements of operations including the Internet and information technology. The content and design of a company are determined by its organizational or corporate structure to meet its needs.

According to Facebook's official website, Hacker Way, Menlo Park, California 94025 is where the company's headquarters are situated. As previously stated, Mark Zuckerberg's key driving business strategy approach is the "Hacker Way. "As of December 31, 2020, Facebook, now Meta, employed 58,604 people. There were also 2.41 billion monthly active users, according to the business [65].

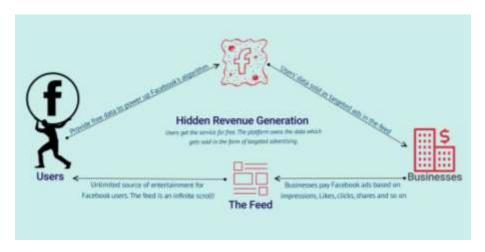


Fig. 5: Facebook Business Model [44]

Facebook's overall competitive strategy aids the company's success by improving its efficiency and making client access more convenient. Facebook's overall competitive strategy aids the company's success by improving its efficiency and making client access more convenient. Facebook Inc. competes on the basis of a generic cost leadership strategy. This strategy intends to decrease corporate costs as much as feasible. Cost-cutting allows the company to compete by reducing its costs. As a strategy of expanding the company, Facebook's numerous activities lay a strong focus on brand recognition. The general plan and aggressive growth strategies of the company are in line with the company's strengths. Facebook's extensive plans include brand recognition (Market Penetration), Marketing strategy (Market Development), Diversity (Diversification), and Product design (Product Development).

Brand Recognition The main part of Facebook's development is built by a market penetration-heavy strategy. This aggressive strategy aims to enhance market share. This approach encourages the company's total competitive goal line of cost leadership by expanding market access using existing assets.

Marketing strategy Market strategy is Facebook's second strategy for company expansion. This approach aims to break into new markets. This strategy is in line with Facebook's objectives, which highlight global market access as a key growth driver. That market penetration fulfils the company's cost leadership generic competitive strategy, maximizing business efficiency and effectiveness.

Diversification Facebook Inc.'s strategic plan prioritizes diversification. The primary objective of this global expansion strategy is to establish new businesses. Cost leadership is a generic marketing advantage that incorporates reduction in costs, which aids in the execution of the aggressive strategy.

Product Design Product development is a key component of Facebook Inc.'s social media business's aggressive growth strategy. The launch of new items is part of this entire plan. When combined with this aggressive expansion strategy, the cost leadership generic competitive approach enhances gross margins [66].

11. STAKEHOLDERS OF FACEBOOK:

Facebook's social media business has an impact on the people all over the globe. The firm's corporate social responsibility measures must fulfil global standards to satisfy customers' interests. Facebook Inc. has a number of stakeholder groups related to corporate citizenship, which are mentioned below in

SRINIVAS PUBLICATION

order of priority in their CSR strategy.

- 1. Members /Users
- 2. Governments
- 3. Advertisers
- 4. Employees
- 5. Groups

Users / Members:

Facebook's online social networking website has thousands of subscribers. Corresponding to Facebook Inc.'s vision and objective declarations, these members or subscribers of the online community were its stakeholder group that accepts the company's high priority in corporate citizenship. Users are important for CSR because they influence the appeal and desirability of the company's display advertising service. As stakeholders, the customers are looking into the simplicity and reliability of services provided as well as the security measures taken for the sensitive information. Facebook's corporate strategy strengthen its social networking services, so that the users accounts are safe.

Advertisers:

Facebook's major part of income is from advertisements. So this stakeholder is important as they directly affect the company's financial status. Reliable services and accurate data from company are the necessary requirements of these stakeholders. Facebook Inc. uses automated systems as part of their social responsibility to avoid human participation in advertising.

Employees:

Facebook Inc. employees are praised for their services to the social media industry. These corporate citizenship stakeholders have a substantial impact on the business's evolution, notably in terms of product improvement and development. Employees' CSR interests consist of excellent pay and advancement opportunities. Facebook's corporate social responsibility programmes explicitly target such objectives through competitive human resource strategies.

Governments:

Govts. are significant CSR stakeholders as they put obligations on the social media industry. This influence ensures that the company adheres to governmental objectives and interests, which include regulatory requirements. Negotiations and collaborations with governments are part of Facebook's corporate social responsibility strategy to express support for government activities and programmes.

Communities:

Communities as a stakeholder group receive the least attention from Facebook Inc.'s corporate citizenship efforts. These stakeholders have a significant impact on the organization through influencing user/member perceptions and advertising. Companies' developmental assistance is appealing to communities. Facebook describes these CSR concerns with Internet.org and green technology, a website launched in 2013 to assist developing countries in gaining internet access [67].

12. SUSTAINABILITY AT FACEBOOK:

Education, technology, social justice, and economic opportunity are among Facebook's top focus areas in terms of Corporate Social Responsibility. The Chan Zuckerberg Initiative (CZI) is Facebook founder Mark Zuckerberg's principal platform for donating to humanitarian causes. Facebook Inc., the world's biggest social media company, has programmes and policies in place to address the requirements of some of its most significant stakeholders. Depending on such CSR concerns, it is advised that Facebook Inc. strengthen its corporate citizenship activities in order to solve community issues, particularly through environmental and ecological community development initiatives, which are two of the company's CSR commitments. To achieve full compliance, the organization should also employ stricter data privacy and security policies.

Education: CZI collaborates with educators, families and students to develop educational tools and programmes, as well as providing support, to make learning and human development science more accessible. A dedicated team interacts with teachers and educators to develop resources that meet kids' requirements. The team aims to grasp the intricacies of today's classrooms in order to create materials and solutions that will help students learn more effectively.

Social Justice: Like in education CZI give emphasis to Housing Affordability, Criminal Justice

SRINIVAS PUBLICATION

Reform, and Immigration Reforms. The firm also assists people in locating inexpensive homes and bringing millions of immigrants who have integrated into American society closer to citizenship.

Science and Technology The main focus of CZI is in the area of science and technology. A team of experts works on scientific and technology advancements that can help tackle environmental as well as economic issues. Many projects are introduced to help and provide assistance to researchers for their study.

Sustainability Facebook is likewise working hard to ensure its long-term viability. Facebook give more importance to Climate changes, renewable energy and sustainability issues. However, it increases efficiency and aids the organization in better controlling its environmental impacts; on the other hand, it has longer-term benefits, such as a better social image [68].

13. SWOC ANALYSIS:

SWOC analysis is a very common management tool used by companies in assessing different factors involved before making a strategic business decision while focusing on long-term stability and sustainability. The acronym SWOC is made from the first letters of the four factors analyzed, namely weaknesses, strengths, challenges and opportunities. Internal elements such as weaknesses and strengths might be evaluated, while external factors such as opportunities and threats exist [69]. SWOC analysis is crucial for the existence, growth and profitability of any organization/venture. Facebook is among the most widely used social networking platforms in the world. Facebook is a better way to stay in touch with others. While Facebook has established its stronghold in some domains, it suffers from several weaknesses in some other domains. a compressive evaluation of Facebook strength, weakness, opportunities and challenges as summarized in the following subsections [70-71].

Strength:

- (1) Facebook enjoys global market dominance in the social media space.
- (2) Facebook is hailed as the world's best employer.
- (3) The company offers diverse products and services.
- (4) Facebook's advertising and marketing campaigns are creative and effective.
- (5) The marketing strategy adopted by the company has produced great results in the past.
- (6) Over the years, Facebook has acquired several loyal users for its products and services.
- (7) The company thrives under the visionary leadership of its founder Mark Zuckerberg.

Weaknesses:

- (1) Several concerns regarding users' privacy have been levelled against Facebook.
- (2) Friction in management is a hindrance to the growth of the company.
- (3) Facebook's overdependence on advertising can turn out to be a problem, as the dynamics of online advertising and digital marketing can change anytime.
- (4) There have been allegations of racial bias at Facebook.
- (5) Some actions and policies of Facebook have been controversial, which led to the spread of negative publicity.
- (6) Fake news propagated through Facebook can affect the company's reputation.

Opportunities:

- (1) Facebook can expand the existing platform to include more products and services.
- (2) By targeting a different audience, several new users can be acquired.
- (3) Facebook has become a ubiquitous platform and other service providers are also integrating Facebook to their applications and services.
- (4) New deals and acquisitions can lead the company to economic boom.
- (5) Changes in advertising trends are actively explored and used to their advantage.
- (6) Facebook provides an active workplace, thereby keeping the employees content and productive.
- (7) The company is also a frontrunner in the race to develop autonomous vehicles.

Challenges:

- (1) More and more nations are tightening their regulations on users' data and privacy.
- (2) As there are no barriers to entry, new competitors can saturate the market.



- (3) Several countries have placed restrictions on the usage of Facebook, while some have gone to the extent of banning the social media platform altogether.
- (4) Data leaks and security breaches at Facebook can affect millions of its users.
- (5) Some are of the opinion that the corporate identity of Facebook is in ruins.
- (6) Duplicates and fake accounts are lingering issues for any online platform, including Facebook.
- (7) There are several financial regulations placed on multinational corporations, which can affect their global expansion and operations.

It can be understood that the pandemic and global switch to remote work has contributed to the greater popularity of social media platforms. Facebook is in a cycle of constant innovation, delivering new products and services that align with the users' requirements and go on to set the standards in the industry.

14. FINDINGS:

Facebook is an epitome of the rise and growth of internet companies in the past decade. Within a few years, it has grown across geographies and verticals to be reckoned as a highly valued brand and corporation. People of all ages are interested in using it. Firms spend a lot of money on Facebook advertising. Facebook was the first mover in several domains that they had to encounter problems first-hand and solve them. While their contributions have been of phenomenal importance to the society, Facebook has also been criticized for its lax policies on privacy. There are also controversies surrounding Facebook's attempts to curb free speech and tilt the political status quo in national elections.

15. SUGGESTIONS:

Based on the authors' observations, the following recommendations are put forward-

- (1) Users must be provided the option to manage the advertisements being served to them. Providing subscription-based plans for ad-free services is also an option.
- (2) The option to unsubscribe from routine and irrelevant notifications must be provided.
- (3) Incorporating user requests and suggestions into the development process is essential to keep the platform engaging and interesting for long-time users.
- (4) The company can explore secondary revenue sources, so that the users won't get the feeling that they are being exploited for profit in exchange for free services.
- (5) Users should be able to take charge of their data what is being shared with third party advertisers, with whom is the data shared and how the data will be used.
- (6) Educating the users on the data being collected from them and its privacy would be a great display of goodwill and can alleviate several queries of the concerned public.
- (7) Facebook has been criticized for delays in responding to security events. Creating a dedicated team to help users regarding security lapses is highly recommended.
- (8) While Facebook accounts are primarily personal in nature, organizations could benefit from a more business-friendly version of the platform with added features, privacy and security controls.

14. CONCLUSION:

As a social media platform more than 2 billion individuals use Facebook consistently, Facebook is without a doubt an indispensable piece of our day today life and also It is among the most powerful brands on social media platforms. Diversification is one of the major strengths of Facebook which is obtained through its family products like WhatsApp, Instagram, Messenger, Oculus, Portal and Workplace. Over the past 15 years Facebook acquired more than 78 companies. During these recent years they are giving more importance to Artificial Intelligence and other new technological advancements so that it could grow miles ahead of its competitors. Other than a social networking and messaging platform Facebook is also a commercial center for used products, a VPN company, and a satellite developer.

REFERENCES:

[1] Robinson, J. (2021, May 26). *How facebook scales artificial intelligence & machine learning*. Medium. Retrieved November 11, 2021, from https://jamal-robinson.medium.com/how-facebook-scales-artificial-intelligence-machine-learning-693706ae296f

- [2] Miller, C. (2019, December 17). *These were the most-downloaded apps and games of the Decade*. 9to5Mac. Retrieved November 11, 2021, from https://9to5mac.com/2019/12/16/apps-and-games-of-the-decade/
- [3] *Company info: Meta.* Company Info | Meta. (n.d.). Retrieved November 12, 2022, from https://about.facebook.com/company-info/
- [4] *Machine learning*. Meta Research. (n.d.). Retrieved November 12, 2022, from https://research.fb.com/category/machine-learning/
- [5] Roblyer, M. D., McDaniel, M., Webb, M., Herman, J., & Witty, J. V. (2010). Findings on facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites. *The Internet and Higher Education*, 13(3), 134–140. Google Scholar
- [6] Ray, J. S. (2011). Facebook: A case study of strategic leadership. *SSRN Electronic Journal*, 1(1), 1-35. Google Scholar≯
- [7] Van Dijck, J. (2013). 'You have one identity': Performing the self on Facebook and LinkedIn. *Media, culture & society*, 35(2), 199-215. Google Scholar ?
- [8] Caers, R., De Feyter, T., De Couck, M., Stough, T., Vigna, C., & Du Bois, C. (2013). Facebook: A literature review. *New media & society*, 15(6), 982-1002. Google Scholar
- [9] Donlan, L. (2012). Exploring the views of students on the use of Facebook in university teaching and learning. *Journal of Further and Higher Education*, 38(4), 572–588. Google Scholar
- [10] Griffiths, M. D., Kuss, D. J., & Demetrovics, Z. (2014). Social networking addiction: An overview of preliminary findings. *Behavioral addictions*, 119-141. Google Scholar
- [11] Ryan, T., Chester, A., Reece, J., & Xenos, S. (2014). The uses and abuses of Facebook: A review of Facebook addiction. *Journal of behavioral addictions*, 3(3), 133-148. Google Scholar
- [12] Li, R., & Suh, A. (2015). Factors influencing information credibility on social media platforms: Evidence from facebook pages. *Procedia Computer Science*, 72(1), 314–328. Google Scholar
- [13] Ainin, S., Naqshbandi, M. M., Moghavvemi, S., & Jaafar, N. I. (2015). Facebook usage, socialization and academic performance. *Computers & Education*, 83(1), 64-73. Google Scholar
- [14] Eid, M. I., & Al-Jabri, I. M. (2016). Social networking, knowledge sharing, and student learning: The case of university students. *Computers & Education*, 99(1), 14-27. Google Scholar
- [15] Laranjo, L. (2016). Social Media and Health Behavior Change. *Participatory Health Through Social Media*, *1*(1),83–111. Google Scholar ?
- [16] Akram, W., & Kumar, R. (2017). A study on positive and negative effects of social media on society. *International Journal of Computer Sciences and Engineering*, 5(10), 351-354. Google Scholar
- [17] Adzovie, D. E., Nyieku, I. E., & Keku, J. A. (2017). Influence of Facebook usage on employee productivity: A case of university of cape coast staff. *African journal of business management*, 11(6), 110-116. Google Scholar
- [18] Wu, C. J., Brooks, D., Chen, K., Chen, D., Choudhury, S., Dukhan, M., ... & Zhang, P. (2019, February). Machine learning at facebook: Understanding inference at the edge. In 2019 IEEE International Symposium on High Performance Computer Architecture (HPCA),1(1), 331-344. Google Scholar
- [19] Nasir, J. A., & Khan, N. A. (2019). Faculty member usage of social media and mobile devices in higher education institution. *International Journal of Advance and Innovative Research*, 6(1), 17–27. Google Scholar

- [20] Jordan, K. (2019). From social networks to publishing platforms: A review of the history and scholarship of academic social network sites. *Frontiers in Digital Humanities*, 6(1), 5-20. Google Scholar

 →
- [21] Ansari, J. A. N., & Khan, N. A. (2020). Exploring the role of social media in collaborative learning the new domain of learning. *Smart Learning Environments*, 7(1), 1-16. Google Scholar
- [22] Castillo de Mesa, J., Gómez-Jacinto, L., López Peláez, A., & Erro-Garcés, A. (2020). Social networking sites and youth transition: The use of Facebook and personal well-being of social work young graduates. *Frontiers in psychology*, 11(1), 230-235. Google Scholar
- [23] Nikbin, D., Iranmanesh, M., & Foroughi, B. (2021). Personality traits, psychological well-being, Facebook addiction, health and performance: Testing their relationships. *Behaviour & Information Technology*, 40(7), 706-722. Google Scholar
- [24] Kraus, S., Kanbach, D. K., Krysta, P. M., Steinhoff, M. M., & Tomini, N. (2022). Facebook and the creation of the metaverse: Radical business model innovation or incremental transformation? *International Journal of Entrepreneurial Behavior & Research*, 28(9), 52–77. Google Scholar
- [25] Rehman, I., Umair, M., Akhtar, S., Khan, W., Abbas, H., & Choudhary, R. K. (2022). A Comprehensive Comparative Evaluation of Machine Learning Algorithms on Facebook Comment Dataset. *Journal of Independent Studies and Research Computing*, 19(2), 59-69. Google Scholar ₹
- [26] Zuckerberg, M. (n.d.). *Bringing the World Closer Together*. Facebook. Retrieved November 12, 2022, from https://www.facebook.com/notes/393134628500376/
- [27] Facebook. DBpedia. (n.d.). Retrieved November 12, 2022, from https://dbpedia.org/page/Facebook
- [28] Facemash creator survives ad board: News: The Harvard Crimson. News | The Harvard Crimson. (n.d.). Retrieved November 12, 2022, from https://www.thecrimson.com/article/2003/11/19/facemash-creator-survives-ad-board-the/
- [29] Rothman, L. (2015, February 4). *Facebook history: Thefacebook.com launched February 4*, 2004. Time. Retrieved November 12, 2022, from https://time.com/3686124/happy-birthday-facebook/
- [30] Williams, C. (2007, October 1). Facebook wins Manx Battle for Face-Book.com. The Register. Retrieved November 12, 2022, from https://www.theregister.co.uk/2007/10/01/facebook_domain_dispute
- [31] Disney, S. (2012, October 11). *Jim Breyer* (accel partners). CNBC. Retrieved November 13, 2022, from https://www.cnbc.com/id/47387334
- [32] EverybodyWiki Bios & Wiki. (2020, April 22). *Facebook*. EverybodyWiki Bios & Wiki. Retrieved November 13, 2022, from https://en.everybodywiki.com/Facebook
- [33] Brügger, N. (2015). A brief history of facebook as a media text: The development of an empty structure. *First Monday*, 20(1), 1-20. Google Scholar ✓
- [34] Miglo, A. (2016). Capital Structure Analysis: Some examples. *Capital Structure in the Modern World*, 211–226. Google Scholar
- [35] Parr, B. (2022, March 11). *These are Facebook's new offices [photos]*. Mashable. Retrieved November 14, 2021, from https://mashable.com/2011/02/07/facebook-menlo-park-pics/
- [36] BBC. (2012, May 10). Facebook app store announced Amid Mobile revenue worries. BBC News. Retrieved November 14, 2021, from https://www.bbc.co.uk/news/technology-18017379
- [37] Cable News Network. (n.d.). *Facebook reaches one billion users*. CNNMoney. Retrieved November 14, 2022, from https://money.cnn.com/2012/10/04/technology/facebook-billion-users/index.html
- [38] Ionescu, D. (2012, October 4). Facebook rules the social networking world with 1 billion users. PCWorld. Retrieved December 5, 2021, from

- $\frac{https://web.archive.org/web/20210227085938/https://www.pcworld.com/article/2011123/facebook-rules-the-social-networking-world-with-1-billion-users.html$
- [39] Tsukayama, H. (2013, January 15). Facebook introduces Social Search Feature. The Washington Post. Retrieved December 5, 2021, from https://www.washingtonpost.com/business/technology/facebook-introduces-social-search-feature/2013/01/15/599c6f7e-5f3d-11e2-9940-6fc488f3fecd_story.html
- [40] Helmond, A., Nieborg, D. B., & van der Vlist, F. N. (2019). Facebook's evolution: Development of a platform-as-infrastructure. *Internet Histories*, 3(2), 123–146. Google Scholar
- [41] Swartz, J., & Guynn, J. (2016, April 13). Facebook's Mark Zuckerberg steps into political fray. USA Today. Retrieved December 10, 2021, from https://www.usatoday.com/story/tech/2016/04/12/zuckerbergs-10-year-plan-expand-facebook-empire/82936814/
- [42] Shead, S. (2017, January 17). Facebook is planning to open a startup incubator in Paris. Business Insider. Retrieved December 11, 2021, from http://www.businessinsider.com/facebook-launches-startup-incubator-in-station-f-2017-1
- [43] Holland, P. (n.d.). Facebook Portal Plus Review: Facebook portal brings Alexa and messenger video chats to one device. CNET. Retrieved December 15, 2021, from https://www.cnet.com/reviews/facebook-portal-plus-preview/
- [44] Wollerton, M. (2018, November 8). *You can buy Facebook's Portal Smart displays starting today*. CNET. Retrieved December 15, 2021, from https://www.cnet.com/news/facebooks-portal-video-calling-smart-display-hits-stores/
- [45] CBS News. (2020, May 16). *Inside the home of Facebook CEO Mark Zuckerberg and wife Priscilla Chan*. CBS News. Retrieved December 15, 2021, from https://www.cbsnews.com/video/inside-the-home-of-facebook-ceo-mark-zuckerberg-and-wife-priscilla-chan/
- [46] Dwyer, C., & Chappell, B. (2019, October 25). Facebook news: App will offer hand-picked stories from NPR, other outlets. NPR. Retrieved December 16, 2021, from https://www.npr.org/2019/10/25/773331294/facebook-news-app-will-offer-hand-picked-stories-from-npr-other-outlets
- [47] Mao, T., & Wen, Y. (2021, December) The Paradox of Platform Monopoly between Tencent and Facebook: *Theory, Practice and Governance*, *I*(1), 1-28. Google Scholar X
- [48] Roose, K. (2020, December 17). Facebook reverses postelection algorithm changes that boosted news from authoritative sources. The New York Times. Retrieved December 16, 2021, from https://www.nytimes.com/2020/12/16/technology/facebook-reverses-postelection-algorithm-changes-that-boosted-news-from-authoritative-sources.html
- [49] Dwoskin, E. (2021, October 29). Facebook is changing its name to Meta as it focuses on the virtual world. The Washington Post. Retrieved December 17, 2021, from https://www.washingtonpost.com/technology/2021/10/28/facebook-meta-name-change/
- [50] Metz, R. (2021, November 8). Facebook is shutting down its facial recognition software. CNN. Retrieved December 17, 2021, from https://www.cnn.com/2021/11/02/tech/facebook-shuts-down-facial-recognition/index.html
- [51] Facebook acquisitions The Complete List (2022)! [infographic]. Techwyse (n.d.). Retrieved December 17, 2021, from https://www.techwyse.com/blog/infographics/facebook-acquisitions-the-complete-list-infographic
- [52] Kumar, B. R. (2019). Major Acquisitions by Facebook. In *Wealth Creation in the World's Largest Mergers and Acquisitions*, 1(1), 321-327. Google Scholar ✓

- [53] Roy, R. (2020, December 29). *Top 5 companies owned by Facebook Inc.*. TechnoSports. Retrieved December 17, 2021, from https://technosports.co.in/2020/07/04/top-5-companies-owned-by-facebook-inc/
- [54] Reiff, N. (2021, November 3). *5 companies owned by Facebook (Meta)*. Investopedia. Retrieved December 17, 2021, from https://www.investopedia.com/articles/personal-finance/051815/top-11-companies-owned-facebook.asp
- [55] *About Whatsapp*. WhatsApp.com. (n.d.). December 17, 2021, from https://www.whatsapp.com/about
- [56] What is machine learning ml and why is it important? NetApp. (n.d.). Retrieved December 19, 2021, from https://www.netapp.com/artificial-intelligence/what-is-machine-learning/
- [57] What is machine learning and how will it impact business? Quantilus. (2018, September 6). Retrieved December 19, 2021, from https://quantilus.cn/machine-learning-business/
- [58] *The importance of Machine Learning Data*. DataRobot AI Cloud. (2021, December 19). Retrieved December 19, 2021, from https://algorithmia.com/blog/the-importance-of-machine-learning-data
- [59] Medium. (2021, May 26). *How facebook scales artificial intelligence & machine learning*. Medium. Retrieved December 20, 2021, from https://jamal-robinson.medium.com/how-facebook-scales-artificial-intelligence-machine-learning-693706ae296f
- [60] Umapavankumar, K., Srinivasu, S. V. N., Siva Nageswara Rao, S., & Thirumala Rao, S. N. (2020). Machine Learning Usage in Facebook, Twitter and Google Along with the Other Tools. In *Emerging Research in Data Engineering Systems and Computer Communications*, 1(1), 465-471. Google Scholar
- [61] *ML applications archives*. Engineering at Meta. (2021, July 15). Retrieved December 20, 2021, from https://engineering.fb.com/category/ml-applications/
- [62] Hazelwood, K., Bird, S., Brooks, D., Chintala, S., Diril, U., Dzhulgakov, D., ... & Wang, X. (2018, February). Applied machine learning at facebook: A datacenter infrastructure perspective. In 2018 IEEE International Symposium on High Performance Computer Architecture (HPCA), 1(1), 620-629. Google Scholar
- [63] He, X., Pan, J., Jin, O., Xu, T., Liu, B., Xu, T., ... & Candela, J. Q. (2014, August). Practical lessons from predicting clicks on ads at facebook. In *Proceedings of the eighth international workshop on data mining for online advertising*, 1(1), 1-9. Google Scholar ?
- [64] *Topic: Facebook.* Statista. (n.d.). Retrieved December 20, 2021, from https://www.statista.com/topics/751/facebook/#dossierSummary_chapter1.
- [65] Cuofano, G. (2022, April 3). *How does facebook [meta] make money? facebook business model analysis- updated 2022.* Four Week MBA. Retrieved December 20, 2021, from https://fourweekmba.com/how-does-facebook-make-money/
- [66] Greenspan, R. (2018, May 23). Facebook Inc.'s Generic Strategy & Intensive Growth Strategies. Panmore Institute. Retrieved December 20, 2021, from http://panmore.com/facebook-inc-generic-strategy-intensive-growth-strategies.
- [67] Kissinger, D. (2018, June 20). Facebook Inc.. Corporate Social Responsibility & Stakeholder analysis. Panmore Institute. Retrieved December 20, 2021, from http://panmore.com/facebook-inc-stakeholders-corporate-social-responsibilities
- [68] Pratap, A. (2021, November 2). *CSR and Sustainability at facebook*. notesmatic. Retrieved December 20, 2021, from https://notesmatic.com/csr-and-sustainability-at-facebook/#:~:text=Corporate%20social%20responsibility%3A,founder%20invests%20in%20philanthropic%20activities
- [69] Aithal, P. S. (2017). Company Analysis—The Beginning Step for Scholarly Research. *International Journal of Case Studies in Business, IT and Education (IJCSBE)*, 1(1), 1-18. Google Scholar ✓

SRINIVAS PUBLICATION

- [70] Facebook Swot Analysis (2022). Business Strategy Hub. (2022, February 11). Retrieved December 20, 2021, from https://bstrategyhub.com/facebook-swot-analysis/
- [71] Aithal, P. S., & Kumar, P. M. (2015). Applying SWOC analysis to an institution of higher education. *International Journal of Management, IT and Engineering*, 5(7), 231-247. Google Scholar
