# Advancement and Contribution of Mobile Smartphones to the Consumer

**K. Annapoorneshwari Shetty [1] & Subrahmanya Bhat [2]**

[1] Research Scholar, Institute of Computer Science and Information Science, Srinivas University, Mangalore, India,
Orcid ID: 0000-0003-1900-256X; Email ID: annapoorna.nikesh@gmail.com
[2] Institute of Computer Science and Information Science, Srinivas University, Mangalore, India,
Orcid ID: 0000-0003-2925-1834; Email ID: sbhat.ccis@srinivasuniversity.edu.in

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[1] Research Scholar, Institute of Computer Science and Information Science, Srinivas University, Mangalore, India,
Orcid ID: 0000-0003-1900-256X; Email ID: annapoorna.nikesh@gmail.com
[2] Institute of Computer Science and Information Science, Srinivas University, Mangalore, India,
Orcid ID: 0000-0003-2925-1834; Email ID: sbhat.ccis@srinivasuniversity.edu.in

## ABSTRACT

**Background/purpose:** *Mobile phones, sometimes known as cell phones since they operate on a cellular network design, have grown significantly in size and technology over the years. Researchers at Bell Labs in the US started experimenting with the idea of a cellular phone network in the 1970s. The plan was to create a network of hexagonal cells that would each have a base station and cover the entire nation. These base stations would use radio frequencies to transmit and receive messages from mobile phones. The purpose of a telephone is to transmit and receive human voice. The most common type of communication in use today is the telephone. It is a device that is affordable, simple to use, and allows users a one-on-one level of contact that is not possible through any other medium. Today, there are billions of telephones in use around the globe.*

**Objective:** *This study focuses on examining how each gadget is utilised and how that affects the online reputation of airline companies.*

**Design/Methodology/Approach:** *Multiple academic sources and publications were accessed to get the data for this research study.*

**Findings/Result:** *In the first ten years of the twenty-first century, mobile phones altered the way we communicate. Since 2005, both developing and developed countries have seen a reduction in the use of landlines as a result of mobile communication, which also enables connectivity in even the most distant regions of the globe. Intelligent and adaptable automation is necessary due to rising client demands and heightened international competitiveness. Mobile robotics, an interaction technology, has a lot of industry potential because it addresses this.*

**Originality/Value:** *The outcome offers a concise rundown of several technological mobile manufacturing firms and new expertise building industries in the viable race.*

**Paper type:** *A Research Case study paper - emphases on establishments in a production, usages and growth of mobile companies in change of technology.*

**Keywords:** Smartphones, Mobile, Sales, Business, Social media, SWOC Analysis.

## 1. INTRODUCTION :

The unique benefits of mobile social media can improve quality of life. Smartphone use that is interpersonal builds social capital. The influence of social capital on psychological well-being is mediating [1]. Mobile technology is increasingly being used by clinicians to access up-to-date information for patient care [2]. The amount of study on the subject of incorporating cell phones into the educational system and the academic learning environment has steadily increased in recent years. The primary debate in this field of study swings back and forth between the advantages and disadvantages of using a smartphone in class. The current study attempted to focus on both sides of the lectern - lecturers and students - about the use of smartphones within the academic classroom in an effort to widen the breadth of research on the topic [3]. A phenomenon associated with the rise in smartphone usage is the use of mobile applications (apps), which has been expanding in the

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technological world. Despite the enormous market for mobile apps, there aren't many research on the factors that influence whether or not users stick with a certain app [4].

## 2. RELATED RESEARCH WORK :

Recent study is on the products, information, and cultural practices that result from the mobile phone's infiltration into daily life. The following table shows the Related Research work in the area of Mobile Technology, Methodology, E-Learning, Gaming and Entertainments, Life style modifications, Service facilities and few applications of smart phones. The recent articles from 2008 to 2020 containing the related work are collected using the keyword search method in Google Scholar using the keywords such as Smartphones, Mobile, Sales, business, social media, SWOC Analysis [5].

**Table 1:** Publications on applying related research on Mobile Methodologies and Mobile Technologies in Advancement of smartphone usage.

| S. No. | Area of Study | Focus | Reference |
|---|---|---|---|
| 1. | Mobile learning (m-Learning) | Study on the environment and aim of mobile learning: a survey of the literature. | Petrova, K., & Li, C. (2009). [6] |
| 2. | Mobile Methodologies | Concepts, Innovations, and Strategies of Mobile Methods. | Hein, J. R., Evans, J., & Jones, P. (2008). [7] |
| 3. | Mobile Technologies | Where is the learning in mobile technologies for learning? | Mayer, R. E. (2020). [8] |
| 4. | The adoption of MI technologies | Mobile internet and SMEs: a focus on the adoption | Balocco, R., Mogre, R., & Toletti, G. (2009). [9] |
| 5. | The development of Mobile Games | Designing smartphone games for the older adults: A research focusing on playability. | Cota, T. T., Ishitani, L., & Vieira Jr, N. (2015). [10] |
| 6. | Sensors in health applications | Mobile phone sensors in health applications | Stankevich, E., Paramonov, I., & Timofeev, I. (2012). [11] |
| 7. | Being cautious of and using a cell phone | Thoughts from India on evaluating knowledge of and reliance on digital technology for health and well-being. | Pai, R. R., & Alathur, S. (2019). [12] |
| 8. | Lifestyle modification | Calorie counting smart phone apps: Effectiveness in nutritional awareness, lifestyle modification and weight management among young Indian adults | Banerjee, P., Mendu, V. V. R., Korrapati, D., & Gavaravarapu, S. M. (2020). [13] |
| 9. | Online facility to provide resource sharing services | Smart Library Model for Future Generations | Aithal, P.S. (2016). [14] |
| 10. | Use through software interface | Smart Health Prediction | Vishakh, M. S., & Puneeth, B. R. (2019). [15] |

## 3. OBJECTIVES OF STUDY :

(1) To Understand the overview of mobile companies and the technologies used in Smartphones

(2) To Analyse the workings of the mobile industry.

(3) To study the mobile industry's development in various countries.

(4) To study the cycles of sale or production data.

(5) To study the research and development in the new production industry.

(6) To analyse how Corona impacted Mobile industry.

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(7) To study the use SWOT Analysis for the recommendation of cell phone industry future strategies for accelerated success.

## 4. METHODOLOGY :

To meet the objective of the paper, secondary sources of data like the report on the information technology sector, annual reports from selected IT companies, journal articles in Google Scholar, newspapers, and business websites from Springer, Tailor & Francis, Emarald, Google Scholar, Srinivas Publications, Research Gate, SSRN, etc. are used [16].

## 5. UNDERSTANDING THE OVERVIEW AND TECHNOLOGY USED IN SMARTPHONES :

Technology adoption models outline a progression from external variables to beliefs, intentions, adoption, and actual usage of the technology. Numerous angles, including sociology, computer-supported cooperative work, and human-computer interaction, have been used to study the mobile phones. We have access to the external world through mobile communication without restriction. It aids in teaching and gives students ease throughout the teaching and learning processes where students and teachers may access information and knowledge. A recent development in the learning process is mobile learning (M-Learning), which emphasis the capacity to promote learning without being constrained by a specific physical place. Mobile phones, laptops or netbooks, tablet PCs, and smart phones can all be used for this anywhere [17]. With the introduction of smartphone technology, anyone may easily access the internet and its related knowledge base. Mobile media devices, like smartphones, have spread across our lives and have become more and more capable of supplementing or even replacing certain mental tasks. Smartphones can be utilised for a wide variety of cognitive tasks for us, as well as to satiate many of our affective impulses. They can be used as phonebooks, appointment calendars, internet portals, tip calculators, maps, gaming devices, and much more [18].

## 6. HISTORY ON MOBILE INDUSTRY :

In telecommunications jargon, the mobile phone is frequently referred to as a mobile terminal. An apparatus that ends or is located at the terminating endpoint of the communication network is referred to as a terminal. A terminal is a peripheral device that is quite basic and totally reliant on the network; without the network, it is unable to function. A terminal, a mobile phone is a device that can make and receive calls similarly to a landline phone. Mobile phones, on the other hand, are more sophisticated and complex than fixed phones. The mobile terminal is referred to as a mobile station in the Groupe Special Mobile (GSM) specifications, which later went by the name Global System for Mobile communication. This word refers to a collection of devices required for transmitting and receiving while moving [19]. Many people ignore the one fundamental feature that has had the biggest impact on how we communicate with one another as mobile devices get more sophisticated and intelligent. This feature is the text message. At first glance, it may not be immediately apparent that text messaging, especially Short Message Service (SMS) messages with a character count of 160 or fewer, are a potently disruptive technology. Mobile for development (m4d), also known as the using mobile devices to enhance systems & services, is among the innovation frontiers that is expanding the fastest, especially in poor countries. Grassroots organisations may employ text messaging and mobile technology to successfully serve their communities thanks to Frontline SMS, an open-source SMS gateway [20]. Smartphones and mobile phones are quickly taking over as the primary computer and communication tool in people's life. Mobile phones are becoming App Phones, capable of downloading a wide variety of programmes in a matter of seconds, thanks to application distribution channels like the Apple AppStore. The fact that modern smartphones can be programmed and include a growing number of affordable, high-performance embedded sensors, including an accelerometer, digital compass, gyroscope, GPS, microphone, and camera, is significant because it is fostering the development of individual, collective, and community-scale sensing applications. Many areas of our economy, including business, healthcare, social networks, environmental monitoring, and transportation, users predict that sensor-equipped mobile phones will transform [21].

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### 7. MOBILE INDUSTRY'S DEVELOPMENT IN VARIOUS COUNTRIES :

Globalization has put the process of industrial development under pressure. A more complex framework than the binary distinction between export orientation and import substitution is required to analyse development routes in light of the fragmented and decentralised nature of global industry as well as the explosive growth of consumer markets in emerging nations [22]. Over the course of the industry life cycle, mobile phone makers have fundamentally altered their product strategy in response to a number of issues, including the fierce global rivalry and the need to react quickly to changes in technology and mass consumer tastes. Contrary to what the traditional product-process life cycle model predicted, when the mobile industry entered a stage of shake-out in the 2000s, mobile phone makers concentrated their strategy not only on process but also on product developments. The constant introduction of cutting-edge product technology primarily increased consumer desire for replacement purchases [23]. Joel Engel was a top researcher and developer at Bell Labs on April 3, 1973. He and his team were at the forefront of mobile communications advancement at the time. They were seeking for methods to develop technologies that would capitalise on their work since they had already built the wireless cell architecture that we utilise whenever we are using mobile devices [24]. Every country in the world uses mobile phones, and usage has increased over the past few years. And it depends on the expansion of cell phones for the nation's economy.

**Table: 2** Shows the details of Countries with the largest manufacturing capacity of smartphones [25].

| Country | Manufacturing capacity of smartphones |
|---|---|
| INDONESIA | The largest mobile market in Asia, with a 17-million-unit annual production capacity. Additionally, their cell phones generate 12 billion dollars in income. Samsung is the most widely used brand in the world. It ranks tenth in terms of exporting goods, and its proportion in global product exports is 1%. |
| TAIWAN | Taiwan is the country where HTC, the first successful Android phone, is manufactured. They generate 10 billion dollars in revenue from their smartphones, which may be produced in 20 million units. The biggest brand is Apple, which ranks 8th in terms of product exports with a 2% global market share. |
| SINGAPORE | Singapore's population of more than 90% uses android phones, while the country's production capacity is just about 21 million. Additionally, the name Apple is widely utilized here, and the income is $12 billion. Additionally, it has a 3 percent global share and ranks #7 in terms of exporting goods. |
| JAPAN | The manufacturing of smartphone components has been done in Japan, where 35 million units may be produced annually for a 10-billion-dollar profit. In Japan, Apple is the most popular brand. Japan also ranks ninth globally in terms of exports, with a 3 percent market share. |
| SOUTH KOREA | In comparison to 2011, 91 percent of Koreans now own cell phones. The income is 12 billion dollars, and the production capacity is 51 million. The most common brand utilized by consumers is Samsung. And when it comes to exporting cell phones, they come in sixth. Additionally, with a 4,5 percent global share. |
| THAILAND | There is a 71 million phone production capacity in this nation, making mobile phones less expensive than in many other nations. Additionally, the revenue is $16 billion. The biggest brand in this area is Samsung products. Additionally, they have a 5.5% share of exports and are ranked fifth overall. |
| HONGKONG | 110 million cell phones can be produced each year with a 30.7-billion-dollar revenue. This is where you may find new and old telephones at lesser prices. The most common brand here is Apple, which ranks fourth in terms of smartphone exports. Additionally, the global share is 11%. |

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| VIETNAM | Here, more than 90% of people utilized cell phones, and their access to the internet improved both output capacity and income by almost 152 million people and 35.5 billion dollars. Samsung is the item that is used the most in this. Additionally, they have a 13 percent global share and are ranked under 2 in terms of exports. |
|---|---|
| INDIA | In countries with high rates of youth and adult population as well as overcrowding, the demand for cell phones is critical. The largest brand created here is Xiaomi, with a 300 million production capacity, 32 billion dollars in revenue, and. It has a 16 percent global market and is ranked third in exports. |
| CHINA | The income is 125 billion dollars, and the production capacity is 650 million. Famous oppo and Vivo mobile phone brands are made in China, and Huawei is the biggest manufacturer in the country, with a 49 percent global market share. |

### 7.1 Review Of Mobile Phone Production:

Here are the functions, features, and other aspects of the rebellion of smart phones between 2010 to 2020 [26]. When we reflect on the decade, we can see that the tech sector undergone numerous significant developments. Designers have made significant scientific advancements. Here are some of the technical developments that took place throughout those 10 years.



**Display:** Phone displays range from 3.5 inches to 6 inches or more: The iPhone 4 was released by Apple in 2010. The phone had a 3.5-inch display, and in addition to Apple, many other phone makers used displays of a similar size in their models. Ten years later, nearly all mobile phones have displays that are 6 inches or larger. Nobody could have predicted that the size of phones and phone displays would rise so significantly in just the past ten years. If we compute the growth in display sizes on an annual basis, we find that during this decade, the increase in display size has been about 0.25 inches.

**Refresh rates range from 60 hertz to 90/120 hertz:** The size of phone displays hasn't been the only thing to vary in the previous ten years; display refresh rates per second have also increased. The reload rate indicates the rate at which the visual equipment updates its buffer. These different from the surround rate measurement that denotes apprising the fresh data. Response time includes the recurrent rendering of similar panels, whereas frame rate measures how quickly a media supply can supply an entire frame of new data to a device. The change from 60 hertz update frequency to 90 or 120 hertz update frequency is happening on many screens, which offers a more flexible movement and a significantly improved visual effect.

**Size of the charger:** A typical mobile battery has a capacity of 1000mAh to 1500mAh ten years ago. Ten years later, mobile phone batteries often have a 3000mAh or higher capacity. When compared to the previous year, several smartphones now have battery capacities greater than 4,000 mAh.

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**Wi-Fi Four to Wi-Fi Six:** The previously used 2 Wi-Fi versions throughout this decade, and as of 2019, then begun implementing the most recent Wi-Fi variety, the Wi-Fi Six. Wi-Fi 5(802.11ac) and Wi-Fi 4 were the two Wi-Fi versions before this one (802.11n). The Wi-Fi version doesn't matter to the average user because Wi-Fi is Wi-Fi. However, it makes a big difference to tech nerds. Here is comprehensive information about every Wi-Fi version.

From a single camera to a dual, triple, or quad arrangement: In 2010, some mobile phones had no cameras at all or simply had one camera. Phones featuring dual, triple, or even four cameras are typical by the end of 2019. The HTC One M8 helped spread awareness of this, which all began with the HTC EVO 3D. Almost all phone manufacturers are now releasing smartphones with multiple camera sensors.

 **Sandwich of rubber, metal, and crystal**: Year 2010, plastic was used to make practically all phones. Nokia constructed practically all of their phones from plastic and is still renowned for their durability. When Apple released phones made of metal, everything changed. Year 2019, now see phones with metal frames positioned between crystal, giving them a quality appearance and feel.

**Smartphone from a bulky viewport to none**: 2010 mobile phones featured unique designs and aesthetics. The bezels were a feature that all 2010 smartphones shared. Ten years ago, the top, bottom, and even the sides of mobile phones all had thick bezels. But as display technology has advanced, the bezels have shrunk. Mobile devices' bezels have gotten so small that they can now be described as bezel-less.

### 7.2 Growth Of Mobile Usage:

- **SMS:** Short Message Service is referred to as "SMS." It is currently both the oldest and most popular text messaging service. As a low-cost communications option, SMS is quickly gaining popularity worldwide. The term "SMS" currently refers to any text message sent to a mobile device. Typically, messages can contain up to 140 characters. The simplest technology available in the mobile environment is SMS, or text message, and a range of interactive learning activities can be developed using very basic tools connecting a number of people, including students, instructors, administrators, etc. Text messages can be sent and received on all mobile devices, even the most basic ones. The importance of SMS instant messaging symbolises a lot of chances for shared activities [27].

- **MMS:** A common way to send multimedia content, including messages, is through MMS (Multimedia Messaging Service) messaging. Unlike SMS, MMS allows you to send up to 40 seconds of video, one picture, a slideshow of multiple images, or music. The majority of modern gadgets will enable MMS texting. Typically, MMS functionality is built within the text message interface and activates automatically when necessary. For instance, if you enter a text-only message, SMS will be used to send it. If a graphic or video is included, the multimedia portion will be sent through MMS. Bulk MMS is comparable to bulk SMS, with the exception that due to mobile device memory restrictions, MMS content cannot be larger than 300kb [28].

- **3G:** Third-generation access technology, which enables mobile phones to connect to the internet, is indicated by the third letter in the name 3G. New data transmission rates and frequency bands are introduced with every new technology. Wireless communication networks, one of the most popular technologies, provide a connection between various types of networks

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without the use of wires [29]. Initially, ideas emphasized mobile videoconferencing and other multimedia applications. 3G thinking had to change as it became obvious that the Internet was the real game-changing application. Personal wireless Internet access will undoubtedly follow as personal wireless handsets overtake fixed telephones in popularity, and users will want mobile broadband Internet access [30].

- **4G:** The term "4G" refers to the fourth generation of mobile networking technology. Customers were able to browse the internet and stream HD movies on their mobile devices thanks to 4G network connectivity, effectively transforming their smartphones into computers. T4G is an IP-based voice communication technology. The IEEE 802.16 (WiMAX), LTE (Long Term Evolution), and UMB (Ultra Mobile Broadband) [31] are regarded as 4G standards.

- **GSM:** The abbreviation for the global system for mobile communication is GSM, or global structure for portable technology. GSM is an exposed, digital wireless networks that is employed for mobile communication. It uses the 850, 900, 1800, and 1900 MHz frequency bands for operation. It uses a TDMA and FDMA hybrid.

- **CDMA:** Code division multiple access is known by the term CDMA. It is a multiple access method that also functions as a channel access mechanism. Numerous accesses simply refer to the ability to convey data from multiple transmitters onto a single communication channel simultaneously.

- **Wi-Fi:** We can connect to a network, as well as to other computers and mobile devices, using the wireless networking technology known as Wi-Fi. In Wi-Fi, data is sent through radio frequencies in a ring-shaped area. A wireless network that acts as a Local Area Network without the usage of cables or other types of cabling is known as a "wireless fidelity" network, or simply "Wi-Fi." [32].

## 8. COMPARATIVE ANALYSIS OF MOBILE SALES AND PRODUCTION DATA: PLATFORM FOR MOBILE DEVELOPMENT :

Every product has a mark that can shield the loyalty of its customers from rival products. A strong brand can help products become well-known and more appealing to consumers. Many businesses are developing brands with unique personalities. Our lives now revolve on our mobile phones. Modern mobile phone usage has been changed by top smartphones. Since consumer preferences are constantly shifting, these top mobile brands must always be on the cutting edge of fashion and innovation. Apple, Samsung, Vivo, Oppo, Xiaomi, and other major mobile brand names are listed in order of popularity, followed by Realme, Motorola, and Honor. Players with a significant global presence make up the top mobile phone brands. The largest mobile phone brands offer a wide variety of devices from which customers can select. The top 10 mobile phone brands in the world as of 2022 are listed below.

- **Rank 1. Samsung:** The current study examines the connection between brand personality and consumer brand loyalty in the Samsung mobile phone market, and its findings are applicable to the target audience. To continue existing in the mobile phone market, which offers strong competitors of various varieties every day, Samsung must preserve its brand identity [33]. In addition, in order to preserve and increase consumer loyalty, a mobile phone must offer customer pleasure as a crucial component. Similarly, every client who has an outgoing and congruent personality will be proportional to a sincere brand personality. As a result, Samsung Company should emphasise its honest personality and add value for customers by fostering a strong affinity between brand personality and consumer personality. Based on the most recent data on the global smartphone market share as of July 2022, Samsung is leading with a sales volume of 28.14%. This indicates that over three out of ten smartphone users use Samsung devices globally.

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- **Rank 2. Apple:** Apple has consistently built its own hardware and software, giving the business a competitive edge in conquering any industry into which it has forayed. Because of the popularity of the iPod, iPad, and iPhone, Apple's strategic management choice to include non-PC goods in its portfolio has so far been a success. However, sales of iPods have decreased. In the world of smartphones, there is more competition for the iPhone [33]. Apple is ranked second among the most well-known smartphone makers. Just 0.65% less than Apple, the US phone manufacturer holds a 27.49% market share in smartphones.

- **Rank 3. Xiaomi:** Everyone's behavioural patterns and those from all walks of life are altering as a result of the growth of mobile internet, particularly with the advent of smartphones. Through social media, Xiaomi phones produce one after another marketing miracle [35]. In order for Xiaomi mobile phones to maintain the performance of other brands of mobile phones, the company has been committed to the development of high-tech mobile phones. Because of this, customers can use technology without spending a lot of money. According to Xiaomi's financial report, the company plans to create more varied products in the future to cater to various consumer needs. With 12.86% of the overall market share, Xiaomi is the third-largest smartphone brand. Given that the Chinese company was only established in 2010, this is noteworthy. The past five years have seen the majority of Xiaomi's expansion. The phone manufacturer held only about 2% of the market before to 2017. However, it increased its share that year by more than doubling it, finishing the year with 4.75%.

- **Rank 4. Oppo:** The Oppo Mobile is a device that can be used by everybody. As part of its promotional plan to publicize their products, the Oppo Cell phone company in this instance utilises Indonesian musicians Raisa, Chealse Island, and Isyana as global brands for the oppo smartphone company's products. [36]. The acquisition of the Oppo smartphone brand by BBK Electronics, which is based in China, is among the most well-known new enterprises in the world. The 2011-founded Chinese firm Oppo is well-known around the world for its smartphones and associated components. The acquisition of the Oppo smartphone brand by BBK Electronics, which is based in China, is among the most well-known new enterprises in the world. The 2011-founded Chinese firm Oppo is well-known around the world for its smartphones and associated components.

- **Rank 5. Vivo:** In 2014, Vivo, one of the newest smartphone brands, launched in Indonesia. Vivo aspires to become a new global superpower in addition to merely existing in the smartphone market. This study attempts to ascertain how VIVO brand mobile phones in the South Tangerang region's buying interest are affected by prices, promotions, and products. Explanatory research with a sample of 96 respondents was the methodology employed [37]. The Chinese company BBK Electronics owns the Vivo brand of smartphones, smartphone accessories, software, and online services. Vivo recently developed the

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Android-based technology platform known as Fun-touch. With a 10.7% global market share in the first half of 2017, Vivo broke into the top five smartphone brands. The X series, V series, which are middle-priced smartphones, and the Y series, which are low-end smartphones, are some of Vivo's premium smartphones. 2018 saw the release of the X20 UD by Vivo, one of the first smartphones in the world to use a fingerprint reader that made use of ClearID technology.

- **Rank 6. Realme:** Chinese phone maker Realme was established in 2018 and enjoys a good recognition among the top mobile manufacturers in the world. Realme started off as an Oppo corporate brand, but as of 2018, it has broken out and established itself as a stand-alone company with a portfolio of over 20 brands. Realme includes TVs, headsets, and wristbands in its product line-up. Realme is the top cellphone maker in India. Vivo and Oppo are siblings that belong to the same BBK trademark as Realme. Realme is sixth on the list of best mobile brands for 2022.

- **Rank 7. Motorola Mobility (Lenovo):** Using just adaptive beacon messages, MOTOROLA's mobility-awareness modules investigate the mobility parameters and the link duration time. Based on the link time threshold value, temporary links are minimised. The mechanism for allocating resources at the route level is also resilient to changes in network topology, and the time-scaled costs of rescheduling are kept to a minimum. Results from simulations and analysis indicate that due to route stability and mobility awareness [38]. When Lenovo acquired Motorola Inc.'s mobile business in 2011, Motorola is now a Lenovo unit and developed into one of the world's top makers of mobile devices and smartphones. An international corporation, Motorola has its American head office in Illinois. The company has a good understanding of mobile phones, tablets, wearables, etc. Motorola has a strong financial base because Lenovo is its parent business. As a result, a considerable sum of money is spent on research and innovation, and technology is viewed as a crucial brand identifier. The Razr brand, which Motorola just debuted to the public and that has earned excellent reviews and effectively conformed to the adjustable interface, has received outstanding evaluations.

- **Rank 8. Huawei:** Huawei has become a hot subject across the globe due to the development of 5G and the trade conflict between China and the United States. Huawei is unquestionably one of the leading participants in the development of 5G, holding 37% of the patents. In less than three decades, Huawei has advanced from being a local technology follower to a worldwide technological leader [39]. The largest smartphone producer in the world, Huawei is a Chinese company that was established in 1987. In R&D, Huawei spent 14% of their sales. Huawei is undoubtedly a big player in the mobile industry with a presence in over 170 nations and aspirations to establish its own operating system. In March 2018, Huawei unveiled the Porshe Design HUAWEI Mate RS, a highly advanced and potent smartphone with a dual fingerprint design, an in-screen fingerprint sensor, an AI processor, and three high-resolution cameras. This smartphone will outperform the most popular model.

- **Rank 9. Transsion (Tecno, Itel):** Sales of feature phones as well as smartphones drive marketplaces around the world. Itel and other Telecommunications brands have successfully cornered the feature phone market, and they are now introducing Itel Vision range and Technology Spark-branded

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cell phones, among other brands. Itel is one of the leading brands right now in the market for smartphones and is posing a challenge to major players like Samsung in both the feature phone and smartphone markets. Transsion used to be one of the most well-known brands in the African mobile phone market, and it is currently one of the brands with the quickest growth in India.

- **Rank 10. Honor:** In 2013, Honor, a well-known brand in electronics products, was established. It is a leader in the manufacture of mobile phones and among the most well-known tech corporations. The Honor Company, with a staff of over 10,000 employees, runs one of the most advanced research centres. The business is well-known worldwide, and its goods are sold in more than 100 countries. The flexible Honor Magic V, Honor X30, and Honor 10X Lite are Honor's flagship phones. Owing to its wealth of functionalities, powerful RAM, storage, and lenses, these mobile devices compete effectively in the global smartphone business. The bulk of the company is owned by the Chinese government.
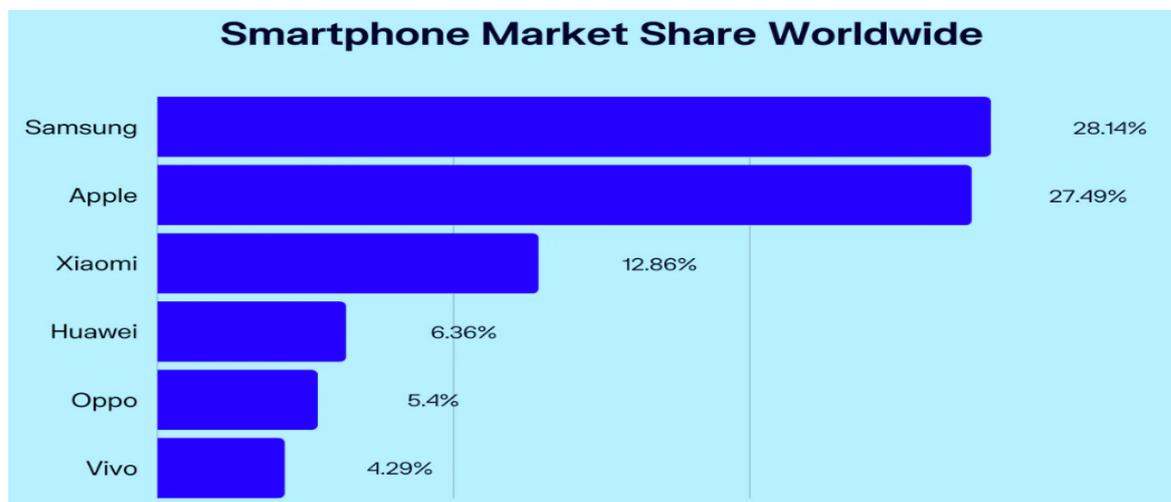


**Fig. 1:** Market share of smartphone.
Source: https://www.oberlo.com/statistics/smartphone-market-share [40]

## 9. IMPLICATION OF THE CORONAVIRUS COVID-19 ON SMARTPHONE INDUSTRY :

Global smartphone manufacturers advanced quickly over time. About a century later in the history of human civilization, a sudden, unanticipated, and chaotic scenario known as a worldwide pandemic, which was declared by the World Health Organization (WHO), halts this advancement. The industry will inevitably lag behind as a result [41]. The usage of currency is risky due to the ever-present risk of infection since banknotes have the potential to spread the coronavirus. As a result, the number of cashless mobile payments has increased. There has been a growth in mobile cashless payments in nations like China, India, and others. The use of mobile payments may rise as their familiarity does [42].

## 10. SWOT ANALYSIS :

The SWOC analysis provides data is useful popular assessing the business's core properties and competitiveness at global market. A multinational company's strengths, weaknesses, opportunities, and challenges may be assessed using a SWOC analysis in order to do worldwide commerce [43]. The many internal and external elements that may significantly impact their operations [44] or business are identified using a SWOT analysis [45]. By meticulously analysing and evaluating their SWOT to increase productivity, every industry retains a prominent place in the IT field [46].

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**10.1 Strengths:** The ability to concurrently investigate the local and global structure of a society-wide communication network is made possible by the communication habits of millions of mobile phone users. Users of smartphones have the option of connecting to the Internet via their wireless home network, a Wi-Fi hotspot, or the carrier's network. Users may almost do any task using one-touch or one-click Internet capabilities, from online banking to e-mailing to making restaurant reservations.

**10.2 Weaknesses:** The content will no more be private if the phone is stolen. It is crucial that you lock and disable your phone. Smartphone use may easily cause user distraction. The majority of cell phones generate radiofrequency radiation, which the body's tissues may absorb. It is suggested that mobile phone usage be restricted in order to eliminate these dangers. Interesting video games and social networking sites both have an addictive potential.

**10.3 Opportunities:** The embracing technologies that have enabled everything touchable are benefits of smartphones. They have played an especially significant role in our daily lives. Smartphones do more than just facilitate communication. Today, we can pay our bills using our mobile devices. We follow maps and directions easily in addition to billing. Traditional mobile phones have been replaced by smartphones. The development of phones was a result of technological growth. This led to several advantages for mobile phones.

**10.4 Threats:** For appropriate data security to be maintained, proper cyber hygiene is crucial. Many smartphone users still share data with friends and co-workers, use weak passwords, and neglect to properly update their operating systems and apps. The secret to defending cell phones from numerous types of viruses and other intrusions is routine updating. Replace any smartphones that cannot get security upgrades.

## 11. CONCLUSION :

Our daily lives are dependent on our mobile phones. Our days often start and end with using our cell phones. Mobile phones provide everyone everything they could possibly want, from communication to entertainment. It may help to sustain participant interest and behaviour change to add a smartphone application as an extra delivery mechanism to a website-delivered physical activity intervention. The most convenient and practical device is the smartphone, which combines a computer, a music player, and a map into one compact unit. Nevertheless, modern smartphones have tremendous new uses. However, if this convenient and little equipment is utilized improperly, it might result in numerous serious damages and other negative repercussions.

## REFERENCES :

[1] Chen, H. T., & Li, X. (2017). The contribution of mobile social media to social capital and psychological well-being: Examining the role of communicative use, friending and self-disclosure. *Computers in Human Behavior, 75*(1), 958-965. Google Scholar↗

[2] Davies, B. S., Rafique, J., Vincent, T. R., Fairclough, J., Packer, M. H., Vincent, R., & Haq, I. (2012). Mobile Medical Education (MoMEd)-how mobile information resources contribute to learning for undergraduate clinical students-a mixed methods study. *BMC Med Educ., 12*(1), 1-11. Google Scholar ↗    CrossRef/DOI ↗

[3] Ariel, Y., & Elishar-Malka, V. (2019). Learning in the smartphone era: Viewpoints and perceptions on both sides of the lectern. *Education and Information Technologies, 24*(4), 2329-2340. Google Scholar ↗                    CrossRef /DOI ↗

[4] Tam, C., Santos, D., & Oliveira, T. (2020). Exploring the influential factors of continuance intention to use mobile Apps: Extending the expectation confirmation model. *Information Systems Frontiers, 22*(1), 243-257. Google Scholar ↗

**International Journal of Case Studies in Business, IT, and Education (IJCSBE), ISSN: 2581-6942, Vol. 6, No. 2, December 2022**

**SRINIVAS PUBLICATION**

[5] Buchanan-Oliver, M., Cruz, A., & Schroeder, J. E. (2010). Shaping the body and technology: Discursive implications for the strategic communication of technological brands. *European Journal of Marketing, 44*(5)*,* 635-652. Google Scholar ↗ CrossRef /DOI ↗

[6] Petrova, K., & Li, C. (2009). Focus and setting in mobile learning research: *A review of the literature, 10*(1)*,* 219-226. Google Scholar ↗ CrossRef/DOI↗

[7] Hein, J. R., Evans, J., & Jones, P. (2008). Mobile methodologies: Theory, technology and practice. *Geography Compass, 2*(5)*,* 1266-1285. Google Scholar ↗ CrossRef /DOI ↗

[8] Mayer, R. E. (2020). Where is the learning in mobile technologies for learning?. *Contemporary Educational Psychology, 60*(1), 4-8. Google Scholar ↗ CrossRef/DOI ↗

[9] Balocco, R., Mogre, R., & Toletti, G. (2009). Mobile internet and SMEs: a focus on the adoption. *Industrial Management & Data Systems, 109*(2)*,* 245-261. Google Scholar ↗ CrossRef /DOI ↗

[10] Cota, T. T., Ishitani, L., & Vieira Jr, N. (2015). Mobile game design for the elderly: A study with focus on the motivation to play. *Computers in Human Behavior, 51*(1)*,* 96-105. Google Scholar ↗ CrossRef /DOI ↗

[11] Stankevich, E., Paramonov, I., & Timofeev, I. (2012). Mobile phone sensors in health applications. *12th Conference of Open Innovations Association (FRUCT), 12*(1), 1-6. Google Scholar ↗ CrossRef/DOI↗

[12] Pai, R. R., & Alathur, S. (2019). Assessing awareness and use of mobile phone technology for health and wellness: Insights from India. *Health Policy and Technology, 8*(3)*,* 221-227. Google Scholar ↗

[13] Banerjee, P., Mendu, V. V. R., Korrapati, D., & Gavaravarapu, S. M. (2020). Calorie counting smart phone apps: Effectiveness in nutritional awareness, lifestyle modification and weight management among young Indian adults. *Health informatics journal, 26*(2), 816-828. Google Scholar ↗ CrossRef /DOI ↗

[14] Aithal, P. S. (2016). Smart library model for future generations. *International Journal of Engineering Research and Modern Education (IJERME), 1*(1)*,* 693-703. Google Scholar ↗

[15] Vishakh, M. S., & Puneeth, B. R. (2019). Smart Health Prediction. *International Journal of Research in Engineering, Science and Management, 2*(5), 1022-1023. Google Scholar ↗ CrossRef /DOI ↗

[16] Van Biljon, J., & Kotzé, P. (2007). Modelling the factors that influence mobile phone adoption. *In Proceedings of the 2007 annual research conference of the South African institute of computer scientists and information technologists on IT resear, 7*(1), 152-161. Google Scholar↗ CrossRef /DOI ↗

[17] Marwan, M. E., Madar, A. R., & Fuad, N. (2013). An overview of mobile application in learning for student of Kolej Poly-Tech Mara (KPTM) by using mobile phone. *Journal of Asian Scientific Research, 3*(6)*,* 527-537. Google Scholar ↗

[18] Barr, N., Pennycook, G., Stolz, J. A., & Fugelsang, J. A. (2015). The brain in your pocket: Evidence that Smartphones are used to supplant thinking. *Computers in Human Behavior, 48*(1), 473-480. Google Scholar ↗

[19] Farley, T. (2005). Mobile telephone history. *Telektronikk, 101*(3/4)*,* 22-26. Google Scholar ↗

[20] Banks, K., McDonald, S. M., & Scialom, F. (2011). Mobile technology and the last mile: Reluctant innovation and FrontlineSMS. *Innovations: Technology, Governance, Globalization, 6*(1)*.* 7-12. Google Scholar ↗ CrossRef /DOI ↗

[21] Lane, N. D., Miluzzo, E., Lu, H., Peebles, D., Choudhury, T., & Campbell, A. T. (2010). A survey of mobile phone sensing. *IEEE Communications magazine, 48*(9), 140-150. Google Scholar ↗ CrossRef /DOI ↗

**International Journal of Case Studies in Business, IT, and Education (IJCSBE), ISSN: 2581-6942, Vol. 6, No. 2, December 2022**

**SRINIVAS PUBLICATION**

[22] Lee, J., Kim, J. C., & Lim, J. (2016). Globalization and divergent paths of industrial development: Mobile phone manufacturing in China, Japan, South Korea and Taiwan. *Journal of Contemporary Asia, 46*(2), 222-246. Google Scholar ↗          CrossRef /DOI ↗

[23] Giachetti, C., & Marchi, G. (2010). Evolution of firms' product strategy over the life cycle of technology-based industries: A case study of the global mobile phone industry, 1980–2009. *Business History, 52*(7), 1123-1150. Google Scholar ↗          CrossRef /DOI ↗

[24] Murphy, T. (2013). 40 Years After the First Cell Phone Call: Who Is Inventing Tomorrow? s s Future?. *IEEE Consumer Electronics Magazine, 2*(4), 44-46. Google Scholar ↗          CrossRef /DOI ↗

[25]     Details of Countries of smartphones retrieved from https://manufacturingdigital.com/top10/top-10-largest-smartphone-companies-world on 12/05/2022          Google Scholar ↗

[26]     Review Of Mobile Phone Production retrieved from https://reviews.com.np /article/tech-changes-during-the-decade on 22/05/2022.  Google Scholar ↗

[27] Balasundaram, S. R., & Ramadoss, B. (2007). SMS for Question-Answering in the m-Learning Scenario. *Journal of Computer science, 3*(2), 119-121. Google Scholar ↗    CrossRef /DOI ↗

[28] Samaka, M., Fakhroo, A., Al-Omari, N., Moeinzadeh, Z., Al-Kubaisi, S., & Fakhri, H. (2009). Wireless application deploying cell broadcast, and bulk SMS/MMS. *In Proceeding of the 12th International-Business-Information-Management-Association Conference, 12*(1), 29-30. Google Scholar ↗

[29] Ezhilarasan, E., & Dinakaran, M. (2017). A review on mobile technologies: 3G, 4G and 5G. *In 2017 second international conference on recent trends and challenges in computational models (ICRTCCM), 2*(1), 369-373.    Google Scholar ↗          CrossRef /DOI ↗

[30] Pereira, V., & Sousa, T. (2004). Evolution of Mobile Communications: from 1G to 4G. *Department of Informatics Engineering of the University of Coimbra, Portugal, 4*(1), 20-28. Google Scholar ↗

[31] Mihret, E. T., & Haile, G. (2021). 4G, 5G, 6G, 7G and Future Mobile Technologies. *J Comp Sci Info Technol, 9*(2), 75-81. Google Scholar ↗

[32] Oancea, C. D. (2011). GSM infrastructure used for data transmission. *In 2011 7th International Symposium On Advanced Topics In Electrical Engineering (Atee), 7*(1), 1-4.  Google Scholar ↗

[33] Teimouri, H., Fanae, N., Jenab, K., Khoury, S., & Moslehpour, S. (2016). Studying the relationship between brand personality and customer loyalty: A case study of Samsung mobile phone. *International Journal of Business and Management, 11*(2), 1-10.    Google Scholar ↗    CrossRef /DOI ↗

[34] Gupta, A., & Prinzinger, J. (2013). Apple, Inc.: Where Is It Going From Here?. *Journal of Business Case Studies (JBCS), 9*(3), 215-220. Google Scholar ↗          CrossRef /DOI ↗

[35] Wang, X., & Li, Y. (2014). Marketing Strategy Analysis of Xiaomi Phone Based On Social Media. *International Conference on Mechatronics, Electronic, Industrial and Control Engineering (MEIC-14), 14*(1), 1608-1612. Google Scholar ↗ CrossRef /DOI ↗

[36] Yusuf, A. (2021). The Influence of Product Innovation and Brand Image on Customer Purchase Decision on Oppo Smartphone Products in South Tangerang City. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal, 2*(1), 472–481.    Google Scholar ↗ CrossRef /DOI ↗

[37] Jasmani, J., Sutiman, S., & Sunarsi, D. (2020). Analysis of the Effect of Prices, Promotions and Products on Purchase Interest Impacts on Consumer Satisfaction of VIVO Brand Mobile Phones in South Tangerang Region. *Journal Administrare, 7*(1), 73-82.  Google Scholar ↗

[38] Yang, P. L., Qin, G. C., Wang, H., Zhang, L., & Chen, G. (2010). Motorola: Mobility tolerable route selection algorithm in wireless networks. *IET communications, 4*(7)*,* 837-849. Google Scholar ↗ CrossRef /DOI ↗

[39] Yan, X., & Huang, M. (2022). Leveraging university research within the context of open innovation: The case of Huawei. *Telecommunications Policy, 46*(2)*,* 7-11. Google Scholar ↗ CrossRef /DOI ↗

[40] Details of Market share of smartphone is retrieved from https://www.oberlo.com /statistics/ smartphone -market -share on 28/05/2022

[41] Shetty, K. A. (2021). CSR Initiatives In Indian Industries, Indian Business, Education, Banking and IT. *A Half Yearly National Peer-Reviewed & Indexing with SJIF Impact Factor Research Journal*, *6*(2), 59-63. Google Scholar ↗

[42] Brem, A., Viardot, E., & Nylund, P. A. (2021). Implications of the coronavirus (COVID-19) outbreak for innovation: Which technologies will improve our lives?. *Technological forecasting and social change, 163*(1), 2-6. Google Scholar ↗ CrossRef /DOI ↗

[43] 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 ↗ CrossRef /DOI ↗

[44] Puneeth, B. R. & Nethravathi, P. S. (2021). Bicycle Industry in India and its Challenges – A Case Study. *International Journal of Case Studies in Business, IT, and Education (IJCSBE), 5*(2), 62-74. Google Scholar ↗ CrossRef /DOI ↗

[45] Aithal, P. S. (2017). ABCD Analysis as Research Methodology in Company Case Studies. *International Journal of Management, Technology, and Social Sciences (IJMTS), 2*(2)*,* 40-54. Google Scholar ↗

[46] Aithal, P. S., Shailashree, V., & Kumar, P. M. (2016). Application of ABCD Analysis Framework on Private University System in India. *International journal of management sciences and business research, 5*(4)*,* 159-170. Google Scholar ↗

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