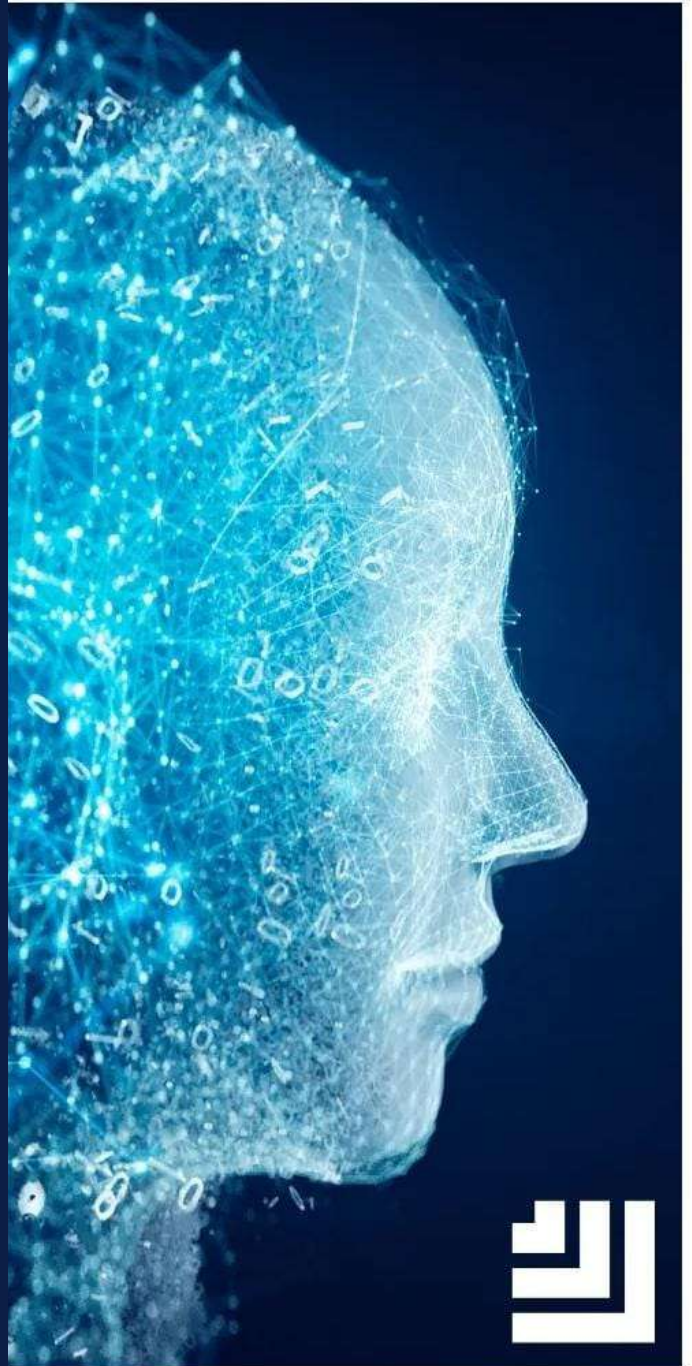# Digital Disruption:

Business, Industry and Commerce

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Editorial

In the ever-evolving landscape of business and commerce, few forces have had as profound an impact as digital disruption. Rapid advancements in technology, fuelled by the internet, artificial intelligence, big data, and the proliferation of connected devices, have revolutionized the way industries operate, businesses compete, and commerce is conducted. The digital revolution has sparked a wave of transformative changes, challenging established norms, upending traditional business models, and presenting unprecedented opportunities and risks. "Digital Disruption: Business, Industry, and Commerce," explores the far-reaching consequences of digital disruption and provides insights into navigating this dynamic era.

The opening article by Dr. Issac Paul and Jojo Francis references research from Gartner, predicting a significant replacement of customer service jobs with AI by 2020. "Embedding Artificial Intelligence Technology in Electronic Commerce: A New Road Map in Competitive Business Spectrum" dwells on the replacement of customer service jobs with AI in the e-commerce industry, providing guidance for businesses to effectively integrate AI into their strategies. On the other hand, "Use of Artificial Intelligence in Higher Education as the Wave of Future: A Review" explores the pervasive presence of AI across various industries, emphasizing its significance in education and offering insights into its transformative influence on the higher education sector.

In the study conducted by Amritha on the antecedents of entrepreneurial orientation among college students in Nilambur Municipality, the aim is to identify motivational factors and barriers faced by student entrepreneurs. Muhammed Shaheen and Suhail examine the profound impact of technologically advanced electronic commerce, particularly in developing countries like India. Their research paper highlights recent trends, models, benefits, and challenges of E-Commerce. By drawing upon theoretical data and existing literature, it offers valuable insights and suggestions for business management teams to effectively leverage E-Commerce in their daily practices.

The paper titled "Testing of Efficient Market Hypothesis: An Empirical Evidence from Indian Stock Market" applies the run test to measure market efficiency using a sample of 30 companies from the Sensitivity index of the Bombay Stock Exchange (BSE), revealing that the share prices of these companies adhere to a random walk pattern. Mini emphasizes the importance of customer retention and the rising popularity of customer analytics tools in achieving higher retention rates in her article. The research examines the effectiveness of various tools and their suitability for different business types, highlighting the need for organizations to leverage customer analytics solutions to understand and meet customer requirements effectively.

"Impact of Digital Economy on the Economic Growth, Productivity and Employment in India" sheds light on the transformative impact of digitalization in the emerging third-largest economy. It explores the pros and cons of digitalization, highlighting its role in transforming business interactions, transactions, and enabling innovations. Ashida addresses the major economic crisis caused by the COVID-19 pandemic, which has resulted in significant disruptions and losses across sectors. The study specifically examines the impact of price volatility on the financial performance of India's top ten pharmaceutical companies listed on Nifty Pharma.

Reshma's research explores the profound impact of digital transformation on the healthcare industry, emphasizing the benefits and tools of digital healthcare such as online medical records, real-time price information, remote consultations, and body monitoring. In a separate study, Rohith investigates digital disruption in the paper "Managing Digital Disruption: Bridging the Digital Divide for Inclusive Growth". The focus is on bridging the gap in technology access among individuals to ensure equal access to the benefits of digital technology.

Amal Abraham and Dilna scrutinize the emerging field of neuromarketing, studying its impact on consumer behaviour in marketing. Their research utilizes neuroscientific methods to understand and influence consumer behaviour, providing valuable insights into the practical applicability of neuromarketing. Arathi emphasizes the significance of public sector banks in driving recovery and their adoption of digital means for transformation. This research examines employee perception of technology and internet adoption, revealing satisfactory performance and advancements in mobile banking technology. The article "Cryptocurrencies: An Opportunity for Investors" highlights the emergence of cryptocurrency as a new investment trend. The article provides valuable insights into the world of cryptocurrency, deepening understanding of its potential and implications.

The book is a comprehensive examination of the transformative power of technology in various sectors. With articles covering topics such as neuromarketing, digital transformation, managing digital disruption, and cryptocurrency, the book offers varied perceptions on the potential and challenges of the digital revolution. It serves as a roadmap for readers, guiding them in navigating and harnessing the benefits of emerging technologies. By exploring the impact of technology on industries, the book equips individuals and businesses with the knowledge and understanding needed to thrive in the dynamic digital landscape. We invite you to embark on a journey of discovery as we navigate the ever-changing landscape of digital disruption in business, industry and commerce. May this book inspire and inform, enabling us to face the challenges and seize the opportunities that lie ahead.

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Rohith.R

Head, Department of Commerce

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Antecedents of Entrepreneurial Orientation of College Students in Nilambur Municipality

N. T. Amritha Kumaran

Abstract

Entrepreneurship creates economic growth by innovating new products and services. Young entrepreneurship can bring about vital changes in the economy by creating and enhancing employment opportunities. Enhancing innovative ideas in every aspect of business helps to utilize existing resources in the most effective manner. Successful entrepreneurs are those who learn from their failures, are willing to take risks, solve problems, strengthen their weaknesses, and ensure they have what they need. They can make their own decisions, organize their own time, and be financially independent. This study aims to identify the motivational factors influencing student entrepreneurs and to identify the barriers perceived by students in entrepreneurship. It focuses on the antecedents of the entrepreneurial orientation of college students in Nilambur Municipality.

Keywords: Employment opportunities, Entrepreneurs, Antecedents, Entrepreneurship.

Introduction

An entrepreneur is someone who innovates, develops, and takes on the risk of operating a business in the face of uncertainty about future conditions. They combine all factors of production to turn them into a product for profit. Entrepreneurship is the process of creating an enterprise, serving as both a career option and an economic developer that can boost self-confidence and economic upliftment. The development of entrepreneurs and small businesses has successfully played a role in stagnant growth rates and rising unemployment rates. Due to its benefits, many people, especially youth, consider entrepreneurship as a viable career option where regular job opportunities fail. With the ever-increasing population and decrease in the number of job opportunities available in India, it has become even more pivotal for the Indian population. The government of Kerala is actively initiating various

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programs to create and develop student entrepreneurship in the state by declaring the 'Start-Up policy' under the Kerala University Startup Mission (KUSUM), aiming to accelerate the growth of student entrepreneurs in the state. This study also sheds light on suitable measures to encourage entrepreneurship among college students and understand the motivational factors of college students' intention towards entrepreneurship in Nilambur Municipality. This study focuses on the antecedents of the entrepreneurial orientation of college students.

Statement of the Problem

Entrepreneurship is the ability and willingness to create, develop, organize, and run a business enterprise along with its uncertainties to make a profit. Today's students are the future entrepreneurs of the country. The lack of employment opportunities in states like Kerala has paved the way for students to showcase their ideas and creativity in terms of creating a valuable and recognizable product for a valuable price. Entrepreneurship is the best solution for young people and students to find a means of livelihood in a challenging job environment. Universities and various colleges are taking initiatives to promote entrepreneurship by incorporating add-on courses on entrepreneurship development, establishing business incubators, entrepreneurship clubs, Institution Innovation Council, etc. The government is making efforts through various schemes and academic institutions to promote and encourage students and youth towards entrepreneurship. Hence, in this context, it is imperative to identify the factors that motivate students in entrepreneurship and also to understand the obstacles they face.

Objectives of the Study

1. To identify and analyse the motivating factors of college students' intention towards entrepreneurship.
2. To measure the challenges and barriers that are perceived by the students in entrepreneurship.

Research Methodology

Population

The population of the study constitutes the college students of Nilambur Municipality.

Sample Design

The sample size is fixed as103, out of which 18 students were selected from 4 different colleges which include, 2 self-finance and 2 aided colleges, and 31 students from Private colleges by purposive sampling method.

Source of Data

The primary data are collected from college students in Nilambur Municipality and secondary data are collected from books and the internet.

Tool of Data Collection

The questionnaire method is used for collecting primary data.

Tools for Data Analysis

Descriptive statistics

Data Analysis and Interpretation

Objective 1: To identify and analyse the motivating factors of college students' intention towards entrepreneurship.

**Table no 1: Motivational Factors of College Students'
Intention towards Entrepreneurship**

Descriptive Statistics					
	Number	Minimum	Maximum	Mean	Std. Deviation
Motivation given by teachers	103	1	5	3.18	1.312
Ability to take risk	103	1	5	3.45	1.109
Potential for profit making	103	1	5	3.58	1.192
Government support for starting start up	103	1	5	3.43	1.134
Support from family	103	1	5	3.86	1.180
Economic condition of the family	103	1	5	3.41	1.232
Inner desire to become entrepreneur	103	1	5	3.67	1.324
Desire to do something innovative	103	1	5	3.75	1.258
Reluctance to work under someone	103	1	5	3.22	1.212

Providing job opportunities to others	103	1	5	3.48	1.251
Knowledge from the curriculum	103	1	5	3.39	1.223
Motivation from friends	103	1	5	3.53	1.203

Interpretation:

The above table describes the motivational factors of college students' intention towards entrepreneurship. Mean values greater than 3 are considered positive influences, and values less than 3 are considered negative influences. All the variables used to measure the motivational factors in the table show mean values greater than 3, indicating that all these factors highly influence students towards entrepreneurship. Therefore, we can conclude that the motivational factors listed in the table have a positive impact on students' intention towards entrepreneurship.

Objective 2: To measure the barriers that are perceived by the students in entrepreneurship.

Table no 2: Barriers towards Entrepreneurship

	Number	Minimum	Maximum	Mean	Std deviation
Competition	103	1	5	3.96	.766
Financial risk	103	1	5	4.22	.753
Lack of knowledge	103	1	5	4.19	.886
Work load	103	1	5	3.80	.856
Unrealistic expectation	103	1	5	3.65	.957
Difficult to hire individuals	103	1	5	3.59	.834
Lack of teamwork	103	1	5	3.81	.853

Interpretation:

The above table analyzes the barriers that are perceived by students in entrepreneurship. A mean value greater than 3 is considered a positive influence, and less than 3 is considered a negative influence. Here, all the variables used to measure the barriers show a mean value greater than 3. Hence, we can conclude that all these barriers influence students toward entrepreneurship.

Findings

- Motivational factors such as Knowledge, risk, higher profit, government support, family support, and motivation from friends are positively influencing students toward entrepreneurship
- Barriers like Lack of knowledge, financial risk, competition, unrealistic expectations, workload, and potential of loss are negatively influencing the students toward entrepreneurship.
- 72% of the respondents are female.
- Approximately 94% of respondents agree that entrepreneurship is a risky factor.

Suggestions

- Most of the students demand a business incubator to develop their entrepreneurial skills. The colleges should provide a business incubator facility to the students.
- Banks and financial institutions should provide grants and loans for students to assist them in the building of capital for start-ups as many of students perceive that funding from the financial institution is a major area of concern.

Conclusion

Based on the findings of the study, certain conclusions have been drawn. It was found that the students have a positive attitude towards entrepreneurship and they have a good perception of the attributes of entrepreneurship. Although students are highly concerned about the risks of entrepreneurship, their risk-bearing capacity does not seem to influence their attitude towards entrepreneurship. Furthermore, all students demand a business incubator at their colleges, and therefore, the management should take utmost care in starting a business incubator facility for the students.

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E-Commerce as an Effective Tool for Marketing: Recent Trends and Challenges

Muhammed Shaheen. A. P
Suhail. P

Abstract

As a result of the penetration of web-based technologies like social media and E-Commerce, many countries have become part of one large economy that is currently changing the global economy. Technologically advanced electronic commerce is currently leading toward enormous economic upheavals that are impacting all sectors of the economy, while all businesses are being transformed into information-based operational processes. At the same time, there are enormous advances in information technology that will eventually bring more changes in the field of trading activities. E-Commerce and its influence have been seen in the present business climate since marketing, finance, and commerce are three core functional areas that use the latest technologies in the worldwide market. Based on the importance of E-Commerce in today's businesses, the current study sought to investigate recent trends in E-Commerce for effective marketing, as well as relevant E-Commerce models and, finally, the benefits and challenges of E-Commerce, especially based on developing countries like India. The study will be handled with theoretical data based on published articles, reports, and literature in the area of E-Commerce. The study contents and the suggestions derived from the study will be more helpful to the various business management teams in their future actions related to the effective usage of E-Commerce in their daily business practices.

Keywords: E-Commerce, Business, Market, Consumers, Government

1. Introduction

The past few decades have seen a boom in electronic commerce in research, drawing experts from academia and industry from a variety of fields into the developing global economy. As a result, e-business and E-Commerce are now becoming an increasingly important part of business strategy and a powerful engine for overall economic growth. Relationships inside companies, between or among

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organizations, and between people have all been transformed by the use of information and communications technology (ICT) in business (Tanushev, 2022). In particular, the use of ICT in business has increased productivity by encouraging a rise in consumer engagement and by enabling the mass management, promotion, and distribution of a range of goods and services, leading to its emergence as a fast-expanding subject of study. Due to significant internet and mobile communication adoption, individuals may now access information through communications technology infrastructure, making large online applications and activities available from anywhere in the globe at any time. Since its lengthy history, E-Commerce has become a key element of our everyday lives through online shopping, selling, and any transaction involving the transfer of ownership/rights to use things or services over a computer-mediated network (Goyal et al., 2022).

The use of digital communications and digital information in commercial transactions to generate, convert, and reframe the relationships for value creation between or among individuals and organizations is known as E-Commerce (Utami et al., 2021). However, despite its widespread use, this definition falls short of capturing recent advancements in this novel and revolutionary business phenomenon. It can also refer to technology that automates business processes like the transmission of data, goods, and services, as well as payments across telephone lines, computer networks, or any other electronic channels. In a broader sense, it is the buying and selling of goods and services using information available on a computer network or the internet. A business organization may use E-Commerce to speed up operations, minimize expenses, reach new customers, and introduce new business models to the market (Burhanuddin et al., 2022). It also serves the needs of management, companies, and consumers to decrease service costs while speeding up service delivery.

Thus, the present study has realized the relevance and role of E-Commerce in this age businesses, and the study is mainly focused on the discussions related to E-Commerce applications and impacts in the day-to-day business world, especially focused on E-Commerce models, recent trends in E-Commerce, advantages of E-Commerce in businesses, and finally challenges of E-Commerce in developing countries like India. The objectives the are as follows;

1. To explore E-Commerce models for an effective marketing strategy
2. To examine the advantages of E-Commerce to the Businesses
3. To study recent trends in E-Commerce
4. To understand the challenges of E-Commerce in developing countries

2. Research Methodology

Research methodology refers to all those techniques and tools used by the researchers to conduct a study from its beginning to the end. Here the research methodology is mainly aligned with how the present study is framed to articulate based on the data

collected from its different sources. The present study was purely theoretical in nature and also based on secondary data from already published academic sources. The secondary sources of data include published reports of various companies or industries, authentic E-Commerce websites, previously published literature/articles, etc. Based on both qualitative and quantitative data from these reports, the researchers have followed an interpretivism approach for reporting this study, thus the study is a completely qualitative method of one that does not deal with any quantitative data in its analysis and discussions.

3. Popular E-Commerce models

After identifying the core relationship of businesses with the other parties, which may be categorized into primary categories based on the parties participating in the business transaction, constructing an E-Commerce model essentially comprises of designing and developing an E-Commerce website (Amitt & Zott, 2017), as depicted in the following diagram.

(Source: Application square, Digital solution, 2019)

A. Business to Consumer (B2C)

This type of E-Commerce focuses on transactions between businesses. Most experts predict that B2B E-Commerce will continue to develop more quickly than the B2C market since it is the fastest-growing segment of E-Commerce, making up over 80% of all E-Commerce (Kim et al., 2006). This idea includes, among other things, business memberships, technical services, manufacturing, and wholesale deals. It also includes household-to-household computerized exchanges for ordering, buying, and other administrative activities. In the B2B model, a company could sometimes exist between virtual enterprises when neither has a physical presence; in these cases, commerce can only be conducted online. Therefore, the B2B model has two main advantages: either it can automate corporate operations to swiftly and efficiently offer the proper goods and services, or it can manage the supply chain as well as production and procurement processes.

B. Business to Business (B2B)

This type of E-Commerce focuses on connections between and among companies. Most experts believe that B2B E-Commerce will continue to develop faster than the B2C segment because the B2B model involves computerized interactions between household members for placing an order, making purchases, and other administrative tasks (Anderson et al., 2003). It is the fastest-growing sector of E-Commerce, with about 80% of this type. It includes services related to, wholesale transactions, manufacturers, professional services, and commercial contracts. In the B2B paradigm, a company may sometimes exist between virtual businesses with neither having a physical presence; in such cases, the whole process is carried out over the internet. The B2B model, therefore, has two major benefits: it can successfully manage the supply chain as well as manufacturing and procurement processes, and it can automate corporate procedures to deliver the appropriate goods and services quickly and affordably.

C. Consumer to Consumer (C2C)

Consumer-to-consumer E-Commerce model, often known as C2C, is simply business done between customers or private persons. In this case, a consumer sells directly to some other consumer as consumers may advertise on online auction platforms and offer their goods to consumers (Chu & Liao, 2007). Moreover, both the buyer and the seller must register with the auction site, and while the buyer is not required to pay anything, the seller must pay a set fee to the online auction house in order to sell their items. This type of website connects buyers and sellers to conduct transactions, and if a buyer finds a particular product, he places an order for it on an E-Commerce website like eBay. Such a website now purchases the product from the seller and sells it to the consumer, resulting in a transaction between two customers, with the company acting as a middleman.

D. Consumer to Business (C2B)

A transaction in between a customer and a business entity is included in the C2B model. In this kind of exchange, the buyer determines the product's price rather than the seller (Antoniou & Batten, 2011). This category includes people who provide goods and services to companies. Five additional models involving interactions between the government and other entities, such consumers, corporations, and other governments, are being created in addition to the models already discussed. E-Governance is the term used to describe all of these interactions that encompass the government as a whole.

E. Business to Administration (B2A)

Business-to-Administration (B2A), In this digital commerce business model, transactions between companies and government agencies take place online. Government agencies (administration) utilize the central portals to trade and share information with different corporate organizations. B2A includes services for fiscal management, social security, legal paperwork, and other government-related procedures. The Business-to-Government (B2G) model is another name for the Business-to-Administration (B2A) concept.

F. Consumer to Administration (C2A)

The Consumer-to-Administration (C2A) ecommerce business concept covers online transactions between people and public entities. Customers may contact their local governments and authorities with queries and requests for details or any information about public services using the C2A E-Commerce paradigm.

4. Advantages of E-Commerce to the Businesses

The Indian business community is becoming more and more aware of the advantages that E-Commerce may provide. The crucial elements that will cause a quick uptake of online commerce are easy access to and navigation of the internet. Along with the need to create and spread technologies like mobile commerce, safe and secure payment methods are equally essential (Rahman & Hossain, 2022). India Reports offers reliable, understandable reports that are relevant to India and capture trends, depict business environments and are built to order for particular purposes. Other studies on India Reports are provided on retail, outsourcing, travel, cuisine, and other developing industries in India. E-Commerce offers a fresh setting for interacting with customers and carrying out transactions. Virtual shops are open every day of the week, 24 hours a day. While many internet merchants represent a single business, others, like Top Online Shopping (toponlineshopping.com), represent a group of businesses.

A. Global Trade: One of the key drivers of corporate globalization is E-Commerce. Decreases in trade barriers, the expansion of global capital markets, the adoption of International Financial Reporting Standards (IFRS), and Internet financial reporting are further influences. Online financial reporting has been very beneficial for E-Commerce businesses (Hunter and Smith 2008). A universal standard for accounting and financial reporting is called IFRS (Smith 2008). While some specific nations have substantially greater growth rates, the anticipated yearly growth rate of E-Commerce worldwide is up to 28%. In India, for instance, where the market is younger than normal, a 51 percent growth rate for E-Commerce has been predicted.

B. Virtual Business: E-Commerce has made it possible for corporate organizations to operate virtually. A virtual business is a modular organization made up of several independent corporate entities linked by computer technologies through the internet. Because the various businesses that make up the virtual company are networked, it is possible to share resources, expenses, and market access. Only a business firm's essential capabilities are contributed. The advantage of a virtual company is that it has the adaptability needed to take advantage of new possibilities and compete in a challenging market.

C. Lower Search Costs: Low search costs and significant pricing transparency are anticipated to be brought about through the Internet. The development of standards like XML will make it easier to create search engines that will track pricing across many websites when rivals simply disclose their prices on the Internet. Price transparency like this may

make collusion easier. Due to enhanced market communication and openness as well as the possibility for more frequent market contacts, internet technology may provide the perfect micro-environment for collusion. Particularly, market design and ownership inside online marketplaces and collaborative Internet sales operations may raise issues about collusion.

D. Increased Power of Downstream Players: The market position of downstream purchase rs in relation to suppliers may be further strengthened by the expansion of E-Commerce. First off, decreased search and switching costs will give buyers' supplier-switch threats more credibility, increasing their leverage in negotiations. Second, buying groups and thoughtful market planning may also increase their purchasing power. Thirdly, the growth of international merchants may be aided by the expansion of regional retail marketplaces. Compared to conventional local or national merchants, they will often have a lot more negotiating leverage with suppliers.

Other important advantages of E-Commerce to the businesses are;

- Easy & vastly growing online community
- Unlimited Cloud space for products and services
- Breaking of geographical and business time restrictions
- Easy access to national and global market
- Quick delivery of information
- Automated and improved business processes
- Application of advanced technologies
- Availability/ purchase/ sales at 24/ 7/ 365- Never close
- High customer base
- Increased visibility to the brand
- Build customer loyalty etc.

5. Recent Trends in E-Commerce

Recent trends reported until 2022 in the era of electronic commerce are listed below with brief discussions. Some of the trends are just mentioned under this head, those may not require more explanation for the clarity in communication.

A. Virtual Reality (VR) And Augmented Reality (AR)

A customer may virtually explore a digital shop, set virtual items on real-world objects, and try on virtual clothing using AR and VR technology. For instance, using the mobile device's camera, customers of the new Ikea app may see furniture in their homes. As customers encounter more improved customer service, augmented reality might encourage them to make a purchase (Lee & Leonass, 2018). Simply said, integrating AR and VR might mark the biggest change in E-Commerce technology since its inception. The growth of voice search is another trend that fits here. Compared to typing at 40 words per minute, humans can talk 150 words per minute. ECommerce merchants should

optimize their site content to be searched suitably as voice search and speech recognition grow more accurate.
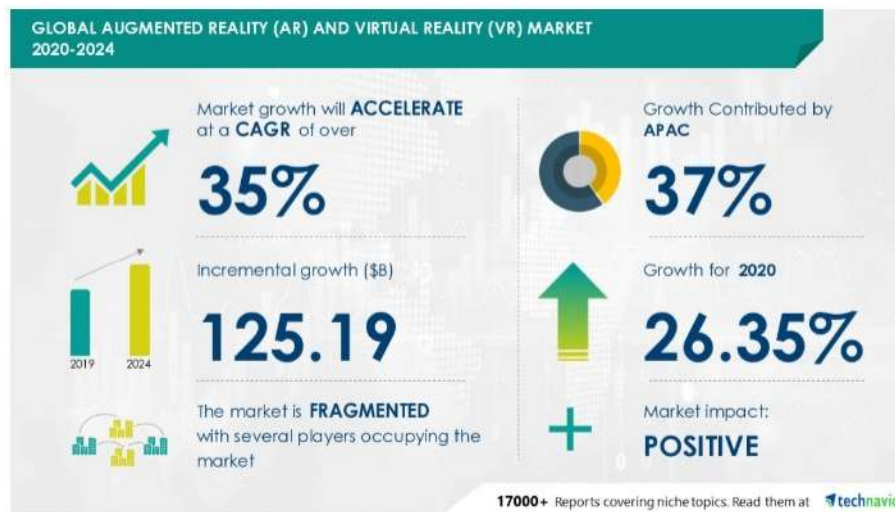
According to an Oracle report, virtual assistants will be used in customer support by 80% of businesses, while 78% of organizations aim to use VR technology by 2024. Due to brand alignment with consumer desires for self-service digital offerings, client interactions with firm personnel have drastically decreased: In the Oracle research "Can Virtual Experiences Replace Reality?" 35% of the participating businesses point out that customers want to avoid interacting with corporate employees both during the sale and after the purchase. Although significant investments have been made in cutting-edge technologies like virtual reality, virtual assistants, and artificial intelligence to meet customer needs, their business integration may run the risk of failing to yield the desired results if brands are unable to match and interpret the various data sources to which they have access. Overall, by 2024, the world market will grow around 35% more in terms of CAGR through adapting these AR and VR strategies in their business operations.

Customized Experience: Customers may personalize their purchasing experiences using augmented reality. For instance, the producer of Converse shoes provides a mobile application that enables customers to test out such items from the comfort of their own homes. Users may see a picture of a shoe (on a foot) straight on the phone screen by merely pointing the phone at the foot. A similar method enables consumers to choose between styles and colors for various apparel companies. Online purchasing will become more distinctive, engaging, and personalized thanks to virtual and augmented reality. The businesses that pay close attention to these innovations will stand to gain the most from them.

B. Artificial Intelligence (AI) and Machine Learning

Although the cost of artificial intelligence and machine learning has prevented many multinational corporations from using them, the trend is expanding and new, less expensive technologies are starting to hit the market (Marr, 2019). According to Forrest

Research, firms will become more competitive and earn 21% CAGR market growth only because of artificial intelligence technologies adaption that is predicted in the North American region. By 2025, artificial intelligence will manage more than 76.44 ($B) increment growth to the companies in world market.

Software for E-Commerce may benefit from the addition of machine learning features. The segmentation and personalization of customers benefit greatly from intelligent algorithms. By assisting in the discovery of trends in customers' online surfing, they greatly expand the potential for individualized suggestions. The use of these technologies may increase sales by 15%. With inventory forecasting and demand forecasting, order and inventory management may be more effectively managed. Anticipatory shipping algorithms, which can forecast shipping demand before an order is placed, may be useful for shipping software (Enache, 2021).

C. Personalization

Contrary to assumptions from smartphones, customization is among the top developments in online commerce for 2020, not delivery or artificial intelligence. Making clients feel valued is the main problem for an internet shop. According to a PayU investigation, the client wants to feel like a special receiver and can rely on goods, content, communication channels, and tailored services. Customization is a top trend this year, and a review of specialist magazines, internet polls, and studies has shown that an increasing number of consumers are seeking for unique offers or advertising. Making clients feel unique is one of an internet retailer's biggest challenges. Instead of feeling like one of thousands of other customers, they like to feel like a special receiver who can rely on the goods, the information, the communication channels, and the tailored services. It is a phenomenon supported by facts, not just a sporadic observation. According to research by AgileOne, which monitors consumer behavior, 70% of Americans and Britons want more customized "experiences" when they purchase online.

Other noted trends in E-Commerce are listed below;

- Variety of payment option
- Smart mobile shopping tools
- Advanced subscription models
- Focus on sustainability
- Enhanced customer support services
- Marketing and products that are more individualized
- New marketplaces and distribution routes are more efficient
- Websites that are well optimized for conversions
- Expansion of forward-deployment fulfilment centres (FDFC)
- Increased competition in online advertising
- Use real-time analytics and machine learning to boost sales
- Preferences for firms that are ethical and self-sufficient
- Automated B2B transactions
- Consumer privacy preferences are changing, etc

6. Challenges of E-Commerce

This study looks at the infrastructure problems that make it hard for poor countries and developing countries to use E-Commerce. Recent polls in several Southeast Asian countries show that SMEs' problems with E-Commerce, the poor economic environment, the high cost of ICT, and worries about security are some of the things that people think are holding back the spread of E-Commerce in developing countries. Internal barriers include a lack of internal communications infrastructure in SME firms, a lack of ICT awareness and knowledge, a lack of ICT-capable/literate managers and workers, a lack of financial resources, and a belief that ICTs don't matter. Here are the main worries that make it hard for more people to use information technology and do business online:

A. Lacking Knowledge Awareness: Most small and medium-sized enterprises (SMEs) in developing countries haven't used E-Commerce or the Internet because they don't see how it can help their businesses. Often these small business owners don't know about new trends, so they stick to what they know. For example, they think that E-Commerce is only needed by big companies and is an extra investment.

B. Obstacles in Infrastructure Facilities: People have pointed out that poor infrastructure makes it hard for developing countries to use E-Commerce. Access to technology like computers, the internet, and connections, as well as a lack of specialisation, trustworthy online merchants of the right size, an imperfect legal system, and a lack of large-scale telecommunication, are major infrastructure problems. On the other side, citizens of an industrialized nation can decide to use E-Commerce because they have access to a wide range of Internet connections and other telecommunications services.

C. Limitations of Socio-economic Nature: Most developing countries have to get past a number of economic and legal hurdles before they can take part in electronic commerce.

People have said that economic conditions, education systems, payment systems that make it easy to move money, and distribution systems that make it easy to get things from one place to another are some of the biggest problems with E-Commerce in underdeveloped countries. Gross domestic product (GDP) and per-capita income are two common economic indicators. GDP and per-capita income are often seen as major barriers to E-Commerce adoption in developing countries because E-Commerce depends on technology infrastructures that are expensive for many developing countries and because their economies are in bad shape, so they are unlikely to participate. Also, most education systems in developing countries are seen as a barrier to its use.

D. Political and Government Hindrances: Most underdeveloped nations lack ICT strategy to govern Internet service supply, which prevents growth. Free trade, national government monopolies over nationwide telecommunications, and import trade restrictions on IT instrumentation like hardware and software all hinder E-Commerce adoption. The government's commitment to Internet service supply and the reduction of import taxes cut costs, making equipment cheaper and promoting Internet connection for future growth. Most poor countries lack a government plan for Internet connectivity, E-Commerce, or information policies to improve functioning. Finally, impoverished countries without national information policy may not have government-provided internet services.

7. Implications of the Study

E-Commerce can be a very useful tool in developing countries, but only if some problems are fixed. The governments of developing countries have to show that they have the political will to get rid of the things that are stopping widespread adoption right now. But because of these obstacles, we face problems that we can think about when making good E-Commerce policies. Here are some of the ideas that can be implemented by the businesses as an effective tool for their marketing:

- Create a scenario that demonstrates the E-Commerce -related technologies that will be used in the next years.
- Thoroughly examine and assess the available technologies, taking into account their obsolescence.
- Thoroughly assess the technology suppliers, practises, and transfer to businesses and organisations in the area.
- Develop the necessary human capital skills to effectively transfer technology to local developers.
- Design a bid process for technology purchases that involves as many technology suppliers as is practical while also bringing down the price of the technology.
- Consider the implications and outcomes of using these technologies across different sectors.
- Consult with institutions and international organisations that are well-informed about the technology adaption.

- Establish domestic restrictions on the import and use of encryption technology.
- Describe how the government interacts with encryption techniques.

8. Conclusion

Even though most developing countries don't have the right policies and infrastructure to support widespread Internet use, the Internet is not yet a resource that everyone can use. This is because most developing countries don't have the right policies and infrastructure to support widespread Internet use. E-business is a new kind of online business that doesn't have any borders. It has a new way of doing business with clients all over the world, new business models, new strategies, and new ways to pay. If a company wants to make money in a new market, its employees need to know how to use the right tools and technologies to help the developing countries. This has made it easier for human resources and small and medium-sized businesses (SMEs) to get access to global markets and sped up the process of E-Commerce has helped the economy of the country and small and medium-sized enterprises (SMEs) by making it easier for them to do business directly with customers in other countries. However, these advantages for developing countries are also facing many challenges in the global market because of bad information and a lack of modern technology. Social culture, political rules and regulations, and international rules and regulations are also becoming barriers to E-Commerce.

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Testing of Efficient Market Hypothesis: An Empirical Evidence from Indian Stock Market

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Abstract

This paper made an attempt to study the efficient market hypothesis and tested the empirical study on a weak form of market efficiency. Market efficiency talks about the reflection of price by market-related information. Here the researcher studied on weak form of efficiency and found that price cannot be predicted by analysis of past prices of stock. In this paper, run test is applied to measure the market efficiency. 30 companies are selected from the Sensitivity index of BSE (Bombay Stock Exchange). And the researcher found that the companies' share prices are following the random walk.

Keywords: Market Efficiency, Stock Price, Sensex, Random Walk, and Run Test

Introduction

The stock market is the major economic reflector of the economy. The information available in the market will affect the stock price either positively or negatively or it can be neutral. A market is said to be efficient when the information available fully reflects the stock price. The efficient market hypothesis (EMH) has been the central proposition of finance, since the early 1970s and also it is one of the most controversial. Market efficiency can be classified into three, which includes: a) Weak Form Efficiency, b) Semi-Strong Form Efficiency, and c) Strong Form Efficiency.

The Efficient Market Hypothesis (EMH) theory was proposed by Eugene Fama in the 1970's. EMH states that security prices fully reflect the entire information, i.e., the prices of financial instruments are fully reflecting all the information currently available. Simply EMH means the stock always traded at its fair value (the statement is controversial to technical analysts). Following are the three categories of the Efficient Market Hypothesis;

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Weak Form Efficiency: It is also known as Random Walk Theory. Weak form of efficiency states that future stock prices are not influenced by past prices or past events, it is random, i.e., the investors cannot earn any abnormal return (super normal/excess profit) based on past prices.

Semi-Strong Form Efficiency: This form of efficiency claims that, not only past prices but the public information such as dividend announcements, earnings, ratios, other news, etc., also discount the market. The investors making decisions based on the information that becomes public cannot make any abnormal return.

Strong Form Efficiency: Strong form efficiency tells that even privately available information, i.e., the information which is secretly available, also reflects in the market. An efficient market will always fully reflect available information; the present paper makes an attempt to study the weak form of market efficiency based on the theory of Efficient Market Hypothesis (EMH, Fama). The closing stock prices of 30 companies are selected from the Sensitivity index of BSE (Bombay Stock Exchange), and then statistical tools are applied to obtain whether the successive price change is independent or not. Research is being carried out keeping in mind to draw the efficiency of the Indian Stock Market at weak form with the help of movement of the closing stock prices over a period of time.

The major objectives of the study can be stated as follows.

- To test the EMH (Efficient Market Hypothesis) under a weak form of market efficiency.
- To investigate whether any Sensex companies have outperformed in the market during the study period.

Literature Review

Martin Sewell (2012)1, studied The Efficient Market Hypothesis: Empirical Evidence from Dow Jones Industrial Average (DJIA) and revealed the extent to which the four statistical tests rejected market efficiency across different time periods, Daily, Weekly, Monthly, and Annual Returns are considered for the study.

Sadanand Vijay Kumar (2020)2, studied on efficient market hypothesis on the Indian stock market and the period was 1st April 2017 to 31st 2018. The overall results of the study show that the price movements of the securities listed on the SENSEX are not affected by their past prices (The Price of securities is Random), which means historical prices cannot be used for predicting future movement.

Neeraj Gupta, Ashwin Gedam (2014)3, study on Testing of Efficient Market Hypothesis: a study on Indian Stock Market, runs test has been used to find out market efficiency which reveals that almost in all the cases except Tech Mahindra, the stock prices are independent of the past prices. The number of observed runs is falling between the upper and lower limit.

Kashif Hamid, et al, (2010)[4], test the Weak form of the Efficient Market Hypothesis in Asia-Pacific Markets. Empirical study is conducted to test the weak-form market efficiency of the stock market returns of Pakistan, India, Sri Lanka, China, Korea, Hong Kong, Indonesia, Malaysia, Philippines, Singapore, Thailand, Taiwan, Japan, and Australia. In aggregate, they concluded that the monthly prices do not follow random walks in all the countries of the Asian-Pacific region. The investors can take the stream of benefits through the arbitrage process from profitable opportunities across these markets.

Rui Dias, et al, (2020)[5], tested the Weak Form of Efficient Market Hypothesis: Empirical Evidence from Equity Markets, test was conducted its weak form, in sixteen international financial markets in the period from January 2002 to July 2019. And the results support the conclusion that the random walk hypothesis is not supported by the indices, the markets are not efficient, in its weak form, that is, the implementation of efficient trading strategies supported by historical prices is advantageous to investors.

Saqib Nisar and Muhammad Hanif FCMA (2012)[6], study suggests that none of the four major stock markets of South-Asia follows Random-walk and hence all these markets are not the weak form of efficient market.

Data and Methodology

This study is based on secondary data and the period of the study is from 1st April 2018 to 31st December 2022. The stocks of the sensitivity index of BSE Sensex are considered for the study. 30 well-established companies have been selected for the study. The source of data is mainly secondary in nature data and are collected from the BSE website and other secondary sources are used for the study. The 'Run Test' is used to identify the efficiency of the stock market. The runs test stands upon the argument that if price changes or returns are random then an actual number of runs (Runs) must near to the expected number of runs. Let $+n$ and $-n$ be considered to reflect the totality of positive returns ($+$) and totality of negative returns (-) respectively, regarding a sample with "n" observations, where $m = n+ + n-$. For greater sample size the test statistic is just about normally distributed.

$$\frac{2\,n_+\,n_-}{n} + 1 \tag{1}$$

$$\frac{2\,n_+\,n_-\,(2\,n_+\,n_- - n)}{n^2\,(n-1)} = \frac{(\mu - 1)(\mu - 2)}{n - 1}$$

Analysis and Discussion

The Indian stock market is one of the fastest growing stock markets in the world. After the adoption of the New Economic Policy in 1991, India started the liberalization process. So, industry and business sector witnessed tremendous growth. The market efficiency talks about stock always traded in its fair value on stock exchange, and it's impossible to an investor to earn abnormal return. For studying efficient market hypothesis, a hypothesis testing is taken into consideration; two hypotheses are formulated H0 is 'past prices that are not reflected on the present prices', and, H1 is 'past prices that are reflected on the present prices. Run test is employed for testing the market efficiency. Run test is a non-parametric test which is used to test the randomness of the series.

30 companies are selected from BSE Sensex. The most sensitivity index of BSE and run test is conducted on the mentioned stock 's closing price, price changes over a certain period of time (April 2020 to December 2022) and each price change is either designated as a plus (+), if it is an increase in price or a minus (-), if it is a decrease in price. To test the weak form of efficiency of the stock market, the Runs Test is applied at 5% significance level. Lower limit and upper limit are calculated as below;

Lower limit: $[\mu - t^*(\sigma)]$ and Upper limit: $[\mu + t^*(\sigma)]$
(Where μ=mean and σ= standard deviation)

Table 1
Result of Hypothesis Testing

SL No	Company Name / Name of the Stock	n1	n2	μ	σ	UL	LM	AR	Decision: Hypothesis testing at a given level of significance
1	Asian Paints Ltd.	20	12	16	2.6	21.3	10.7	17	Actual runs lie between the limit, H0 accepted
2	Axis Bank Ltd.	18	14	16.8	2.74	22.3	11.2	18	Actual runs lie between the limit, H0 accepted
3	Bajaj Finance Ltd.	18	14	16.8	2.74	22.3	11.2	15	Actual runs lie between the limit, H0 accepted
4	Bajaj Finserv Ltd.	18	14	16.8	2.74	22.3	11.2	15	Actual runs lie between the limit, H0 accepted
5	Bharti Airtel Ltd.	18	14	16.8	2.74	22.3	11.2	16	Actual runs lie between the limit, H0 accepted
									Actual runs lie

6	Hindustan Unilever Ltd	18	17	18.5	2.91	24.4	12.6	19	between the limit, H0 accepted
7	Housing Development Finance Corporation Ltd.	16	16	17	2.78	22.7	11.3	22	Actual runs lie between the limit, H0 accepted
8	HDFC Bank Ltd.	16	16	17	2.78	22.7	11.3	22	Actual runs lie between the limit, H0 accepted
9	HCL Technology Ltd.	17	0	16.9	2.77	22.6	11.3	16	Actual runs lie between the limit, H0 accepted
10	ICICI Bank Ltd.	20	12	16	2.6	21.3	10.7	21	Actual runs lie between the limit, H0 accepted
11	IndusInd Bank Ltd.	21	11	15.4	2.5	20.5	10.3	18	Actual runs lie between the limit, H0 accepted
12	Infosys Ltd.	18	14	16.8	2.74	22.3	11.2	17	Actual runs lie between the limit, H0 accepted
13	ITC Ltd.	18	14	16.8	2.74	22.3	11.2	14	Actual runs lie between the limit, H0 accepted
14	Kotak Mahindra Bank Ltd.	18	14	16.8	2.74	22.3	11.2	19	Actual runs lie between the limit, H0 accepted
15	Larsen & Toubro Ltd.	21	11	15.4	2.5	20.5	10.3	13	Actual runs lie between the limit, H0 accepted
16	Mahindra and Mahindra Ltd.	21	11	15.4	2.5	20.5	10.3	16	Actual runs lie between the limit, H0 accepted
17	Maruti Suzuki India Ltd.	19	12	15.7	2.59	21	10.4	14	Actual runs lie between the limit, H0 accepted
18	Nestle India Ltd.	13	19	16.4	2.68	21.9	11	17	Actual runs lie between the limit, H0 accepted
19	NTPC Ltd.	17	15	16.9	2.77	22.6	11.3	20	Actual runs lie between the limit, H0 accepted
20	Power Grid Corporation of India Ltd.	20	12	16	2.6	21.3	10.7	19	Actual runs lie between the limit, H0 accepted
21	Reliance Industries Ltd.	16	16	17	2.78	22.7	11.3	19	Actual runs lie between the limit, H0 accepted
22	State Bank of India	20	12	16	2.6	21.3	10.7	19	Actual runs lie between the limit, H0 accepted
23	Sun Pharmaceutical Industries Ltd.	20	12	16	2.6	21.3	10.7	16	Actual runs lie between the limit, H0 accepted Actual runs lie

24	Tata Motors Ltd.	19	13	16.4	2.68	21.9	11	17	between the limit, H0 accepted
25	Tata Steel Ltd.	21	11	15.4	2.5	20.5	10.3	16	Actual runs lie between the limit, H0 accepted
26	Tata Consultancy Services Ltd.	18	14	16.8	2.74	22.3	11.2	19	Actual runs lie between the limit, H0 accepted
27	Tech Mahindra Ltd.	20	12	16	2.6	21.3	10.7	15	Actual runs lie between the limit, H0 accepted
28	Titan Company Ltd.	18	14	16.8	2.74	22.3	11.2	17	Actual runs lie between the limit, H0 accepted
29	UltraTech Cement Ltd.	20	11	15.2	2.5	20.3	10.1	18	Actual runs lie between the limit, H0 accepted
30	Wipro Ltd.	19	13	16.4	2.68	21.9	11	16	Actual runs lie between the limit, H0 accepted

n1: no of +ve sign
n2: no of -ve sign
σ: Standard Deviation
UL: Upper Limit
LL: Lower Limit
AR: Actual Run or Observed Run

If the number of runs is significantly higher or lower than expected, the hypothesis of statistical independence may be rejected. Here the observed number of runs falls within the limit (Upper & Lower Limit), and we can reach the conclusion that the prices are independent at a 5% level of significance, i.e., H0 is accepted. Thus, the market is weakly efficient.

Conclusion

In this study, the researcher analyzed the weak form of the efficient market hypothesis. The closing values of Sensex companies are selected to understand the EMH, the run test is applied to the selected variables and the study reveals that all the companies are following the random walk theory. The market is efficient in its weak form of variant because in all the cases the number of observed runs is falling between the upper and lower limit, it is the evidence of Random Walk Theory during the study period.

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Embedding Artificial Intelligence Technology in Electronic Commerce: A New Road Map in Competitive Business Spectrum

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Abstract

This article discusses the impact of artificial intelligence (AI) on the e-commerce industry, including how AI is changing customer expectations and driving new business models. The article cites research from Gartner that predicts the majority of customer service jobs will be replaced by AI by 2020. The article also explores how corporations are using AI for comment mining, chatbots, product recommendations, and big data processing in e-commerce. Ultimately, the article presents a new roadmap for competitive businesses to integrate AI into their e-commerce strategies.

Keywords: Artificial intelligence, E-commerce, Customer expectations, Business models, Gartner, Chatbots, Product recommendations, Big data processing, Competitive strategy, Comment mining.

Introduction

Amazon and Netflix are familiar to everyone in the present social order. The way in which these platforms have changed the way customers access content has disrupted the entertainment industry, and the case of Uber is no different. Observe how it disrupted traditional taxi services. The impact of technological advancements is evident in all sectors leading to new business models which eventually change customer expectations and finally propel organizations to come up with new products and services. The advancements in artificial intelligence have brought about drastic changes in the field of commerce and industry. The emergence of artificial intelligence is paving the way for new ideas and patterns for the development of e-commerce. According to market research firm Gartner, by 2020, more than 80% of customer service jobs will be replaced by artificial intelligence. Corporations are harnessing artificial intelligence technology to conduct comment mining, develop chatbots, make product recommendations, and process big data.

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Artificial Intelligence: A Unique Roadmap

Artificial Intelligence (AI) is a technology science that develops theoretical methods, technologies, and applications to simulate and extend human intelligence. In the summer of 1956, a group of visionary young scientists led by McCarthy came together to discuss issues related to using machines to simulate intelligence, and they proposed the term "artificial intelligence" for the first time. This marked the formal birth of the emerging artificial intelligence discipline, which has since become a broad interdisciplinary frontier science. Artificial intelligence technology revolves around intelligent machines that mimic human mental work, such as robots, voice assistants, and image recognition systems. These machines can make an immediate response after receiving control commands.

Elements of Artificial Intelligence

The key elements of AI are depicted as below:

Natural Language Processing (NLP)

NLP is a branch of AI that allows machines to use and understand human language.

Expert Systems

Expert systems are machines or software applications that provide explanations and advice to users through a set of rules provided by an expert

Robotics

Intelligent robots are mechanical structures in various shapes that are programmed to perform specific tasks based on human instructions

Intelligent Agents

Multi-agent systems (MAS) are a subfield of AI that builds computational systems capable of making decisions and taking actions autonomously.

Computational Intelligence

Computational Intelligence is the computational aspect of AI that focuses on utilizing and deriving value from data.

Possibilities of Artificial Intelligence

Artificial Intelligence could be used across various industries and domains, including

• **Healthcare:** AI is used for medical diagnosis, drug discovery, and predictive analysis of diseases.

• **Finance:** AI helps in credit scoring, fraud detection, and financial forecasting.

• **Retail:** AI is used for product recommendations, price optimization, and supply chain management.

• **Manufacturing:** AI helps in quality control, predictive maintenance, and production optimization.

• **Transportation:** AI is used for autonomous vehicles, traffic prediction, and route optimization.

• **Customer service:** AI-powered chatbots are used for customer support, answering frequently asked questions, and handling simple requests.

• **Security:** AI is used for facial recognition, intrusion detection, and cybersecurity threat analysis.

• **Marketing:** AI is used for targeted advertising, customer segmentation, and sentiment analysis.

• **Education:** AI is used for personalized learning, adaptive testing, and intelligent tutoring systems.

Embedding Artificial Intelligence Technology in Electronic Commerce

Amazon has long recognized the benefits of artificial intelligence and related technologies. The e-commerce giant uses machine learning to improve product selection, user experience, and optimize logistics. Currently, the application of artificial intelligence in the field of e-commerce is mainly reflected in the following aspects:

• **More Targeted Marketing and Advertising**

Advancements in AI and machine learning have enabled deep personalization techniques that allow content to be customized for each user. By analyzing big data from purchase histories and other customer interactions, businesses can zero in on what their customers really want and deliver messages that will most resonate with them.

• **Seamless Automation**

AI can play a significant role in helping you automate repetitive tasks that keep your online store functioning. With AI, you can automate tasks such as product recommendations, loyalty discounts, low-level support, and more.

- **Personalized Product Recommendations**

It is now easier than ever to collect and process customer data about their online shopping experience. Artificial intelligence is being used to offer personalized product recommendations based on past customer behavior. Over time, machine learning will require less and less involvement from data scientists for everyday types of applications in e-commerce companies.

- **Pricing Optimization**

AI-enabled dynamic pricing is a strategy of changing your product price based on supply and demand. With access to the right data, today's tools can predict when and what to discount, dynamically calculating the minimum discount necessary for the sale.

Enhanced Customer Service

With virtual assistants and chatbot technology, you can deliver the appearance of higher-touch customer support. While these bots are not completely self-reliant, they can facilitate simple transactions, leaving live support agents able to focus on more complex issues.

- **Customer Segmentation**

AI systems can explore highly complex and varied options for customer engagement very quickly, and continuously optimize their performance as more data becomes available. This means marketers can set parameters and allow the AI to optimize and learn to achieve precision.

- **Smart Logistics**

Smart logistics or intelligent logistics is all about using real-time information through sensors, RFID tags, and the like for inventory management and to better forecast demand. Machine learning systems become smarter over time to build better predictions for their supply chain and logistics functions.

- **Sales and Demand Forecasting**

Artificial intelligence can help us plan inventory based on real-time and historical data. Real-time customer analytics will continue to be important to monitor and react to shifts in consumer demand that can be harnessed for price optimization or targeted marketing.

Issues of Artificial Intelligence:

Artificial Intelligence has the potential to bring many benefits to society, but it also raises some important issues that need to be addressed, including:

- Bias and Discrimination: AI systems can perpetuate and amplify human biases, leading to discriminatory outcomes.
- Job Displacement: AI may automate jobs, leading to job loss and unemployment.

- Lack of Transparency: AI systems can be difficult to understand and interpret, making it challenging to identify and address bias and errors.
- Privacy Concerns: AI can collect and process vast amounts of personal data, leading to privacy concerns and the potential for abuse.
- Security Risks: AI systems can be vulnerable to cyber-attacks, making it important to ensure the security of AI systems.
- Ethical Considerations: AI raises important ethical questions, such as the acceptable use of autonomous weapons, the right to autonomous decision making, and the responsibility of AI systems for their actions.
- Regulation: There is a need for clear and effective regulation to ensure the responsible development and deployment of AI.

It is crucial to address these issues as AI continues to play an increasingly important role in our lives and society.

Future of E-Commerce with AI

AI is transforming the e-commerce industry by offering a highly personalized shopping experience through virtual buying assistants, improving the online shopping experience for both customers and retailers. It also enables e-commerce stores to analyze big data to engage, segment, and retarget their customers based on their behavior. Personalization is key to the success of online businesses, and AI can forecast future purchasing patterns and make product recommendations based on browsing patterns.

According to a report by Business Insider, almost 85% of customer interactions would be managed without human intervention by 2020, and this seems to have become a reality with emails, phone calls, and chats being efficiently and quickly responded to by automated systems. Tractica predicts that by 2025, the profit generated from the direct and indirect application of AI software will increase up to $59.8 billion.

However, there is still room for improvement. According to recent surveys, up to 85% of AI initiatives fail to deliver on their promises. There is a need for improvements in AI algorithms, and this number is expected to decrease as modern AI solutions incorporate these improvements.

Conclusion

Currently, e-commerce giants are actively applying artificial intelligence technology to optimize their own e-commerce platforms and increase competitiveness. With the rapid development and continuous progress of research technology, mainstream artificial intelligence technologies such as deep learning platforms, voice analysis technology, biometrics technology, image recognition technology, video analysis technology, robot automatic processing systems, text analysis, and natural language processing (NLP) will continue to develop steadily, promoting the development and reform of e-commerce in

the future. With the support of artificial intelligence technology, e-commerce will have a broader development prospect, which is conducive to the establishment of better customer relationship management and the promotion of sales while bridging the gap between personalization and privacy.

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The Effectiveness of Different Types of Customer Analytics Tools in Improving Customer Retention

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Abstract

Customer retention is crucial for the success of any business. In recent years, customer analytics tools have gained popularity as a way to improve customer retention rates. This study aims to examine the effectiveness of various customer analytics tools, including customer satisfaction surveys, customer behavior tracking, and sentiment analysis, in improving customer retention rates. The study also explores which types of tools are most effective for different types of businesses. Now a days consumer have access to information on where to obtain goods and services, what and how to buy, and what to expect to spend. Organizations must make every effort to provide the appropriate products and marketing campaigns to their customers because they can easily find the ideal products for their requirements. Organizations can accomplish this by using customer analytics solutions to understand their customers.

Introduction

Customer retention is a critical factor in the success of any business. While acquiring new customers is important, retaining existing customers is equally important. It is well known that it costs much less to retain an existing customer than to acquire a new one. Customer analytics tools have gained popularity in recent years as a way to improve customer retention rates. These tools enable businesses to analyze customer data to identify patterns, preferences, and behaviors, which can be used to tailor marketing and service offerings to individual customers. However, the effectiveness of different types of customer analytics tools in improving customer retention rates is not well understood.

A single, accurate image of an organization's customer base is what customer

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analytics seek to achieve so that decisions about how to best attract and keep new clients may be made. Additionally, it may recognise important customers and provide pro-active ways to communicate with them. Today's consumers have more power in the marketplace. Businesses spend a lot of money trying to learn what customers like and dislike so they can make wise decisions. Customer analytics is therefore a helpful procedure in achieving that goal.

The customer journey can be optimised by businesses that have a thorough understanding of the purchasing patterns and lifestyle preferences of their customers. Large quantities of accurate data are necessary for accurate analysis. Without it, analysis insights could be entirely off and useless.

Customer analytics refers to the procedure of obtaining and using customer data analysis to recognise, draw in, and retain customers. These customer data can be gathered from a variety of sources, including interactions a customer has with the company. All of this data are gathered by sophisticated software, which then transforms them into insightful information that businesses can utilise to improve their strategy. These insightful tips are helpful for businesses' efforts in product creation, marketing, and sales. They can provide more relevant experiences to their clients as a result in all of their interactions. A customised experience is what encourages a consumer to continue with a company and eventually develop brand loyalty.This research could examine the impact of various customer analytics tools, such as customer satisfaction surveys, customer behavior tracking, and sentiment analysis, on customer retention rates. The study could also explore which types of tools are most effective for different types of businesses.

Importance of Customer Analytics

A corporation must effectively use consumer behaviour analytics in a wide range of situations. It helps them in activities including management, pricing, and promotion. Their strategies wouldn't have a chance of success without an understanding of consumer behaviour. Companies use predictive analytics to foresee customer behaviour using customer data collected from all channels of communication. A 360-degree customer view gives businesses a comprehensive understanding of their clients. It aids them in developing strategies for attracting new consumers, keeping existing ones, and actively engaging with them. The process is as follows:

- **Customer Acquisition:**

You may create efficient marketing and sales strategies that target the correct customers by understanding consumer behaviour. Your marketing expenses can be greatly decreased by choosing the correct audience to target. The conversion ratio could be raised by creating customised marketing efforts.

- **Customer Retention:**

You can create predictive customer analytics by examining the behaviour of customers who left. In order to stop future churn, appropriate initiatives can then be developed to engage at-risk clients in a proactive and effective manner.

Customer Engagement:

Personalized experiences are essential for effective customer engagement. Customers enjoy getting customised solutions that meet their wants. You can interact with them in a more meaningful way by researching their service requests, niche, and issues. Customer engagement statistics play a significant role in fostering customer connections and product uptake.

Working of Customer Analytics

There are three steps you need to take into consideration when putting customer analytics to use. They are:

1. Data Collection
2. Validating Data
3. Data Analysis

1. Data Collection

A customer interacts with your brand on many touchpoints. Data collection is the process of gathering information from all customer interaction channels. These channels consist of:

- Website Analytics: The users of your website can provide you with a wealth of helpful information. You can collect these statistics with the aid of tools like Mixpanel and Google Analytics. There are further tools as well, such as CrazyEgg and Optimizely, that can provide you with sophisticated data such as heat maps, session recordings, etc.
- Customer Service Calls: You can learn about the types of questions a consumer is raising through customer service calls. This would aid you in figuring out their problems. You can conduct a thorough behavioural analysis using the qualitative data listed below.

2. Validating Data

You must properly validate all of the data you gather. All of your customer analytics efforts may be in worthless without validation. To assure the accuracy of your data, a suitable validation process must be created. There are a few guidelines for data validation, including the following:

• Have a dedicated resource in your Data operations team whose main responsibility is to validate data;
• Ensure that the data is comprehensive and no fields are left blank for future analysis.

• Make use of a platform for customer data analytics that provides a thorough 360-degree perspective of a consumer. It may also function as a platform for client success.

3. Data Analysis

You must have your client personas created before you start conducting consumer analytics through data. You can develop forecasting models for your company by cross-validating the acquired data with consumer use cases. This aids in discovering consumer decisions that directly affect your company. These options could include things like how customers find your product, the aspects they enjoy it the best for, what value means to them, and the reasons they stop using it.

In addition to the business-related information mentioned above, you can also examine the customer's personal details, such as their job description, age, sex, marital status, and location. To identify the underlying patterns in such a huge amount of data, you would need to apply data mining techniques using technologies like AI and machine learning.

Many tools, such as Google Cloud ML Engine or BigML, are available to assist you in building a predictive model. These tools assist you in developing models that allow you to forecast your business outcomes and make necessary advance adjustments.

Customer Analytics Best Practices

When businesses start using customer analytics, customer interactions can become significantly more effective. Here are a few examples of excellent practices you could use:

- Aalyzing all omnichannel client interactions and comprehending how your product appeals to diverse customer segments.
- Analyzing consumer interactions with the brand to gauge their degree of happiness. Through a variety of pertinent consumer feedback data, this can be understood.
- Deciding on the best method of communication and the right moment to interact with a consumer.
- Finding the customers who are at danger and taking proactive steps to improve customer lifetime value.

Ways in which Customer Analytic Tool Helps Retain Customer

Customer analytics tools help businesses retain customers in several ways:

1. **Identifying Customer Needs and Preferences:**

Customer analytics tools can be used to gather data on customer behavior and preferences, such as purchase history, website interactions, and social media engagement. By analyzing this data, businesses can identify customer needs and pre ferences and tailor their products and services accordingly. This can lead to increased

customer satisfaction and loyalty.

2. Improving the Customer Experience:

Customer analytics tools can be used to identify pain points in the customer journey and improve the customer experience. For example, businesses can use website analytics tools to identify areas where customers are dropping off or experiencing difficulties, and make changes to improve the user experience.

3. Personalizing Marketing and Service Offerings:

By analyzing customer data, businesses can develop personalized marketing and service offerings that are tailored to individual customers. This can help businesses build stronger relationships with their customers and increase customer loyalty.

4. Predicting Customer Behaviour:

Predictive analytics tools can be used to identify customers who are at risk of churning or who are likely to make a purchase. This information can be used to develop targeted retention strategies that help businesses retain customers and increase customer lifetime value.

Overall, customer analytics tools provide businesses with valuable insights into customer behavior and preferences, which can be used to improve the customer experience, personalize marketing and service offerings, and develop targeted retention strategies. By leveraging these insights, businesses can build stronger relationships with their customers and increase customer loyalty, which is essential for long-term growth and success.

Types of Customer Analytics Tools

There are several types of customer analytics tools that businesses can use to gain insights into customer behavior and preferences. Here are some examples:

1. Customer Relationship Management (CRM) Software: CRM software helps businesses manage customer interactions and track customer behavior. It can be used to collect and analyze data on customer preferences, purchase history, and interactions with customer service representatives.
2. Customer Satisfaction Surveys: Surveys are a common way to gather feedback from customers. They can be used to measure customer satisfaction, identify areas for improvement, and track changes in customer sentiment over time.
3. Website Analytics: Website analytics tools, such as Google Analytics, can be used to track website traffic, user behavior, and conversion rates. This information can be used to optimize website design and improve the customer experience.
4. Social Media Analytics: Social media analytics tools can be used to track customer engagement on social media platforms. This information can be used to identify customer sentiment, monitor brand reputation, and track the effectiveness of social media marketing campaigns

5. Customer Behaviour Tracking: Customer behavior tracking tools can be used to collect data on customer interactions with a company's products and services. This information can be used to identify patterns in customer behavior, improve product design, and tailor marketing campaigns to specific customer segments.

6. Sentiment Analysis: Sentiment analysis tools can be used to analyze customer feedback, such as reviews and social media comments, to identify customer sentiment and feedback. This information can be used to improve customer service and address customer concerns.

7. Predictive Analytics: Predictive analytics tools use machine learning algorithms to analyze customer data and make predictions about future customer behavior. This information can be used to identify customers who are at risk of churn and develop strategies to retain them.

Overall, customer analytics tools are essential for businesses that want to understand their customers better and improve customer retention rates. By leveraging the insights gained from these tools, businesses can make data-driven decisions that enhance the customer experience and drive long-term growth.

Customer Analytics Best Practices

The success factors and customer experience metrics mentioned below can help businesses build successful customer interactions.

• Target customers through all available channels and consider the best way to deliver a good or service.
• Evaluate and comprehend client satisfaction levels in connection to the brand. A combination of quantitative and qualitative surveys can be used to accomplish this.
• Interact with customers using the appropriate channel at the appropriate time.
• Predict the rate of customer turnover and take steps to increase a customer's lifetime value.
• Use big data to identify trends and study online behaviour to boost sales.
• By determining which customers are more likely to purchase one sort of product vs another, you may improve the customer journey through targeted selling and market segmentation.

Conclusion

In conclusion, I would like to suggest that customer analytics tools are effective in improving customer retention rates. The previous studies portraits that customer satisfaction surveys, customer behavior tracking, and sentiment analysis are the most commonly used customer analytics tools. Customer satisfaction surveys are effective in identifying customer needs and preferences and can be used to tailor marketing and service offerings to individual customers. Customer behavior tracking can help businesses identify patterns and trends in customer behavior, which can be used to improve product

and service offerings. Sentiment analysis can be used to identify customer sentiment and feedback, which can be used to improve customer service and address customer concerns.

However, the effectiveness of these tools may vary depending on the type of business and the customer base. Therefore, businesses need to carefully evaluate which types of customer analytics tools are most effective for their specific needs. Further research is needed to explore the impact of customer analytics tools on customer retention rates in different industries and to identify best practices for using these tools effectively.

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Impact of Digital Economy on the Economic Growth, Productivity, and Employment in India

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Abstract

This study discusses digitalization and its impact on various sectors of the Indian Economy. This is aimed to connect the rural parts of India with Internet Connection and make them digitally literate to understand the development happening in their own sector and to inculcate them. India is one of the fastest developing nations with a very high young population accounting for (~65%) whose age is less than 35 years. The impact of Digitalization can be clearly observed only when individuals are capable of understanding and adopting them, for every individual has to be financially literate which makes them capable of making judicious decisions, post digitalization financial transactions have to be taken through internet keeping that in view digital financial literacy has become the essential knowledge through digitalization we can change a business model and provide new revenue and value-producing opportunities. This paper focuses on how digitalization has impacted the Indian economy, productivity, employment opportunities, Agricultural, manufacturing, MSME service sectors and why digitalization is so important and what the sectors got impacted and how can we as emerge 3rd largest economy in the near future and how digitalization helped in bringing the transparency in the financial transactions. This paper provides information regarding the impact of digitalization on the economy and many pros and cons. By collecting and compiling research articles related to the effect of digitalization and information and communication technology on the economy in India. The digital economy is not simply about moving business transactions from face-to-face to online, but it's about transforming the many facets of business interactions and transactions and enabling innovations too. From the reviews, the variables are Pricing, Speed, Unemployment, GDP, FDI, Money, Governance, Infrastructure, etc., have found essential in this.

Keywords: Digitalization, Indian economy, GDP, Employment, Agriculture, MSME.

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Introduction

The role of the digital economy in improving social governance mechanisms is indispensable. The solution for all social, economic, and other problems in society is to attain the development and economic growth of the nation. The welfare of people is depended on the level of economic growth and can evaluate the economic states of society and look after how well the GDP and national income are implemented. After the 2nd world War, mainly during the last few decades digitalization has become one of the important processes for technological progress. The digital economy is the rise of information technology or IT in markets, goods, services, and all sectors. The digital economy is mainly known as the Internet economy or new economy. Continuously replacing the traditional economy with a modern system that results from billions of daily online transactions among people, businesses, transportation, construction, tele communication, medical equipment, nuclear technology, agricultural machinery, educational institutions, industries, etc by using computing devices such as smartphones, laptops, etc. To enhance productivity ICT is used in all sectors of the economy. Covid -19 pandemic also contributed to the digital economy like studying, working, etc online activities increased. The increase of the digital economy results in productivity and usefulness of consumers and a reduction in working hours and it increases social welfare and technical innovation in the efficiency of production and which leads to international and economic relationships, improve efficiency, create new sales channels and services, wide usage of financial instruments. There are many strategies for the digital economy. The main three key business strategies underpinning its organization are open innovation, modularity, and platforms.

Digital Economy

The digital economy means the use of IT (Information technology to create a market and consume goods and services). It is the worldwide network of economic activities, commercial transactions, and professional interactions that are enabled by ICT (Information and communication technology). It offers potential for consumers and organizations to connect more efficiently and quickly with better products and services and helps to reduce transaction costs for marketing and advertising new digital services used. It reduces the unemployment rate and improves the employment structure and contributes to the growth of GDP in the country. India's digital economy grew 2.4 times faster than the Indian economy. The economic impact of digitalization can be seen across the country that Gross Annual Value (GAV) increased from 5.4% in 2014 to 8.5% in 2019 and 22%of GDP in 2019.

Features of the Digital Economy

The main characteristics of a digital economy include:

- Internet-Powered: The internet has become the driver of the digital economy, making it possible for organizations to connect with new markets and target a better fit of customers.

- World-Encompassing: Location no longer limits businesses in a digital economy. The ease of global interconnection enables businesses to reach new markets and better maintain the customers they have.
- Always-on: The technology, mobile apps, and digital products offered by E-Commerce have allowed businesses to offer goods and services twenty-four hours a day, seven days a week.
- Fast-Paced: Due to the almost constant flood of new technologies, and the innovation that brings with it, the digital economy moves at a far quicker pace, making it even more important for companies to keep up.
- Data-Driven: Data is at the heart of the digital economy. Using data and analytics, businesses are able to make more informed decisions about the product they offer, and formulate marketing strategies targeted perfectly at specific consumers.
- Competitive: In a web economy, networked intelligence has enabled companies to ramp up the competition by being more aware of what consumers want, allowing them more choices, and forcing them to vie for their attention.

Benefits of a Digital Economy

- With today's prevalence of a work-from-anywhere-culture, employees have come to expect the same level of connectivity as they had in a physical office.
- Managing this virtual, highly flexible, globally interconnected new economy has meant that many organizations have had to re-think their economic activity, and how they package their digital goods. They've also had to re-evaluate the way they operate and re-visit how they provide value to their consumers.

- **The Expansion of Business Opportunities**

Firms that once had trouble breaking into new national and global markets have been able to forge new pathways and create new economic opportunities. Emerging technologies have allowed small businesses and enterprises in every industry to procure and distribute their goods and services across the globe.

- **The Creation of New Employment Opportunities**

The future of work has changed, and the digital economy is proving to have the potential to enhance productivity, increase income and improve social well-being by creating job opportunities in new markets, as well as boosting employment in some existing occupations. Internet-based workplace ecosystems have won out over traditional economic models, allowing the creation of millions of jobs worldwide in the last few years alone.

- **The Enhancement of Public Services**

Internet coverage throughout the world, along with the network effects of easily acquired information and communication offers a means to improve many public services such as health care, municipal activities, and policing.

- **The Rapid Rise of E-Commerce**

With the digitization of so many businesses, new technologies have made it easier and more profitable, and affordable to produce and distribute goods and services. Digitization has also enabled easier delivery, marketing, and tracking of these commodities, with the result of better service to consumers. In today's digital economy, anyone can buy any product or service conveniently and quickly online, from household goods to healthcare access, entertainment, or world travel.

Impact of Digitalization: -

1. Economic Growth and Productivity

Innovation describes the development and application of ideas and technologies that improve goods and services to make their production more efficient. Technical progress that brought about the industrial revolution and the remarkable economic progress in history, started in the 18th century. Innovation is the development of steam engine technology in the 18th century. Technical innovation increased productivity and increased growth of the numbers of people in the world, increased the standard of living of people due to the increase in the number of products, and reduced working hours.

After the 2nd world War especially during the last few decades, digitalization has been one of the key areas of technological progress. Along with digitalization, technological progress to a great extent continuous in other areas such as creating new materials in the industry, construction, nuclear technology, telecommunication, biotechnologies, means of transportation, medical equipment, pharmacology, agricultural machinery, etc. the most crucial economic effect of innovations is the increase of productivity and GDP per capita and the increase of consumption i.e., the standard of living at the same time. In addition to technological innovations changes in institutions and economic policy also influence the increase of productivity as well as changes in domestic and international economic relationships.

2. Agriculture and Allied Sectors

70% of the population in India resides in villages and more than 58% of people in India have agriculture as their primary source of occupation

- Gross Annual Value of agriculture and allied industries is set to reach 18.55 lakh crores in 2019 and is estimated to grow at 2.1% for the year 2020.
- India has a remarkable rise in FDI equity inflow of $9.78 billion between 2000 and December 2019, which is highest in the field of agriculture and its allied industries.
- CAGR of 10% from 2016 – 21 and to reach 75000 crores by 2025 from 2700 crores in 2017.
- Digitalization has changed the face of the Agri foods start-ups, as they are witnessing the funding of $1.66 billion from (2013-17) in 558 deals.

3. Employment

The introduction of the digital economy makes existing workplaces bring an open resistance of workers towards the introduction of new technologies. Innovations and employment are mandated new technologies create new jobs and close some of the existing ones. The development of ICT brought the creation of a great number of new jobs in the field of development and production of computers, creation, and maintenance of software, internet, telecommunication, etc. With the use of technology in workplaces, the organization has increased their productivity and efficiency.

Working processes are time-consuming, so technology will make activity quick and efficient through digital tools and systems. The IT revolution is having a dramatic impact on employment and the labor market by creating new technologies, socializing tasks, making tasks more productive, and creating new job opportunities. 133 million new jobs are emerged by 2022 and as the expansion of the middle class in developing countries and new energy policies.

4. Service Sector

India is one of the major economies that export services to other countries and this sector contributes roughly 55% of the Indian GDP. It has also a significant amount of foreign investment and contributed to exports and is one of the largest employment-providing sectors

- We can identify the keen jump in the ease of doing business from 24 in 2018 company to 137 in 2014 due to steps taken by the government.
- India's digital economy is expected to reach 1 million USD by 2025 and the IT sector is the crucial contributor with a growth rate of 8% and expected to reach 14.3 billion USD by 2023.
- India's service sector GVA grew at 6.96% to 1356.5 billion USD in the year 2019 from 846.54 billion USD in 2012.
- Health sector is expected to reach 132 billion USD by 2023, with the advent of many new technologies in the field of medical sciences.

Key impacts of Digitalization on the Service Sector

- Moving from Personal service to automation and self-service thereby reducing the burden on the organizations.
- The ease of accessible services is increasingly likable to provide the solutions at the lowest cost possible across the globe.
- Increase in customer data, resulting in customized marketing thereby increasing the chance of gaining the customer's attention.
- Digitalization helps in increasing efficiency and brings innovation and timeliness to the offerings.

- GST has a huge impact on the service sector, which helped in decreasing the tax burden and also in the reduction of costs in the future with the GST input credit facility.

5. Manufacturing

Digitalization has made an extensive effect on the development of the manufacturing sector in the Indian economy. GOI with the mean to make India a worldwide manufacturing center has driven a program called 'MAKE IN INDIA'. With this, it is normal that India will turn into the fifth-biggest manufacturing nation in the world by the end of 2020.

Manufacturing industries raise up and helped in increasing productivity and picked up. Manufacturing industries play a vital role in the development of India. The manufacturing industry has a bright future in India because of the huge manpower and significant growth in employment while comparing with other sectors which help to uplift domestic revenue and make a greater impact on the Indian economy.

6. MSME

Micro, small, and medium enterprises play an important role in developing the Indian economy. These enterprises contribute to GDP about 8% and provide employment to 80 million people and contribute 45% in manufacturing and 40% to exports. MSME helps to development of economically backward sectors.

Digitalization helps the MSME as: -
- Proper understanding of segmentation, targeting, and positioning.
- Help to gain knowledge and international best practices.
- Financial knowledge and helps to decision making, less risk, and other issues.
- Efficient provisioning of products and services.
- Operational excellence beyond all over the world.

Through digitalization cloud computing for the ICT domain sector, data mining, and IOT could change the phase of the MSME sector and can provide competition to the big players of the industry.

INDIA – The 3rd Largest Economy

The Centre of Economics and business research has said that India will become 3rd largest economy by 2035 from the current 5th spot. Over the next 5 years, India's annual rate of GDP is expected to average 6.4 after which growth is expected to be 6.5% in 9 years. India's GDP will grow from $2.7 Trillion in 2019 to $5 Trillion in 2025. There will be a surge in FDI investments.

Digital economy refers to the use of information technology to create or adapt, market, or consume goods and services. Digital novelties include digital banking, e-commerce,

virtual education, smart phone apps, and collaboration platforms. Digitalization provides new sources of jobs and income for workers but raises challenges, protection, and fair treatment. It modified whole sectors of the globe and made businesses move forward beyond national markets and made more connections in the world. Digitalization improves the performances of MSMEs and helps in reducing financial problems and options for MSMEs. It resulted in increasing MSMEs operations, performance, productivity, and increase total productivity of the economy. Digitalization is affected the Indian economy. India's gross annual value increased from 5.45 in 2014 to 8.5% in 2019. After digitalization, it is around 22% of the GDP in 2019. The rapid spread of ICT all around the world has led to the development of new kinds of products and services. India posted a growth rate of 9.47% in 2022 i.e., the digital economy grew 2.4 times faster than the economy in 2014. India's digital economy based on the ICT sector using national industrial classification is around 6.7% of India's economy during 2011 - 12 to 2017 - 18. Providing more financial support to weaker sections of society in the IT sector increase open innovation and more usage of information technology.

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The Impact of COVID-19 on Price Volatility and Financial Performance of NSE CNX Nifty Pharma Companies

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Abstract

The world has experienced numerous war stages, including world wars, natural disasters, pandemics, epidemic diseases, etc. The world will experience a major economic crisis brought on by COVID-19 that will be worse than the Great Depression of 2008. The COVID-19 epidemic is still ravaging many parts of the world. One of the greatest tragedies the world has ever seen is the destruction of every country's economy. Many factors, like security trading, export, employment opportunities inside and outside the country, business opportunities, transportation, tourism, etc., that are contributing to the growth of the country have been slowed down, and that is resulting in huge losses in the economy. If we take the security market into account, that market witnessed numerous withdrawals of securities trading among the people. This caused high volatility in security prices on the market. This study looked at the reaction to price volatility and the financial performance of India's top ten pharmaceutical companies listed on the NSE, Nifty Pharma. It is done by using two approaches to securities analysis. The results of the research are significant for investors, entrepreneurs, participants, and others who want to make wise decisions regarding their security holdings. This study considers Nifty Pharma's phases over the entire COVID-19 pandemic time span, from the first wave to the present. Out of all the elements considered for the study, it was found that incredibly volatile prices in the market caused an adverse effect on the financial performance of the companies.

Keywords: Covid-19, NSE Nifty Pharma, Price volatility, Financial performance

Background of the Study

The world witnessed different stages of struggling in the form of world wars, natural calamities, pandemics, epidemic diseases so on and so forth. Due to COVID-19 in the year 2020, the world hits a severe economic crisis that worsens than the Great Depression of 2008. When Covid-19 initially swept back the globe two years

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past, inflicting societies to pack up, the explosive blow to an economic activity meant demand for energy - and its value - folded. From that point forward, financial certainty has returned in fits and starts, however, providers have not been quickly capable all the time to satisfying rising degrees of need. This has caused the cost of unrefined petroleum, and items got from it, to rise. It distracts the entire economy and the lives of the people in the world. COVID-19 still exists in the country and threatening the lives of every citizen of the country. The Indian government announced a 21-day nationwide lockdown on 23rd March 2020 to avoid the spread of the disease. There was the world's largest coronavirus directive, not even China, the world's most populous country and origin epicenter. Lockdown That suddenly shocked the people of the country and the economy. Although the government supplies goods for the daily needs of the people through the Public Distribution System and other systems, the financial hardships faced by families in the country are not insignificant. The Government of India, with the assistance of the WHO, has been implementing various schemes for the health care of the people. As part of this, the Indian Government invented the vaccine, which has a history of giving the largest number of vaccines in the world. The securities market is the most vibrant market in the world.it is the back born of the financial system of every country. In India, the securities market is growing stage, and it plays a vital role in economic growth and development. There have been revolutionary changes over a period. It seems to be dynamic and most vagarious changes in every nanosecond. Hence it gives suspicious importance to each element of information.

The securities market is a component of the wider financial market where securities can be bought and sold between subjects of the economy, on the basis of demand and supply. The National Stock Exchange (NSE), Nifty, and the Bombay Stock Exchange (BSE), Sensex, are India's two primary stock indices. On March 23, 2020, the Sensex index decreased to 13.2% on the Bombay Stock Exchange. Since the Harshad Mehta Scam broke out on April 28, 1991, it was their highest charting single (Mandal, 2020). Nifty has also decreased throughout this time, falling to approximately 29%. Some analysts have labeled COVID-19's effects on the Indian stock market as "black swan events," which refer to the occurrence of a very unforeseen event that has a very negative outcome. The government's implementation of the lockdown policy has resulted in the factories' workforce and output levels being cut, which has affected the supply chain. Once more, consumers minimize their consumption because of worldwide uncertainty, which causes demand-side shock. Additionally, research has shown that the previous pandemic only had an impact on the supply chain. However, the COVID-19 epidemic has impacted both the supply and demand chains.

NSE CNX Nifty Pharma

The National Stock Exchange of India Limited (NSE) is the largest stock exchange and is controlled by several local and international financial institutions, as well as by individuals and publicly and privately traded companies. Mumbai, Maharashtra, is where it is situated. According to statistics compiled by the World Federation of Exchanges (WFE) for the calendar year 2021, the NSE is rated fourth globally in terms of the volume of trades in cash equities. Some of the top banks, insurance corporations, and financial institutions own it. As the nation's first dematerialized electronic exchange, the NSE was founded in 1992. The Futures Industry Association (FIA), a trade organisation for derivatives, predicts that by the volume of contracts exchanged in 2021, it will be the largest derivatives exchange in the world.

The NIFTY Pharma Index shows the performance of the pharmaceutical sector. Twenty companies listed on the Indian National Stock Exchange comprise the index (NSE). The NIFTY Pharma Index's level is the ratio of a given base market capitalization value to the sum free-float capitalization of all the companies included in the index. Using the free-float market capitalization method, this index is determined. The market capitalisation of the underlying companies in an index of the stock market is determined using the free-float approach. Using this method, the market capitalisation of a corporation is determined by multiplying the price of equity by the number of freely tradeable shares. Locked-in shares, such as those held by insiders, promoters, and governments, are not included in the free-float method. Benchmarking fund portfolios and offering index funds, ETFs, and structured products are a few uses for the NIFTY Pharma Index. The effect of the Covid-19 pandemic on the Indian economy made investors weary and slowed the growth of their stock portfolios. Case similar in phrama indices, by considering other stocks pharma sector attain merely more growth in this period.

This paper focuses on measuring and analysing the five phases of the Indian stock market's quick response to the COVID-19 pandemic, mainly the pharmaceutical sector, and detailing the reasons for the dramatic shifts in investor perception.

Literature Review

Morrin et al. (2002)[1] has conducted a study by using pharmaceutical securities listed on the New York Stock Exchange. He confirmed that for the pharma sector, there are more contrarian investors than momentum investors.

Rishika Shankar, Priti Dubey (2021)[2] Vulnerable or Resistant: The Indian Stock Market During the COVID-19 Pandemic? Sectoral analysis: This study examines the impact of the COVID-19 epidemic on the volume of trading and daily average returns on the Indian stock market. Because of the limited or absence of economic activity, businesses

and the government both faced financial restrictions. When people increase their equity investments during extended times of recession, the author alludes to a bubble developing.

Shehzad et al. (2020)[3] conducted a study to analyze the nonlinear behavior of the financial market of the United States, Italy, Japan, and China market return by applying the asymmetric power GARCH model. The study confirmed that COVID-19 harm the stock returns of the S&P 500. However, it revealed an inconsequential impact on the Nasdaq composite index.

According to Herrero (2020)[4] the third wave of the COVID-19 pandemic has hit the emerging economy worst resulting decrease in business activities. This unprecedented shock increases the risk-averse nature which increases the financial cost. Latin America is affected worst because of its dependency on external financing. Due to the restriction on transport, export has declined. Restriction in the international movement has hampered the tourism sector leading to a fall in revenue.

Raja Ram (2020)[5] in his study has found that COVID-19 crashes the entire global share. Indian stock market also experienced sharp volatility due to the collapse of the global financial market. Again, fall in foreign portfolio investments also reduces the return of the Indian stock market. By analyzing the history of all unexpected events, the author has considered COVID-19 also a "black swan" event. He has further analyzed the history of the crash and recovery of the Indian stock market and concluded that the economist cannot predict the recovery of the economy until a stable public health system.

Ravi (2020)[6] has compared the pre-COVID-19 and COVID-19 situation of the Indian stock market. His findings revealed that before COVID-19, that is, at the beginning of January, trade of NSE and BSE were at their highest levels hitting peaks of 12,362 and 42,273, respectively showing favorable stock market conditions. After the outbreak of COVID-19, the stock market came under fear as BSE Sensex and NSE Nifty fell by 38%. It leads to a 27.31% loss in the total stock market from the beginning of this year. The stock of some other sectors such as hospitality, tourism, and entertainment has dropped by more than 40% due to transport restrictions.

According to Lynch et al. (2019)[7] Pharmaceuticals contribute a significant percentage to stock markets' total volatility.

Firoozabadi and Sorkheh (2019)[8] stated that strong herding had a negative effect on the return of the pharmaceutical industry in every period except the bust periods.

Shreya Agrawal and Dr. Sangeetha R (2019)[9] The Effect of Macroeconomic Determinants on the Performance of the Indian Stock Market, This article's main focus is on analyzing the direction of the Indian stock market while taking all factors into consideration through the analysis, such as the price of gold, silver, and oil, interest rates, industrial production, exchange rates, inflation, money supply, foreign exchange reserves, and trade balance.

Research Gap

Several researchers have studied security price volatility during a market fluctuation owing to a noteworthy incident in the prior literature. Only the price volatility of the securities was studied in those studies. In light of the Covid-19 epidemic, studies have compared volatility in the Indian stock market from the prior first wave to the post-first-wave lockdown period. However, such research did not explore the relationship between price volatility and company financial performance throughout the pandemic period. Previous research focused on time periods ranging from 3 to 6 months. It was necessary to examine the closing price data for the entire period in order to obtain a formalized picture of how volatility was manifested in accordance with the five distinct stages indicated. The phases will depict the actual movement of volatility in the Indian securities market, as well as its impact on the financial performance of the selected companies. Specifically, the top five pharmaceutical companies in India are listed on the NSE Nifty Pharma index.

Research Problem

The Covid-19 pandemic has impacted practically every area of the stock market, including volatility, volume, trade prices, and other factors that cause firms' financial performance to deviate. Previous research on the price volatility and financial performance of firms in the Indian stock market as a result of the Covid-19 epidemic was limited to a time frame that did not include the complete first-wave and post-first-wave periods. This study aims to demonstrate the broad-scale under Nifty Pharma in full effect in five distinct phases from April 2020 to December 2021.

Objectives of the Study

- To analyses the effect of covid-19 on NSE CNX Nifty Pharma indices.
- To investigate the Indian stock market's predictability indicator over the five-time lines specified.

Research Methodology

As regards the methodological aspects of the study, the current study is an analytical research study that is fully based on secondary data. For the topic considering the volatility study of stocks, company details, financial statements, and closing prices of the selected three pharmaceutical companies under Nifty Pharma were collected from the National Stock Exchange website, and their fundamental and technical analysis was done

for analysing price volatility and financial performance. For this research, the period is divided into five distinct phases from April 2020 to December 2021.

The five-period identified are:

1. From April 1, 2020 – August 31, 2020
2. From September 1, 2020 – December 31, 2020
3. From January 1, 2021 – April 30, 2021
4. From May 1, 2021 – August 31, 2021
5. From September 1, 2021 – December 31, 2021

There are specific reasons for classifying the period in to five phases. The first phase is the condition of the market during the onset of Covid-19 in the international market and first ever case identified in India, during the period it identified the first wave of the pandemic in India. The first phase is the most crucial period where the Indian government declared 21days complete national wide lockdown. This period is marked as the lowest point of indices ever happened in India by NSE and BSE.

The second phase study is based upon the unlock announcement of different stages by central and state governments.

The third phase is identified in the new year 2021 was imposed restrictions continued, especially for economical and trading activities between the borders of states and nations to prevent the further spread of the virus.

The fourth phase is identified based on the gradual unlocking of the economy with factories and offices opened but cases are increased at an increasing rate. The first dosage of vaccine is received by the people. But the economy is still in the stage of depression, the employment rate is fallen, inflation is continuing, and gold and petrol prices are increased.

The fifth phase is also crucial for the study because the investors have suddenly shifted their investment options without thinking about the future. They fear to lose of money due to the variant condition of both national and international markets. Almost nations are withdrawing the traveling restriction between the nations.

The NSE Nifty Pharma index comprises 20 well-known companies that represent the significant industrial sectors of the Indian economy. It represents companies involved in the pharmaceutical industry in the nation. It is one of the most significant NSE indices that provides an update on the state of the Indian economy.

The closing price of the stock index, which is easily accessible and utilised to determine volatility, was used for the technical analysis.

The measure of a stock's volatility describes the state of the stock within that timeframe. It is merely a measurement of risk or uncertainty connected to the stock. Risk and volatility are directly correlated. By comparing stock price volatility, also indicates the success of these particular companies.

High the volatility = the higher the risk of stocks

A sample of the securities has been selected for the purpose of collecting secondary data on the basis of the systematic sampling method. It is a type of probability sampling method in which sample members from a large population are selected according to a random starting point and other members are selected after a fixed sampling interval. The samples are chosen based on the top three pharmaceutical companies registered with the NSE. The stocks selected for analysis consist of:
1. Sunpharma
2. Divi's Lab
3. Dr. Reddy

Collected data are analysed by using statistical tools like standard deviation, mean, and variation Tables, diagrams, charts, and graphs are used to analyse the data and present the results in attractive ways.

Analysis and Results

The five identified stock indices from the estimate of volatility are shown in the following figures for the five phases to illustrate how intense the volatility was that prevailed during the years 2020 and 2021 in response of the global pandemic:

Figure 1 – Time plot of NSE Nifty Pharma- Indicates the plotting of closing prices of NSE Nifty from April 1, 2020 – August 31, 2020

From Figure 1, we can see that April 3, 2020, is indicated by the lowest point in the time plot.

Figure 2 – Time plot of NSE Nifty Pharma- Indicates the plotting of closing
prices of NSE Nifty from September 1, 2020 – December 31, 2020

From figure 2, we can see that September 19, 2020, which is indicated by lowest
point in the time plot.

Figure 3 – Time plot of NSE Nifty Pharma- Indicates the plotting of closing
prices of NSE Nifty from January 1, 2021 – April 30, 2021

From figure 3, we can see that March 19, 2021, which is indicated by
lowest point in the time plot.

Figure 4 – Time plot of NSE Nifty Pharma- Indicates the plotting of closing prices of NSE Nifty from May 1, 2021 – August 31, 2021

From figure 4, we can see that May 05, 2021, which is indicated by lowest point in the time plot.

Figure 5– Time plot of NSE Nifty Pharma- Indicates the plotting of closing prices of NSE Nifty from From September 1, 2021 – December 31, 2021

From figure 5, we can see that December 21, 2021, which is indicated by lowest point in the time plot.

During this pandemic period, the Indian stock market witnessed high volatility in the pharma index stock prices. It showed the lowest ever closing price in the historyof NSE Nifty Pharma. However, as we can see, it recovered at the end of this study.

The daily closing price of Nifty Pharma was selected as the basis for this study, with the objective of analysing the price using the stated methodology. First, note the descriptive statistics for the NSE Nifty Pharma closing prices for the period from April 1, 2020, to December 31, 2021.

Table1- Descriptive Statics of NSE Nifty Pharma From 1 April 2020 to 31 December 20

SL No	Time Plot	Lowest Closing	Highest Closing
1	From April 1, 2020 – August 31, 2020	6956.20	12027.95
2	From September 1, 2020 – December 31, 2020	11006.80	13006.20
3	From January 1, 2021 – April 30, 2021	11280.80	13476.80
4	From May 1, 2021 – August 31, 2021	13201.48	14743.30
5	From September 1, 2021 – December 31, 2021	13005.20	14938.25
	Skewness	-1.4232968	-0.2055343
	Standard Deviation	2512.865302	1217.554371
	Mean	1686.8768	961.82
	Correlation Coefficient	0.939802454	

According to the mean and standard deviation of the table's data, the price during the specified period experienced substantial volatility. It shows that there was a higher variance in the lowest closing price of these indexes than in the highest closing price. And both data sets show negative skewness, which means investors should anticipate frequent moderate gains and rare large losses. Furthermore, it demonstrates that the two have a positive correlation, indicating that both are highly volatile. So, it's safe to state that the pandemic period had an impact on phrama companies.

Table 2- Descriptive Statics of NSE Nifty Pharma Company Sunpharma from 1 April 2020 to 31 December 2021

SL No	Time Plot	Sunpharma	
		Lowest Closing	Highest Closing
1	From April 1, 2020 – August 31, 2020	338.39	594.6
2	From September 1, 2020 – December 31, 2020	450.96	601.77
3	From January 1, 2021 – April 30, 2021	548.17	666.46
4	From May 1, 2021 – August 31, 2021	639.79	831.83
5	From September 1, 2021 – December 31, 2021	734.6	850.95
Mean		**118.1656**	**105.8144**
SD		**155.2741906**	**124.1291882**
Skewness		**-0.1364872**	**-0.2137553**
Correlation Coefficient		**0.935760511**	

COVID-19's effect on Sunpharma Company over the course of the study is depicted in tabulated statistics. Because of this company's highly fluctuating closing prices, we can conclude that prices are highly volatile. And it causes pricing to skew unfavorably. Additionally, Sunpharma's closing prices correlate significantly

Table 3- Descriptive Statics of NSE Nifty Pharma Company Divi's Lab from 1 April 2020 to 31 December 2021

SL No	Time Plot	Divi's Lab	
		Lowest Closing	Highest Closing
1	From April 1, 2020 – August 31, 2020	1822.95	3335
2	From September 1, 2020 – December 31, 2020	3004.65	3859
3	From January 1, 2021 – April 30, 2021	3153.3	3898
4	From May 1, 2021 – August 31, 2021	3964.35	5219
5	From September 1, 2021 – December 31, 2021	4356	5425
Mean		**719.94**	**779.84**
SD		**979.6716063**	**920.1028203**
Skewness		**-0.58603755**	**0.35870054**
Correlation Coefficient		**0.949217865**	

From the above tables, we can see the price volatility of Divi's Lab Company from April 2020 to December 2021. When the lowest and highest closing prices of the securities are compared to the mean and standard deviation, they are highly variant and negatively skewed at the lowest closing price and positively skewed at the highest closing price. Also, prices are positively correlated.

**Table 3- Descriptive Statics of NSE Nifty Pharma Company Divi's Lab
from 1 April 2020 to 31 December 2021**

SL No	Time Plot	Dr Reddy	
		Lowest Closing	Highest Closing
1	From April 1, 2020 – August 31, 2020	3025.1	4758.6
2	From September 1, 2020 – December 31, 2020	4232	5496.95
3	From January 1, 2021 – April 30, 2021	4135	5427
4	From May 1, 2021 – August 31, 2021	4506	5614.6
5	From September 1, 2021 – December 31, 2021	4441.3	5077
Mean		**417.112**	**285.624**
SD		**602.1258647**	**351.2715396**
Skewness		**-1.89532703**	**-0.88062588**
Correlation Coefficient		**0.780069096**	

According to the table, Dr. Reddy's Company experienced high volatility during the period, with the highest growth among the securities. It is also negatively skewed with a great deal of variation. By comparing the correlation factors of the other two companies, Dr. Reddy has a low correlation value, but it is positive in nature.

Conclusion

This study examined the impact of the COVID-19 pandemic on the response of the Indian stock market. This is the financial performance and volatility of NSE Nifty Pharma companies over more than two years, from April 1, 2020, to December 31, 2021. To illustrate the impact of five clearly defined phases, the performance of three major companies listed in the NSE Nifty Pharma is considered. The closing prices of selected pharmaceutical companies from the NSE Nifty Pharma list are analyzed for volatility using standard deviation, variance and skewness analysis and plot of closing prices for

five periods. The calculations and observations of the study show that the stock market fluctuated sharply in each period, particularly in the second period of the timeline. The pharmaceutical industry was particularly affected by this. This was due to the high demand and supply of securities on the stock market. We also concluded that the financial performance of these companies will change in 2020 and 2021. In summary, the analysis found sufficient evidence to conclude that the COVID-19 pandemic affected the Indian pharmaceutical industry and increased price volatility. This in turn affected the financial performance of these companies during the pandemic period. Comparing the first and second phases, pharmaceutical companies recovered from significant losses.

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Use of Artificial Intelligence in Higher Education as the Wave of Future: A Review

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Abstract

Artificial intelligence is a technological breakthrough. In every industry and discipline, artificial intelligence is becoming more and more significant. The significance of machine learning/ artificial intelligence is that it has crept into our lives without our knowledge. Today artificial intelligence is used in many fields, from the education field to health care, business gaming, e-commerce, sports, stock trading, and even building some customer-oriented applications, artificial intelligence is used in many fields today. The importance of artificial intelligence is growing day by day in this one area, which is experiencing rapid growth. Artificial intelligence is extremely important in this day and age when customer-oriented application technologies are also expanding. This paper aims to provide an overview of how Artificial Intelligence is shaping the higher education sector and its future.

Keywords: Artificial Intelligence, Higher Education, Teaching, Learning

Introduction

The future of the higher education system is often a debated topic. The future of higher education depends on several factors. The future of higher education sometimes depends on the emergence of new technology. As we can see, AI and its importance are growing day by day. The question that needs to be answered is: "Is AI in higher education the wave of the future?" Because AI (artificial intelligence) is changing our lives and working on another level. By using AI, we can perform tasks like perception, decision making, problem solving, etc. that normally require human intelligence. Herein lies the importance of AI, which provides enhanced productivity, efficiency, and creativity. AI is becoming unavoidable in various fields, including healthcare, transportation, manufacturing, finance, and education.

In recent years, there has been a growing interest in AI and exploring the potential of AI in higher education. The use of AI intelligence may benefit the persons who are in higher education sector.

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What is Artificial Intelligence?

In general, we can say that artificial intelligence (AI) refers to the ability to Programme any system, including but not limited to computers, to carry out a task that ordinarily needs human intelligence, such as recognition, intelligent guessing, and critical evaluation.

The term AI was first coined by Jhon McCarthy in 1956, According to John McCarthy, "It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable."

Sundar Pichai, CEO Google, had a talk on Artificial intelligence and impact on humanity in an interview by World Economic Forum he said "AI is one of the most profound things we are working on as a humanity. Its more profound than fire and electricity"

Oxford dictionary, "the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages".

Application of AI in Higher Education and Teaching

Many research studies show that AI is becoming an unavoidable component of learning. The use of artificial intelligence does not only help or facilitate teachers but also helps students in numerous ways. The University of San Diego, one of the top-ranked universities, included in their blog a topic related to AI and how it is applicable in the higher education sector. The article "3 Examples of Artificial Intelligence in Education" describes how AI is useful for both teachers and students. For teachers, it can be used to give personalised attention to every student and provide customised content delivery where it is not possible in the absence of AI. AI can be used for assessing students and grading them according to their performance in an easy way by reducing time and avoiding errors. With the support of AI, schools and teachers will be able to accomplish more than ever before in the areas of learning and teaching. Additionally, it can support universal access for all students as well as differentiated and personalised learning. AI can help break down borders between schools, making global classrooms accessible to everyone, automating administrative work, and offering tutoring and support outside of the classroom. For schools and colleges, they can automate the administrative activities.

Matthew Lynch writes in an article 'What Will AI Mean for Higher Education?' (2019) that AI can help universities and colleges collaborate with external parties and with different disciplines and reduce their burden as researchers. It can also automate routine academic tasks, identify students' weak points and strengths, and provide personalised learning.

Matthew Lynch listed the following points in his work titled, '26 Ways that Artificial Intelligence (AI) is Transforming Education for the Better', examples are

- Lesson Planning
- Test Preparation
- Assessment
- Gamification
- Coding
- Scheduling

The Benefits of AI in Higher Education and Teaching

AI can be used in the academic field in a variety of ways, ranging from the customization of content to meet the current needs of students, and then academicians can set curriculum by using AI-enabled software and machines to the learning flexibility that students gain when compared to traditional classroom environments. This artificial intelligence helps children a lot to learn a thing and find its real-life example within minutes; it may encourage them to focus more on their studies, and it can automatically create a big impact in the education culture. Most of the researchers show that AI is going to change the entire study system in the near future.

Taking a robotics class in an innovative way isn't far off. It may take a long time to change through classes based on such an artificial intelligence, and only after all the universities have done a good, in-depth study for this can we implement such an artificial intelligence.

Even though there are still possibilities like:

- **Personalised Content:**

  By using AI, teachers can provide personalised content to students, especially those who are differently abled and students from different disciplines.

- **Enhanced Product and Content:**

  As compared to traditional teaching aids, it can provide enhanced content and presentation tools and even help the students prepare their seminar topics. For example, Chat Gpt, Siri, and Google Assistant can be used to search for and create content.

- **24/7 Support:**

Several AI-enabled applications will assist the students and provide mentorship in the absence of teachers.

- **Smart Content Creation:**

Several AI-enabled software tools are used by both students and faculty. Examples include Duolingo, Blue Canoe, Carnegie Learning, Cognii, Knewton, Quizlet, Riiid Labs, Chat Gpt, Siri, etc. This kind of software will enable the faculties and students to create content in a smart way.

- **Bridge the Gap**

In the higher education sector, major issues faced by both faculties and students are the lack of language skills. The AI-enabled application can solve this problem, like Quill bot, Cognii, etc.

- **Automation of Tasks:**

By applying AI-enabled software and installing robotics, we can automate the tasks at the administrative and non-administrative levels in the higher education sector.

Negative Impact of AI in Education Sector

As AI continues to advance and expand its capabilities, it is critical to recognise that along with its phenomenal impact come certain inherent risks that must be carefully unpacked and managed. As it is a new technology, there may definitely be two arguments. When it comes to the higher education sector, undeniably, we can say it has more good things to supply. While AI has the ability to enhance the quality and accessibility of education, educators and government leaders must carefully consider the ethical consequences and possible risks associated with AI integration in higher education.

There some issues that needs to be addressed,

- **Overdependence on Technology:**

  Like all other technologies, intensive use of AI-powered tools limits their ability to think critically and creatively. For example, those who overly depend on AI-powered writing tools may fail to develop their own writing skills or learn how to identify and correct errors on their own.

- **Reduced Social Interaction:**

  Traditional classrooms allow for the development of a society because they are more socially connected, whereas AI-based learning may reduce social interaction.

- **Installation Cost:**

  when compared to the cost of installation, it may limit some instructions and make others think differently.

- **Unemployability:**

  The application of AI may reduce the number of staff required to run an office and perform administrative tasks. For example, while admitting a student to the campus, an AI-enabled chatbot system may assess not only the educational background but also the personality of that student.

- **Lack of Updating:**

  AI is dependent on a lot of data, and now one of the problems facing AI is the lack of updating current data, which may create irrelevant data and mislead the users.

- **Reduce the Reliability of Research Work:**

  Intensive use of AI powered applications by the research students reduces the reliability of research work.

- **Digital Gap:**

  Most of the AI enabled applications required network-connected laptops and mobile devices. It may limit the poor students access to technology.

- **Hackers and Virus Attack:**

  As it needs well connected internet, there is a possibility of threat from hackers and virus attacks, which may mislead the users and even spread the violence.

Conclusion

The advent of artificial intelligence has brought about a revolutionary change in every field, as well as in the education system. Although artificial intelligence has many objections today, it has many endless possibilities. Like AI, which is used in many fields, it should also be applicable in the higher education sector. It is the duty of those who are currently benefiting from AI to address the potential capability and vast possibilities of AI in the higher education sector. As a technology, it has both pros and cons. Many educationalists see artificial intelligence as having the power to disrupt the existing education system. But AI is not going to change the entire education system but may encourage students and faculties to focus on their studies and even attract more to the higher education sector.

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Acceptance of Digital Healthcare Technologies with special reference to Palakkad Town

Reshma. U

Abstract

This article discusses the impact of digital transformation on the healthcare industry, highlighting the benefits and tools of digital health care such as online medical records, real-time price information, remote consultations with doctors, and body monitoring. The article also focuses on the increasing acceptance

Keywords: Digital transformation, digital health, Online medical records, Real-time price information, Remote consultations, Body monitoring, Digital health technologies

Introduction

The present era can be called the digital era, as we can experience the advancement of digital aspects in almost are areas. One such needful application is in the field of health care. Digital transformation in healthcare is the positive impact of technology in healthcare. Digital Health has become an influencing factor in today's day and age. Patients using digital networks to communicate with doctors are enjoying the benefits of innovative healthcare experiences. Some common tools of digital health care are:

• Checking hospital and doctor records online
• Getting real-time price information on medical procedures and prescriptions
• Receiving lab results without a doctor's appointment
• Doctor consulting through video chat or phone call
• Keeping continuous track of our body

Digitization is possibly the most comfortable change that Indian doctors and patients are experiencing. The proliferation of the internet, penetration of the global market, and rising use of mobiles are expected to fuel this trend further. Education and

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information around the use of digital health can bring a number of people under the umbrella of technology benefits.

Statement of the Problem

The technologies in healthcare keep changing day by day. We do not know about people's awareness of digital healthcare technologies. As Digital Health care Technology is an emerging trend, it is relevant to study people's preference towards digital healthcare technology

Objectives

- To study the level of awareness toward Digital Healthcare technologies
- To determine the level of satisfaction with Digital Healthcare technologies
- To find out the association of demographic factors, like age and educational qualification, with acceptance of Digital Healthcare Technologies

Hypothesis

1. Age
H0: There is no association between age and acceptance of Digital Healthcare Technologies
H1: There is an association between age and acceptance of Digital Healthcare Technologies
2. Educational Qualification
H0: There is no association between educational qualification and acceptance of Digital Healthcare Technologies
H1: There is an association between educational qualification and acceptance of Digital Healthcare Technologies

Research Methodology

Sources of Data

- Primary Data:
  Primary data are those data that are collected for the first time. Here primary data are collected through a well-structured questionnaire.
- Secondary Data:
  Secondary data comprises information from the internet, magazines, newspapers, and websites. etc.

Sampling Method

Convenient sampling technique was used to select samples.

Sample Size

A sample of 100 respondents was taken.

Data Collection

Data required for the study was collected using a structured questionnaire.

Statistical Tools Used for Collecting Data

Statistical tools were used for this study the tools used are simple averages, correlation analysis and Chi-Square

Analysis and Findings

Table 1 Gender Wise Classification of Respondents

	No: of respondents	Percentage
Male	43	43%
Female	57	57%
Total	100	100%

The table provides the gender-wise classification of respondents in a research study focused on the acceptance of digital healthcare technologies in Palakkad Town. Out of 100 respondents, 43 (or 43%) were male, while 57 (or 57%) were female. This information could be useful in identifying any potential gender-based differences in the acceptance of digital healthcare technologies in Palakkad Town. By analyzing the data collected from both male and female respondents, the researchers can gain a better understanding of the factors that contribute to the adoption or rejection of these technologies and develop strategies to promote their uptake among both genders.

Table 2: Awareness of Digital Health Care Technologies Among Respondents

	No.of Respondents	Percentage (%)
Media Adds	34	34
Word Of Mouth	26	26
Medical Professionals	20	20
Health Tv Programs	8	8

Health Magazines	12	12
Total	100	100

The table provides the different sources through which the respondents in a research study have become aware of digital healthcare technologies. Out of 100 respondents, the largest percentage of people (34%) learned about digital healthcare technologies through media advertisements. The second most common source of awareness was word of mouth, which accounted for 26% of respondents. Medical professionals were the third most common source of information, with 20% of respondents reporting that they learned about digital healthcare technologies from them. Health magazines and TV programs were the least common sources of awareness, with only 12% and 8% of respondents respectively reporting that they learned about digital healthcare technologies from them.

This information can be useful for healthcare providers and marketers who want to promote the uptake of digital healthcare technologies. By understanding the most effective channels for reaching potential users, they can design more targeted and effective awareness campaigns.

Table 3: Satisfaction Level Treatment Through Digital Healthcare Technologies

	Number	Percentage
Highly Satisfied	10	10
Satisfied	52	52
Neutral	32	32
Dissatisfied	6	6
Highly Dissatisfied	0	0
Total	100	100

The table provides the satisfaction level of respondents who have received treatment through digital healthcare technologies. Out of 100 respondents, the largest percentage (52%) reported that they were satisfied with the treatment they received through digital healthcare technologies. 32% of respondents reported a neutral level of satisfaction, and 10% reported that they were highly satisfied with their treatment. Only a small percentage of respondents (6%) reported that they were dissatisfied with their treatment, and no one reported being highly dissatisfied.

Overall, the results suggest that digital healthcare technologies are generally well-received among the respondents who have received treatment through them. However, the neutral satisfaction level suggests that there may still be room for improvement in terms of enhancing the user experience and addressing any concerns or issues that patients may have. This information can be useful for healthcare providers who want to improve their digital healthcare services and ensure that they are meeting the needs and expectations of their patients.

Testing Association between Demographic Variables and Acceptance of Digital Healthcare Technologies

H03 There is no association between demographic variables and acceptance of Digital Healthcare Technologies.

H0: There is no association between age and acceptance of Digital Healthcare Technologies Table 4 Testing Association between Demographic Variables and Acceptance of Digital Healthcare Technologies

	Value	Df	Asymp. Sig (2-sided)
Pearson Chi-Square	11.467a	3	.009
Likelihood Ratio	14.543	3	.002
Linear-by-Linear Association	5.220	1	.002
N of Valid Cases	100		

a. 8 cells (100.0%) have an expected count of less than 5. The minimum expected count is 1.00.
Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Age * Acceptance	100	100.0%	0	0.0%	100	100.0%

The results suggest that there is a statistically significant association between age and acceptance of the healthcare technology in question. However, the low expected counts in some cells suggest that the sample size may be too small for robust analysis, and further research may be necessary to confirm the findings.

Testing Association between Educational Qualification of Respondents and Acceptance of Digital Healthcare Technologies

H0: There is no association between educational qualification and acceptance of Digital Healthcare Technologies.

Table 5.: Testing Association between Educational Qualification of Respondents and Acceptance of Digital Healthcare Technologies

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.095a	3	.003
Likelihood Ratio	2.151	3	.002
Linear-by-Linear Association	.224	1	.001
N of Valid Cases	150		

a. 8 cells (100.0%) have an expected count of less than 5. The minimum expected count is 1.50.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Educational Qualification * Acceptance	100	100.0%	0	0.0%	100	100.0%

The results suggest that there is a statistically significant association between educational qualification and acceptance of the healthcare technology in question. However, the low expected counts in some cells indicate that the sample size may be too small for robust analysis, and further research may be necessary to confirm the findings.

Findings

- The study found that females showed a higher preference (66%) for digital healthcare technologies compared to males.
- Most of the respondents demonstrated awareness of digital health through media advertisements, followed by medical professionals.
- Most of the respondents agreed that digital health technologies are secure.
- The results of the chi-square test indicated a significant association between gender and acceptance of digital healthcare technologies.
- The chi-square test revealed a significant association between educational qualification and acceptance of digital healthcare technologies.

Conclusion

The popularity of digital health services is increasing, but perceptions and attitudes towards it vary among individuals. A recent study found that younger people are more attached to digital health compared to elder people, indicating that the younger generation is more willing to use digital healthcare. As the trend of online platforms grows, businesses will need to offer value to customers to sustain their position in the market. This trend is occurring due to the changing lifestyle of customers in India and the increasing expansion of online activity.

Day by day there would be tremendous potential and more and more businesses would be adding online platforms. However, they will have to offer value to the customers to

sustain in the long run. Transformation in the trends of digital health is occurring because of the changing lifestyle of the customers in India and expansion in online activity.

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Managing Digital Disruption:
Bridging the Digital Divide
for Inclusive Growth

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Abstract

Digital disruption has become a common phenomenon in today's business landscape. As technology continues to advance at a rapid pace, it creates new opportunities and challenges for organizations. Change management is essential to cope with the changes brought about by digital disruption. This article aims to explore the reasons behind digital disruption, how organizations can manage these changes, and the issue of the digital divide. The digital divide refers to the gap between those who have access to technology and those who do not. The article provides recommendations on how to bridge this divide and ensure that everyone has access to the benefits of digital technology.

Keywords: Digital disruption, Change management, Technology, Organizations, Digital divide, Access to technology.

Change has always been a key factor in the social progress of mankind. The invention of the wheel and fire are two of the most important inventions that have fuelled human progress. All these inventions of mankind are also subject to changes with time. Digital technology is one field that is changing every second of the day. Each advancement in digital technology has led to an explosive change in all areas it is connected to. But adapting to these changes is also important. A sudden transplant from one that has been used regularly is not an easy task. It is often a major challenge faced by many MNCs. It is from this change that the term digital disruption originates.

In recent years, the phrase "digital disruption" has almost become a cliché and is frequently used incorrectly to characterize any product utilizing digital technology or the use of digitization to increase market competitiveness. It frequently gets mixed up

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with the phrase disruptive technology, which was created by Professor Clayton M. Christensen of the Harvard Business School to describe a new technology that replaces an existing technology.

In the context of digital disruption, change management becomes especially important because the changes brought about by digital technologies can be significant and wide-reaching. Effective change management can help organizations adapt to these changes and make the most of the opportunities they present. It can also help organizations minimize the disruption and negative impact of these changes on employees, customers, and other stakeholders.

A sudden change does not acceptable for employees who have been working as part of the same organization for a long period of time. They may resist those sudden changes.

Some key considerations for managing change in the context of digital disruption include:

• **Identifying the Key Drivers of Change:** Understanding the forces driving the adoption of digital technologies and the impact they are having on the organization can help inform the change management strategy.

• **Assessing the Impact of the Change:** It's important to understand the potential impact of digital disruption on different parts of the organization and on different stakeholders. This will help the organization determine the resources and support that will be needed to manage the change effectively.

• **Communicating the Change:** Clear and effective communication is essential to successful change management. It's important to communicate the reasons for the change, the benefits it is expected to bring, and the support that will be available to help employees through the transition.

• **Providing Training and Support:** Providing employees with the training and support they need to adapt to the changes brought about by digital technologies can help ensure a smooth transition. This may include training on new technologies, processes, or tools, as well as support for employees who may be feeling anxious or uncertain about the changes.

Overall, effective change management is critical to managing the disruption and changes brought about by digital technologies. By taking a structured and systematic approach, organizations can navigate these changes successfully and make the most of the opportunities they present.

Digital Divide

The digital divide is the difference between populations and geographic areas that have access to contemporary information and communications technologies and those that do not. The gap it alludes to is continually changing as technology advances, even if the word today includes the technical and financial abilities to employ existing technology, as well as access (or a lack of access) to the internet.

The term "digital divide" refers to the disparity between those who have access to reasonably priced, dependable internet service and those who don't (as well as the knowledge and tools required to make the most of that access).

Rural communities are significantly more likely to be shut off from digital technologies than city dwellers, which is a problem in many nations. Moreover, continents and nations are divided.

Effect of Digital Divide

Internet connection was previously considered a luxury, and discrepancies in digital access were widely viewed in the same terms. However, there is now a prevailing understanding that technological exclusion is a form of social exclusion since it denies some citizens access to resources necessary for wealth accumulation.

The international economy as a whole and in particular the quick increase in the number of employments requiring digital access and skills make this most obvious. For instance, approximately half of all STEM (science, technology, engineering, and math) occupations in the U.S. are in the field of computing.

The inability to acquire these skills is a barrier to this employment and the associated salary. The digital divide affects everyone, regardless of whether or not you want to work in technology. Several people are affected by the phenomenon in a number of significant ways:

Isolation and Lack of Communication: The COVID-19 pandemic has brought to light the ease with which those without internet access or computer skills can become isolated. This may have detrimental side effects, such as making it difficult to schedule appointments for coronavirus vaccinations, limiting people's employment options, and harming their mental health.

Education Barriers: As more and more education is provided online, people without the means to access the internet, such as kids who were forced to receive distant instruction during the epidemic, may be deprived of the chance to advance their abilities. Children might experience educational gaps as a result, and adults might miss out on employment

opportunities or be unable to acquire the fundamental skills required to contribute to their community.

Gender Inequality Getting Worse: As has already been mentioned, the digital divide makes many existing forms of prejudice worse. The most prevalent of these is gender discrimination. Women who do not have equal access to the internet are unable to acquire the knowledge or information they need to question (and possibly improve) their status.

Bridging the Digital Divide: Strategies for Effective Implementation

Technical discrimination deprives some citizens of resources necessary for development and wealth creation, which is a type of poverty and social exclusion. During the COVID-19 epidemic, this was a common occurrence as many students and workers found it challenging to work from home and attend classes online. Here, we go over the key consequences of the digital divide:

The UN's Sustainable Development Goals (SDGs) include reducing the digital gap (SDG 9). For this reason, projects have been started worldwide to make technology more accessible. These are a few of the more significant ones:

Digital Literacy Programmes. They provide advice on how to enhance the personal well-being of those who use the Internet under less favourable circumstances.

Coalition for Accessible Internet (A4AI). This initiative, spearheaded by a global alliance of governments, corporations, and civil society organizations, intends to reduce the cost of broadband in particular regions of Africa, Asia, and Latin America.

Essentials for Free. Via a smartphone application, this project, supported by Facebook and six other technology companies, promises to offer free access to a variety of websites.

The digital divide is a significant issue that needs to be addressed to achieve sustainable development goals and promote social inclusion. Governments, corporations, and civil society organizations are coming together to bridge this gap through various initiatives such as digital literacy programs, accessible internet coalitions, and free essentials projects. By ensuring that technology is accessible to everyone, regardless of socioeconomic status, we can create a more equitable and inclusive society that empowers individuals to reach their full potential.

Digital disruption has become a significant challenge for businesses and society. The rapid pace of technological change has led to significant changes in consumer behavior, business models, and industries. Organizations must be prepared to adapt quickly to these changes to remain competitive and relevant. Effective change management

is critical to successfully navigating digital disruption. Leaders must understand the nature of disruption and the underlying factors that drive it. They must also be willing to embrace new technologies and business models and develop strategies for managing the associated risks and challenges.

Another important aspect of digital disruption is the digital divide, which refers to the gap between those who have access to technology and those who do not. Bridging this divide requires a concerted effort from governments, organizations, and individuals to provide access to technology and digital literacy programs to those who are currently underserved.

Overall, digital disruption is a complex and multifaceted issue that requires a thoughtful and strategic approach to management and decision-making. By understanding the causes and effects of disruption and taking proactive steps to address them, organizations can position themselves for success in the digital age.

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Unlocking the Power of Neuromarketing: A Conceptual Study of Brain Science in Marketing

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Abstract

Consumer neuroscience is also known as neuromarketing. It is taking the world by storm and has been utilised by almost every major company and university in some way or another. Despite such a widespread influence on the marketing world, many people do not know exactly what neuromarketing is or how it can be used effectively. Neuromarketing can be defined as a marketing branch using neuroscientific methods and techniques for analysing and understanding human behaviour regarding markets and important marketing issues. The field of neuroscience has advanced to such an extent that even minute neuronal activities can be measured and studied. Neuromarketing uses the latest advances in brain scanning to reveal the desires, expectations, and hidden restraints of consumers. Neuromarketing is associated with having a high influence on consumer buying behaviour, advertising, pricing, distribution of products, branding, and decision-making as marketing inputs. Therefore, neuromarketing may be considered a remarkable extension in the research of human behaviour and the brain as the black box, which can positively contribute to its practical applicability. This paper is an attempt to make a conceptual study of neuromarketing in a marketing scenario.

Keywords: Consumer neuroscience, Neuromarketing, Neuroscientific methods, Human behavior, Brain scanning, Hidden restraints, Consumer buying behavior

Introduction

In recent years, the field of consumer neuroscience, also known as neuromarketing, has gained significant attention in the marketing world. Neuromarketing is a marketing branch that uses neuroscientific methods and techniques to understand and analyze human behavior with regard to important marketing issues. By measuring and studying even the minute neuronal activities of consumers, neuromarketing provides insights into their desires, expectations, and hidden restraints.

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This field has a high influence on consumer buying behavior, advertising, pricing, product distribution, branding, and decision-making. Despite its wide usage, many people are still unfamiliar with neuromarketing and its potential for effective implementation. In this paper, we aim to provide a conceptual study of neuromarketing in a marketing scenario, exploring its practical applicability and its remarkable contribution to the research of human behavior and the brain as the black box.

The Importance of Neuromarketing

The issue of the effects of neuromarketing for companies and society is important since it is assumed that there is potential to discover implicit and automatic processes that determine the decision-making process and that it will reveal secret information about consumer behaviour that was not obtainable by traditional marketing methods. Although there are also critical arguments against neuromarketing's intervention into the privacy of customers, it is expected that with this method, more effective customer segmentation can be carried out, which in turn leads to improved marketing of products by considering individual product and brand preferences as well as consumer behaviour in general.

Use of Neuromarketing

Neuromarketing helps the organisation build brand positioning and loyalty. Emotions lead to the attention of people, which may lead to the satisfaction or dissatisfaction of customers. The phenomenon leading to satisfaction or dissatisfaction of the customers exists for the short term, as there are many surveys conducted that resulted in the fact that even the consumers who are satisfied walk away, and those who are satisfied may return after some time.

Neuromarketing helps in reducing failures related to marketing and helps in enhancing the success of marketing in a positive way. Today's advertising campaigns spend a large amount of money. It will lead marketing professionals to monitor the needs of the brain with the help of scanning in order to judge which part of the brain is responding or active while watching an advertisement. If it fails to be responsive, then the advertisement fails the test.

Neuromarketing Techniques to Understand Client's Mind

1) Eye Tracking: Look Through Consumer's Eyes

As the name itself indicates, eye-tracking consists of following the eye movements of people participating in a study. In other words, it is a tool that allows your brand to see through your potential client's eyes, not only in labs but in real-life purchasing scenarios as well. As modern eye-tracking devices are small and light, the participants in the study can wear them while shopping or watching TV.

2) Neuromarketing Devices for Reading Consumers' Thoughts

Thanks to neuromarketing techniques, we can go a step even further. Not only can we know exactly what people Looking are at them, but we can also even get clues as to what they are thinking. How? By using devices that specialize in reading the brain's electromagnetic activity, such as functional MRIs or electroencephalograms (EEG). Marketers can use these to really get to know consumers' preferences: if they feel attracted or repelled by a given feature, whether our brand interests or bores them. In the end, we obtain the answers to the same questions as traditional marketing studies, but with much greater accuracy and scientific proof.

The electroencephalogram is very time-sensitive and accurate; it can relate a stimulant to its reaction almost immediately, which is what makes it so useful to figure out exactly which element provides which kinds of feelings in the user. It compromises, however, with its reduced precision in locating which area of the brain causes this reaction. The functional MRI, on the other hand, tells you exactly which parts of the brain are being activated and has somewhat lower time precision.

3) Facial Coding: "A Smile is Worth a Thousand Words."

They say the face is the mirror of your soul, and neuromarketing has converted the art of interpreting facial expressions into somewhat of a science. Just as we use neuromarketing techniques to measure eye movement and brain activity, this science is also used to "read faces" with unprecedented precision. The way it works is very simple: when we smile, display anger, or assemble any other kind of facial expression, we use our muscles to do it. By using sensors, these minute muscle movements can be accurately measured to detect expressions and emotions we aren't even aware we are feeling. Of course, a small smile or a grin doesn't show the absolute truth of what a person is feeling at that given moment, but facial coding helps marketers by reading and interpreting subtle reactions that offer insights into our opinions. They are sometimes even able to predict the behaviour that will follow these expressions.

4) Sensory Marketing: Looks are not Everything

Besides investigation-related techniques, neuromarketing also has more practical and functional applications, like sensory marketing. By applying neuromarketing discoveries, we can impact consumers without them even knowing that we're doing it. There are several forms of sensory marketing, such as through touch, sound, or smell. All of them, however, are based on the same idea: influencing the audience to think of a certain brand in the presence of sensory stimulation. The smell is the perfect example of the use of sensory marketing. Sometimes, getting a customer to make a purchase is as easy as influencing their senses with the right fragrance. A very common example is supermarkets that strengthen the smell of fresh bread in order to attract people to the bread section and

encourage them to purchase. Sounds are also a very useful resource; it has been proven, for example, that consumers pay more attention to lighter-colored objects when they hear high-pitched sounds and darker objects when they hear low-pitched sounds.

Pros of Neuromarketing

1. Filling in the Gaps

Neuromarketing tools can easily highlight blind spots left by traditional methods of market research. It provides a better understanding of customers' behaviour as well as insights on why they very often don't 'walk their talk'. To put it more simply, neuromarketing can explain why, when going to a café, customers plan to drink tea with milk but order black coffee upon arrival. Unlike traditional market research, neuromarketing derives data not only from information provided by customers (survey answers) but also from observations (of facial expressions, eye movements, shifts of the mouse cursor, etc.). Such data, which mainly originates from the unconscious reactions of respondents, can tell you a lot more about their true desires and attitudes than their consciously controlled answers to questionnaires (get a free pdf on how and why to measure consumers' emotional responses).

2. Linking of Physiological Reactions to Content

Neuromarketing enables the establishment of clear links between physiological reactions and particular moments in a video, elements of a website, packaging design, etc. For instance, emotion measurement can provide you with comprehensive data on respondents' reactions to particular parts of a video or marketing material and thus help you improve those parts that provoke negative emotional feedback.

3. Value for Money

New digital tools and software substantially diminish the price of research while providing better-quality insights. Online software-based tools, which can be used even by amateurs of market research, today provide quality and depth of insight previously only reachable by professional market research companies 15 years ago, and at a lower price.

Cons of Neuromarketing

1. Ethical Concerns

It is the eternal question. Some people think that neuromarketing involves getting inside the brains of customers. Well, neuromarketing does things that a good psychologist does. It 'learns' your behavior patterns and makes smart outcomes, nothing more

2. Availability of Specific Skills

The more specific knowledge you have, the higher quality insights you can achieve. Some time ago, it was necessary to have a scientific background to be able to interpret

the waves and graphs neuro-tools provide you with. Today it's not necessary because the reports are easier to understand (thanks to technology, of course). But you still have to make some effort to sort out what all these heat maps, statistics, and metrics mean. We have to help the machines understand!

3.Expensive Equipment

It is true that neuromarketing equipment always used be expensive. But today, thanks to the development of technology, a complete set of professional neuromarketing equipment costs around $1,500, not $50,000. It's still a considerable amount of money, especially for a small company, but it's far less than the tens of thousands of dollars that it used to cost. The quality of the data you get using expensive equipment is excellent, but not as good as it was 10 years ago.

4. Privacy

All this buzz around the GDPR proves that people want to have more control over the data they share. Well, no one is truly insured against the leakage of data. That's why we should work towards improving the technologies and ways of data collection and protection. And it comes not only from the data that we get with the help of neuro tools. It's quite doubtful whether an incentive to make customers happier through the improvement of the product and buying experience can be called a crime. Anyway, be ready for people to still consider attempts to get inside the brains of customers interfering with their right to privacy and personal lives. For sure, an implicit test will show that each person in our office has a preconceived opinion about neuromarketing. Don't judge us too harshly, please! Of course, we seem a bit biased when talking about neuromarketing. But we truly love it! And we are ready to inspire you to give these tools a try.

Conclusion

Marketing has changed in recent years. It can be said that it has become more focused on individuals and their needs. The change has been encouraged by the emergence of a new branch of marketing called neuromarketing. The latter has appeared as a product of introducing neuroscientific methods into the marketing system. This application has enabled "insights into the human brain" and found previously unknown facts and data. Owing to this kind of revolution," the marketing experts have started a "deeper" exploration of connections and relationships between marketing elements and customer behaviour. All these insights have been implemented in practice to create a product or brand that will provoke the consumer's emotions and not make him or her indifferent. Neuromarketing provides the possibility of detecting data about purchase decision-making and buyers' preferences that have not been known until now. In order to turn the data into information, neuromarketing will have to "learn" how to connect the gathered data with customers' preferences, selections, and behaviours in order to achieve the set goals, which certainly represents one of the future research areas of neuromarketing.

Therefore, it is expected that future research in this area will focus precisely on understanding the cause-and-effect relations between the activities of a particular brain area and the customer's actions. It should be pointed out that the connections between these instruments and customers' behaviour have not been fully explained and ascertained, nor can they be done at this stage of technology development and understanding of the human brain. However, it is assumed that this will be feasible in the future.

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An Empirical Study of
Two Public Sector Banks

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Abstract

As the economy starts limping back towards normalcy, the working of the public sector banks is back in focus, as the banking system is central to the process of recovery and the government-controlled banks dominate the financial sector by size and volume of business. Public sector banks are fast adapting to digital means and will play a significant role in driving major transformation initiatives. The present paper mainly focuses on the employee's perception towards the adoption of the internet and technologies in banks. The paper is mainly designed to evaluate the awareness level of the technologies offered by the banking sector and the overall perception of employees on these technological offerings. It measures the employee's attitude towards technological advancement and internet connectivity. A well-structured questionnaire has designed, and an extensive survey was undertaken among 100 employees of SBI and Canara Bank in 14 districts of Kerala in India. On the basis of this study, it is found that almost all the employees found the overall performance of technology and internet connectivity to be satisfactory. Mobile banking technology is advancing in public sector banks of India.

Keywords: Banks, Public Sector, Technology, Employees, Digital

Introduction

India's public sector banks must innovate and embrace digital banking, for quite some time public sector banks have been stuck in their conventional way of banking without embracing digitalization. Internet and mobile technology have been decisive moments in the banking industry. It is the wild perception among the general mass that technological advancement in the banking sector has reduced the workload of the employees of the banking sector. The banking industry is replete with examples of innovative technology advancements, but most of these initiatives are more seen by private sector banks. But after the introduction of YONO SBI, public sector bank

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expanded, and the need for change is recognized. The increasing dependency on the Internet and other technologies has brought additional challenges in managing and optimizing performance levels in the banking industry

Banks are not just a medium to transfer money but in alignment with technology provider companies can help in building customer relationships. This paper mainly envisages two major public sector banks state bank of India and Canara bank, they are known as trendsetters in introducing various tech products in the public sector banking industry such as mobile app-oriented electronic passwords, bank account opening, unified payment interface apps, etc. To find the employee preferences and other findings of employees, banks, and customers. The public sector banks have already started investing heavily in technology, Artificial intelligence, Blockchain technology, and Robotic process automation are the key innovations that are likely to impact the banking scenario in India in a transformative way. Advances in software tools, computer hardware, and telecommunications have altered banks' focus away from data processing toward computerization. The banking sector has experienced a tremendous technological revolution that has paved the way for creating better services for customers.

Review of Literature

A review of previous studies by different researchers validates the present study by indicating the gaps in those studies and gaining insight for conducting this study.

Kodan and Chhikara (2011)[1], the opening of bank accounts is not only essential for maintaining and improving the social and economic status of a person but also is essential for meeting all needs.

Chakravarty and Pal(2013)[2], in developed countries and some developing countries like India, the government has used branch expansion policies.

According to Raina (2014)[3], Public sector banks are enabling financial inclusion and promote inclusive growth, when the banking system fails, the whole of a nation. The payment system is in jeopardy. Only efficient bank can enlarge their business in the form of deposits and credit and reach the customer.

Jameela, and Salma (2016)[4], conducted a study to determine the employee's perception of the technology adoption of SBT in the Palakkad district. The study indicated that electronic banking has a greater advantage to attract young customers than the age- old.

Pathania et.al. (2016)[5], have investigated the case of four commercial to deliberate upon the current quality parameters undertaken by these banks for the financial inclusion

of rural populations thereby finding the gaps that need to be addressed as part of innovative financial inclusion.

Diksha Gupta (2017)[6], evaluate the attitude of bank employees towards Internet banking and concluded that the employees of banks have taken Internet banking as a competitive edge and it has resulted in increased employee morale and productivity, branch productivity vis-a-vis bank's productivity.

Maity and Sahu (2018)[7], have examined the role of Indian banks in financial inclusion and measured their efficiency through DEA in financial inclusion respect. The study reveals that the execution of financial inclusion will require an approach in totality on part of banks in creating awareness about financial products, education, and advice on money management, debt counseling, savings, and affordable credit.

Harshita Singh Rao's (2019)[8], Study centers on the specialized parts of cybercrimes in banks concerning saving money and their related effects.
Aruna (2020)9 revealed that 20% of the respondents are having a PMJDY bank account in an Indian bank and other banks. This study covers a sample size of 60 from India.

Aruna (2020)[9], revealed that 20% of the respondents are having a PMJDY bank account in an Indian bank and other banks. This study covers a sample size of 60 from India.

Significance of the Study

The current study included an assessment model of customers' digitally oriented transactions and employees' perceptions linked with their demographic profile. Innovation has been assuming a significant job, numerous factors are analyzed through this study bank employees' job satisfaction, job stress, technological awareness, and internet literacy. This paper is an endeavor to comprehend the discernment level of a cross area of two public sector banks. At present bank supplies various services at the doorstep due to the advent of technology. The banking industry is presently seeing a solid challenge to embrace new technology. Like other things, the adoption of technology banks comes with pros and cons. Not only the user, but the bank employees also need technological upgradation unless they will not fit for the job.

Objectives of the Study

- To scrutinize the bank employees' perceptions in accordance with job satisfaction, job stress, technological awareness, and internet literacy after the implementation of E-banking.
- To explore whether bank employees' perceptions are linked with their demographic profile.

Methodology

The study is restricted to two major public sector banks SBT and canera bank, employees in 14 districts of Kerala, and 100 samples was taken. Data were collected from primary sources and secondary sources. A well-structured questionnaire has been designed to collect the primary data and different related books, research papers, journals, and online sources were used as secondary data.

Stratified random sampling is the sampling used for completing the analysis, SBI and Canara employees of different districts of Kerala were taken as 100 representatives for the study.

Tools for Analysis

The data was collected through a proper questionnaire and the data was sorted out, ordered, and analyzed deliberately utilizing some statistical tools. Statistical tools for data analysis are the responses were validated and filtered, then analyzed using SPSS Packages with Chi-square with P-values with a measure of central tendency and standard deviation.

Data Analysis

Measuring technological knowledge of employees.

Hypothesis

H0; There is no difference between formal computer literacy and the proficiency of working in the technology-oriented banking scenario.

Ha: There is a significant difference between formal computer literacy and the proficiency of working in the technology-oriented banking scenario.

Description	Yes	No	Mean	Std. dev	Variance	skewness
Computer literate	72	28	1.26	0.442	0.197	1.051
Technology proficiency	95	5	1.07	0.238	0.057	3.760

Statistical Inference

Standard error of 0.051 and 95% level of confidence, I -0.3098 to 0.1102.T statistics -4.148, $P<0.05$, Here P value is less than 0.05 so we reject the null hypothesis and could infer that there is a significant difference between formal computer literacy and the technical proficiency in the banking sector.

Other Factors of Bank Employees

Factors	Strongly Agree	Disagree	Neutral	Mean	Median	Standard deviation	Variance
Implementation of Internet	30	29		3.12	3	0.720	0..510
Stress in employees	37	41		2.44	2.5	1.110	1.2285
Reduced complaints	28	42		3.09	3	1.040	1.075

Interpretation

- At a 5% significance level, public sector banks contribute less but speed of the work, resolving the problems, and ombudsmen are more.
- The income of the employees is increasing as per the workload of banks, the TAs and fringe benefits are provided for refreshments.
- At a 5% significance level, the gender difference is significant in the case of the employee's reduction of workload, stress, and consistency of work which reduces the number of complaints.
- By adopting technology, the workload of the employees has been reduced in the present technology-driven banking scenario.
- The working error has been minimized and bank employees' efficiency increased in technological upgradation.
- The difference in technologies is significantly attributable to a case of speed of the work and resolving the problems in the banking sector especially the two assigned public banks.

Statistical Findings

- There is a need for technological upgradient in public sector banks and more innovations leading to tasks easier.
- Employees should be professionally trained and educated about the mechanism of technologies.
- New technological adoption in public sector banks and avail the benefits of all technologies.
- More employee-oriented programmes to be adopted and stress-relaxing mechanisms to be introduced.
- Internet facility and upgradation should be avail to motivate employees to help customers and proper training and refreshments should be provided for the upliftment of employees.

Conclusion

The role of Tech -driven PSBs in ensuring the last mile benefit, unavailability of technology and connectivity emerges as the biggest challenge in extending the public service delivery to the last mile. Public sector banks play an important role in ensuring benefits to the people by helping the government to implement and act. Internet and connectivity are still a challenge in some areas, in some countries, internet connectivity is declared as the legal right of the citizen. India can be needed for more development being a huge country in size and population wise. The public sector banks adopt new technologies and work at par with private sector banks in terms of new deployments. Nationalized banks should see how their campaign align with technology providers and onboard new technologies to stay relevant. The bank employees are happy with innovation as they are eager to become familiar with the new innovations and their workloads become simplified. The study reveals that adopting technology in public sector banks has effects on all stakeholders, enables easy handling, improves coordination, simplifies jobs, improves accuracy, and reduces complexity are the features of technology upgradation in banks.

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Cryptocurrencies: An Opportunity for Investors

Rajashree. V

Abstract

The modern era of technology has introduced many golden opportunities in several aspects. One of the fields that benefit from these online connections is the financial and business sector. A new type of soft trading transactions and currencies has been arising. One of the remarkable financial forms that emerged in the past few years is Cryptocurrency. It is a new trend in investment, and it opens vast opportunities for investors, but one of the limitations of the same is that a very less majority of investors are fully aware of crypto investment. So, this article aims to know more about Cryptocurrency.

Keywords: Cryptocurrency, Bitcoin, Altcoin, Blockchain, Mining

Introduction

Cryptocurrency can be defined as any medium of exchange apart from real-world money that can be used in many financial transactions whether they are virtual or not. The decentralized control of each cryptocurrency works through distributed ledger technology typically known as the blockchain, that serves as a public financial transaction database. It is a new trend in investment.

Cryptocurrency is the name given to a system that uses strong cryptography to allow the secure transfer and exchange of digital tokens in a decentralized manner. These tokens can be traded at market rates for fiat currencies. Bitcoin, first released as open-source software in 2009, is generally considered as the first Cryptocurrency. It was invented by an unknown programmer or group of programmers under the name Satoshi Nakamoto. Since then, many other Cryptocurrencies have been created employing the same innovations that Bitcoin introduced, but changing some of the parameters of their governing algorithms.

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The History of Cryptocurrency

The first decentralized digital currency can be traced back to "bit gold" which was worked on by Nick Szabo between 1998 and 2005 but was never implemented. It was one of the earliest attempts at creating a decentralized virtual currency. Although bit gold was considered the first precursor to Bitcoin, the American cryptographer David Chaum's Digicash (a company founded in 1989 that attempted to innovate e-cash), Wei Dai's B-money (a conceptual system published in 1998 which Satoshi cites in the Bitcoin white paper), and "e-gold" (a centralized digital currency introduced in 1996) are all notable early mentions.

The modern Crypto revolution started in 2008 when Satoshi Nakamoto published a white paper detailing the plan and protocol for Bitcoin.

Bitcoin became the first decentralized digital coin when it was created in 2008. It then went public in 2009. As of 2019, Bitcoin is the most known and used Cryptocurrency. Meanwhile, other coins including Ethereum (ETH), Ripple (XRP), Litecoin (LTC), and more are notable inventions. The term "Altcoin" is used to describe the alternative variants of Bitcoin (especially coins with small market caps). As of January 2015, there were over 500 types of Altcoins for trade in the online market. However, only 10 of them had a market capitalization of over $ 10 million. As of September 2017, there were over 1100 Cryptocurrencies and the total market capitalization of all reached an all-time high surpassing $60 billion. Then by December 2017, the total market capitalization reached $600 billion (a multiple of 10 in only two months). As of March 2022, there were more than 9000 Cryptocurrencies in the market, of which more than 70 had a market capitalization exceeding $1 billion. It means that Cryptocurrency is more than just a currency. Although the future is uncertain, the Crypto market is growing.

<div align="center">

1989 – e-cash

1996 – e-gold

1998 – Bit gold

2009 – Bitcoin

2022 – More than 9000 Crypto currencies

</div>

Blockchain

A blockchain is a collection of data. The data is added to the block by connecting it with other blocks in chronological order. The first block in the blockchain is called Genes. Blockchain is a distributed ledger, which simply means that a ledger is spread across the network among all peers in the network and each peer holds a copy of the complete ledger.

Key Attributes of Blockchain

1. Peer-To-Peer: There is no central authority to control it. All participants talk to each other directly.

2. Add-only: Data can be added to the blockchain with time sequential order. This implies that once data is added, it is almost impossible to change it.

3. Strong cryptography: Cryptography is used for security purposes which makes the ledger tamper-proof

4. Distributed: The ledger is spread across the network which makes tampering not so easy.

5. Consensus: Any update made to the blockchain is validated against strict criteria defined by the blockchain protocol and added to the blockchain only after a consensus has been reached among all the participating peers of the network.

Working of Blockchain

1. A node starts a transaction by first creating and then digitally signing it with its private key (created via cryptography). A transaction can represent various actions in a blockchain. Most commonly this is a data structure that represents the transfer of value between users on the blockchain network. Transaction data structure usually consists of some logic of transfer of values, relevant rules, source and destination and addresses, and other validation information.

2. A transaction is propagated using a flooding protocol called gossip protocol to Peers that validate the transaction based on pre-set criteria. Usually, more than one node is required to verify the transaction.

3. Once the transaction is validated it is included in the block which is then propagated onto the network. At this point, the transaction is considered confirmed.

4. The newly created block now becomes part of the ledger and the next block links itself cryptographically back to this block. This link is a hash pointer. At this stage, the transaction gets its second confirmation, and the block gets its first confirmation.

5. Transactions are then reconfirmed every time a new block is created. Usually, six confirmations in a network are required to consider the transaction final.

Bitcoin (BTC)

Bitcoin is considered as original Cryptocurrency. It was created in 2009 as open-source software. The author of the white paper that established this digital currency was under the pseudonym Satoshi Nakamoto. The coin limit for Bitcoin is 21 million. The value of this changes every second. The approximate value of 1 Bitcoin is 18,81,070 rupees.

Using blockchain technology bitcoin allows users to make transparent peer-to-peer transactions. All users can view these transactions; however, they are secured through the algorithm within the blockchain. While everyone can see the transaction only the owner of that bitcoin can decrypt it with a "private key" that is given to each owner. Unlike a bank, there is no central authority figure in Bitcoin. Bitcoin users control the sending and receiving of money which allows for anonymous transactions to take place throughout the world.

Litecoin (LTC)

Litecoin was launched in 2011 as an alternative to Bitcoin. Like other Cryptocurrencies Lite coin is an open source, global payment network that is completely decentralized. The coin limit for Lite coin is 84 million.

Ripple (XRP)

Ripple was released in 2012 and acts both as a Cryptocurrency and as a digital payment network for financial transactions. It's a global settlement network that is designed to create a fast, secure and low- cost method of transferring money.

Ethereum Classic

Ethereum Classic is a version of the Ethereum blockchain. It runs smart contracts on a similar decentralized platform. Smart contracts are applications that run exactly as programmed without any possibility of downtime, fraud, or third-party interface. Like Ethereum, it provides a value token called "classic ether" which is used to pay users for products or services.

Bitcoin Cash

Bitcoin Cash is a digital currency that was created to improve certain features of Bitcoin. Bitcoin cash increases the size of blocks allowing more transactions to be processed faster.

Zcash (ZEC)

Zcash is a digital currency that was built on the original Bitcoin code base. A core feature of Zcash is the emphasis on privacy. Users can send and receive Zcash without disclosing the sender, receiver, or the amount transacted.

Stellar Lumen (XLM)

Stellar Lumen is an intermediary currency that facilitates currency exchange. Stellar allows a user to send any currency they own to someone else in a different currency. Jed McCaleb found this open-source network.

Working of Cryptocurrency

Public Ledgers

All the confirmed transactions from the start of a Cryptocurrency's creation are stored in a public ledger. The identities of the coin owners are encrypted and the system uses other cryptographic techniques to ensure the legitimacy of record keeping. Bitcoin calls this public ledger "transaction blockchain".

Transactions

The transfer of funds between two digital wallets is called a transaction. The transaction gets submitted to a public ledger and awaits confirmation. Wallets use an encrypted electronic signature when a transaction is made. The signature is an encrypted piece of data called a cryptographic signature and it provides mathematical proof that the transaction came from the owner of the wallet.

Mining

Mining is the process of confirming the transaction and adding them to a public ledger. To add a transaction the "miner" must solve a complex computational problem. Mining is open source so anyone can confirm the transaction. The first "miner" who solves the same adds a "block" of transactions to the ledger. Once a block is added all correlating transactions are permanent, and they add a small transaction fee to the miner's wallet (along with newly created coins). The mining process is what gives value to the coins and is known as a proof-of-work system.

Benefits of Cryptocurrency

1. Decentralization

There is no central authority to control. The network is distributed to all participants and each computer mining bitcoins is a part of this system.

 2. No Inflation

The maximum number of Bitcoins is limited to 21 million. Neither political forces nor corporations can change this order. So, there is no possibility for the development of inflation in the system.

3. Unlimited Possibility of Transaction

Each of the wallet holders can pay anyone, anywhere, and for any amount. The transaction cannot be controlled or prevented. Users can make transfers anywhere in the world wherever another user with a Bitcoin wallet is located.

4. Transparency

The blockchain keeps the information about everything. So if a company has publically used the BTC address, then anyone can see how much BTC is owned.

5. Speed of Transaction

The ability to send money anywhere and to anyone in a matter of minutes after the BTC network processes the payment.

Challenges Of Cryptocurrency

1. Impact on Real Monetary Systems

Since some cryptocurrency systems are connected with real-world monetary systems, they may affect the demand and supply facilities of real-world money.

2. Fluctuation in Virtual Currency Value

The value of cryptocurrency is not stable. It changes every second. This may create trouble for the investors.

3. Collapse Concerns in Cryptocurrency Systems

Unlimited issuing of virtual currency in various virtual communities will lead to economic problems since its issuing is not based on demand and supply.

Conclusion

Cryptocurrencies are a new trend in investment that offers an attractive model of payments that boosts revenue. It also provides an alternative method of payment, apart from real money. The lack of legislation is considered the main concern cryptocurrency system. In the above sections, we discussed various types of Cryptocurrencies, their working, features, blockchain technology, benefits, and challenges. In short, Cryptocurrencies and their variants are a welcome development.

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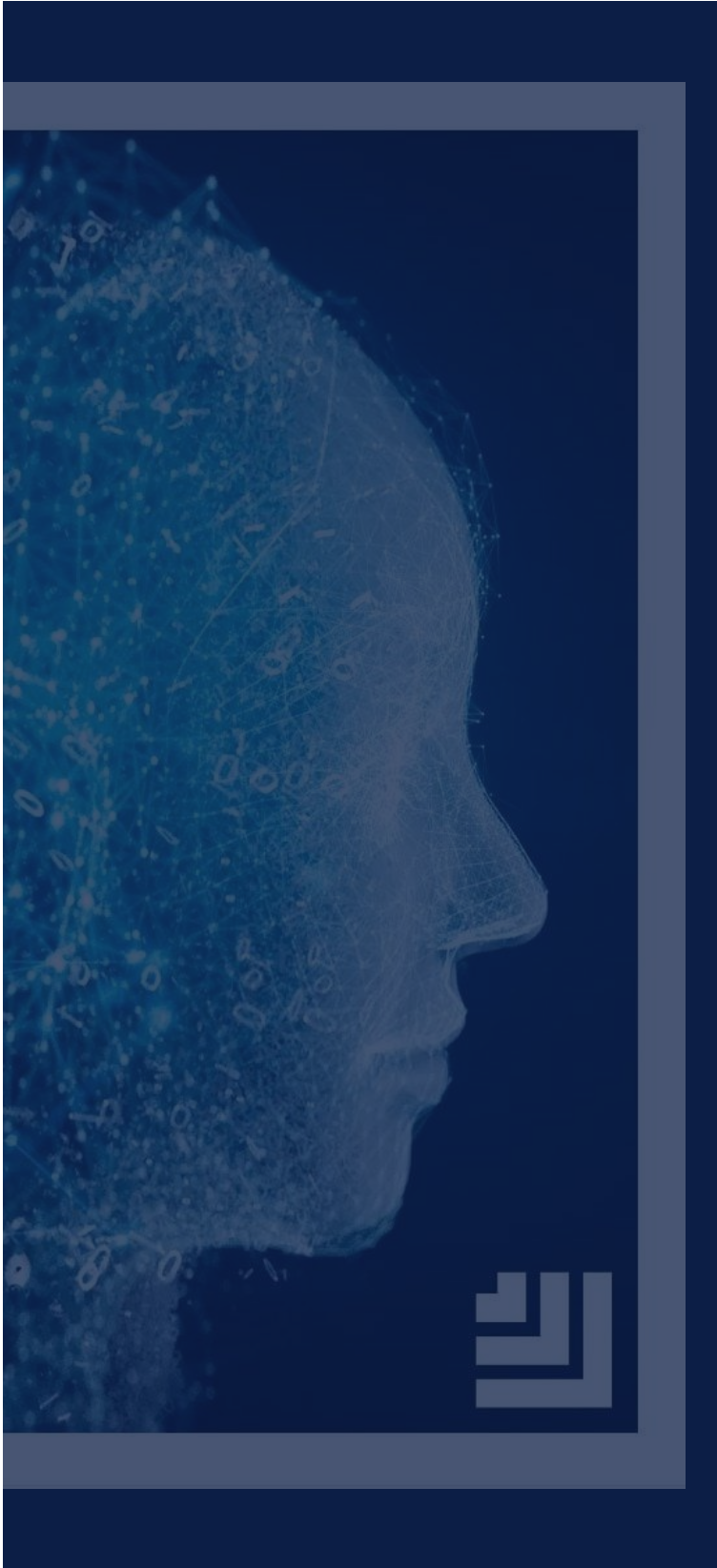
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