BUNTS SANGHA'S

S.M.SHETTY COLLEGE OF SCIENCE, COMMERCE & MANAGEMENT STUDIES, POWAI, MUMBAI.

Affiliated to University of Mumbai

NAAC ACCREDITED 'A' GRADE

IMC RBNQ Certificate of Merit 2019

ISO 9001:2015 CERTIFIED

Certificate of Participation

This is to certify that **Asst.Prof Mayuree Tawade** of **Sinhgad Institute of Management Pune** has Participated & Presented a paper titled **"Corporate Bond Market in India: Challenges and Opportunities"** in Multidisciplinary International e-Conference on **'Redefining Business in Digital Era: Issues and Challenges'** organized by Internal Quality Assurance Cell on 29th May, 2020.

His/Her paper has been published in **Studies in Indian Place Names (UGC CARE Journal) ISSN 2394-3114 with Impact Factor 6.2 in March 2020 Issue.**

Prof. Sandesha Shetty
Convener

Dr. Liji Santosh
IQAC Co-ordinator

Dr. Sridhara Shetty
Principal

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

A Study on Business Transformation through Industrial Metamorphosis and Challenges Encountered by HRM: HR Perspective

Mr. Anjit Jha [#1], Ms. Swati Ahirrao [*2] , Mr.Avinash Choudhary [*3]

[1,2]*Assistant Professor at Sinhgad Institute of Management, Pune*

[3] *MBA Student at Sinhgad Institute of Management, Pune*

Abstract:

Industrial Revolution where everything is digitally innovated, not only involves cyber physical systems but man force and organisation and the work environment. The fields like big data analytics, cloud computing, internet of things (IOT), Robotics is emerging with the futility of employee sufficiency. The challenge is to overcome the digital innovation and to enhance the concurrency of Robots and people in industries. Human capital is creative but improperly trained in India in some sectors. Level of human knowledge can be intensified by training. There are many sectors in India where the traditional training approaches are still implemented. It is required to adopt new working environment. This paper aims to offer a viewpoint for overcoming the challenges faced in training and development models. It also facilitates the investigation to overcome the further obstacles faced by an innovative approach. Intelligent training is obligatory whereas industry 4.0 is at pinnacle to establish a zenith India.

Keywords: *Human Resource Management, Challenges, Training and development, Innovative methods, Digital transformation.*

I. INTRODUCTION

We're in the midst of a significant transformation and this transition is so compelling that it is being called Industry 4.0 to represent the fourth revolution that has occurred in services and manufacturing. Industry 4.0 is a name for the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet of things, cloud computing and cognitive computing. Industry 4.0 is usually referred to as the fourth industrial inception. The first industrial revolution (1.0) devised the mechanization of production converting water to steam power. The second industrial revolution (2.0) came into limelight three decades later when the first electricity-powered congregation line up introduced bunch production. The third industrial revolution (3.0) smoked in the late 1960s when the first programmable logistic controller (PLC) empowered production computerization through the use of electronic and IT systems. Industry 4.0 denotes to the permutation of a number of significant technology innovations, all growing at the same time that is normal to considerably move the background of the industrialized industry. These tools are sophisticated robotics, artificial intelligence, refined sensors, cloud computing and big data analytics – all subsist in industrialized today in some form, but as they join together with one another, the physical and virtual worlds will interweave and convert the industry.Erstwhile to industrial revolt, the transform of the being work had usually been measured to be unconstructive and at that time even violent conflict to industrial change was usual.But, these days the alter seems to be smoother on one hand, but still vivid because of the broader and deeper impact that had shifted from slow, regional or industry specific area to a global system that can be affected.

Research Objective:

1) To understand the concept of innovative HRM practices and its relevance to organisation.
2) To describe innovative practices of HRM that has contributed organizations significantly
3) To suggest few HRM practices for boosting its bottom line.

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Data and Methodology

The study utilizes data from various secondary sources including but not limited to annual reports of the companies, published articles, expert views and clientele feedback.

Challenges of Human Resource Management:

Routinely, the major challenges of HR manager include totaling value to an organisation both the labour force and the business itself, manage talent within your organisation – try to draw and keep talented and hard-working people in the organisation; managing globalization, Information Technology, business control, Information-workers and info-management.

The modern business cannot effectively manoeuvre in the business world if the human force is not well equipped with the latest technology and techniques. This is the accountability of the human force manager to properly train the work force and to see the basic things the human force needs to achieve the competitive advantages of business in 21st century.

To cope with this situation the today's HR manager is also facing a variety of issues and challenges on how they can best manage and solve all these issues and challenges with splendid ways.

Economy Changes:

1. Reduced Time – to – Market: In business, time to market (TTM) is the length of time it takes from a product being conceived until its being obtainable for sale. TTM is important in industries where products become obsolete quickly.
2. Improved Innovation Process: Business best positioned to endure and flourish in the highs and lows of economic cycles are those that continue to innovate, despite the consequences of the economic cycle. During tough economic times, innovation can help the business make real gains in competence and efficiency.
3. Higher Level of Customization and flexibility: Flexibility and rigidity in customization and build-to-order production is the new status quo for the business and industry 4.0 is fostering this.
4. Increased Collaboration required: A few other imperative aspects that group effort brings to the table include: Equal contribution- alliance gives team members equal opportunities to participate and communicate their ideas.

Social Changes:

1. Lesser younger workforce entering market to replace those retiring: Since the average retirement age of a baby boomer lies somewhere between 61 and 65, it's not hard to see that this so-called silver tsunami is going to create some serious challenges for HR; the main one being, how are they going to fill the talent gap that's left between the number of baby boomers that retires and the number of younger workers with the right skills to replace them?
2. Younger generation demands contrary social values: The hum around ethical or socially-minded business has gradually decreased and, so as consumers' demands for values-driven companies reach a fever. Generations X has the highest expectations for brands to take a stand on values.
3. Improved work life balance: Work-life balance is indispensable to shun suffer exhaustion in your career.

4. Convergence physical world with virtual world: Artificial Intelligence validates key rudiments of the virtual world to commence, and between the virtual entities and the physical participants of the newly-created world.
5. Complex processes require higher qualification: course of action rationale is defined as the collection and evaluation of data, from the process intend stage throughout production, which establishes methodical evidence that a process is capable of consistently delivering quality products.

Technical Changes:

1. Ability to deal large amount of data efficiently: Organizations are careworn to supervise Big Data. According to the studies, the amount of information formed, captured or computer-generated has exceeded available storage for the first time since 2007. The dimension of the digital universe this year will be tenfold what it was just five years earlier.
2. Standardized protocols and open architecture to deal with heterogeneous environment: The Internet of Things (IOT) covers a enormous range of industries and use cases that scale from a single constrained device up to massive cross-platform deployments of embedded technologies and cloud systems connecting in real-time. Tying it all together are numerous legacy and emerging communication protocols that allow devices and servers to talk to each other in new, more interconnected ways. At the same time, dozens of alliances and coalitions are forming in hopes of unifying the fractured and organic IoT landscape.
3. Cyber-security having everything attached to everything: Cyber-security demonstrates practically every characteristic of our network-based activity, because in the digital financial system, almost everything is connected. That means that everything is at risk for a cyber attack. Yet, the national agency charged with the oversight of the nation's electronic networks has walked away from its cyber responsibility.
4. Inter-connectivity of platforms and devices: IoT helps to advance daily life in a number of ways. Interconnectivity between devices capacitates augmented efficiency at home or within industrial settings. This interconnectivity comes at a price, as the status increases and the number of devices and networks amplifies, the lack of interoperability between them becomes an issue.

The modern business cannot resourcefully manoeuvre in the business world if the human personnel is not well capable of with the latest technology and techniques. This is the responsibility of the human vigour manager to aptly train the work force and to observe the essential things the human strength needs to achieve the spirited advantages of business in 21st century.

All the institutions should perform their being resources people well keeping in view the international environment or market place to guarantee cut-throat advantage. Human resource manager would have to build or developed such a frame work that allows smoothness to develop such a labour force that will be the work power for tomorrow.

What should be the priorities for human resource in future what should be? The answer to this question is very difficult but there are many factors contributing to HR managers functions and these activities are constantly changing. By keeping in view the entire situation, the organisation's HR department is continuously being transformed as well.

Some pieces of studies have pointed out that the most of the challenges faced by the HR in 21st century are also, retention of the employees, multicultural workforce, women workforce,

retrenchment of employees, change in the demand of the government, technology , globalisation, and initiating the process of change.

The study pointed out the most imperative top HR challenges are leadership growth, health and safety, staff retention, organizational efficiency, change administration, compensation learning and development, succession planning. Staffing: recruitment and skill labour. Max Weber has pointed out that the most important challenges of the HR in business are layoffs. The most of the owners and managers are facing this hard issue. This laid off may be due to several reasons which include the economic uncertainty, the employee's job unsteadiness and HR less effectiveness.

In the view point of T V Rao, the most imperative challenges of HRM, are globalization, technology, e- commerce, and workforce diversity, and ethical consideration of the organisation which may openly or indirectly affect the organisation competitive advantages, particularly with technological advancement the effect on job performance, recruitment, training and development with great extent can be study in organisation.

It could amount up these from the following points that the foremost challenge faced by HRM is the globalisation. Globalisation says the present flow of information, goods, services, capital, ideas, and people. It means the movement of these things without using any human resource. In this contemporary business world, markets have become battlegrounds where both the domestic and foreign competitors strive to capture as utmost market shares as possible. Such kind of globalisation is confronted for HRM.

However with no human resource they have no value because a personnel is well-informed and expert, who facilitates a company in gaining competitive advantage over others and enable a company to compete in the overseas market and to make outlay in not only in a domestic market but also in foreign markets. Therefore all the HR Managers come up numerous strategies to extend and hold such human resource, because Human Resource is the tool which makes an organisation flourishing in the field of globalization.

This is particularly factual during the harsh economic times like in the past few years which have put more organizational require on the proceeds generating business functions – and more of a focus on cost saving for the other functions. Regrettably most organisations still view HR as a transactional cost centre which makes them to under play the function.

One of the major ordinary complaints about HR is that many professionals devoid of forward thinking, strategic advisory focus needed to be an successful business partner. They don't spend the time to recognize the business they support and focus more on transactional HR activities that don't have the blow the business desires. HR Business Partners need to be trusted advisers to the businesses and leaders they work with. They need to be effective coaches and remain aware of their critical role as to effectively assess workforce capabilities and enable planning for future needs. HR must be focused on becoming a trusted advisor to their business to empower managers to drive improved organisational performance.

Conclusions

Hardware and software won't touch the toughtware of human being, none the less industry 4.0 could be the benchmark pertaining to complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgment and decision making, service orientation, negotiation, cognitive flexibility.

REFERENCES

[1] Dr. SubbaRao P. (1999) "Personal and human resource management" Himalaya publishing house, Mumbai, Revised Enlarged Edition 2006.
[2] Dr. Mamoria c.v., Dr Mmoria Satish, Gankhar S.V(1983) "Dynamics of Industrial Relations", Himalaya publishing house, Mumbai 15th edition 2005.
[3] Yoder Dale (1967) "Personal Management", prentice hall of India Pvt. Ltd., Mumbai 8th edition 1984.
[4] https://www.google.co.in/
[5] https://www.researchgate.net
[6] rap.ncirl.ie/730/1/Declan_Naughton
[7] www.slideshare.net
[8] https://en.wikipedia.org/wiki/Sterlite_Technologis
[9] www.slideshare.net

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Social media and its significance in external communication

Gopa Das [1], Nisha Nagdeote [2]
Faculty of Management, SIOM
Marketing Student, SIOM

Abstract:

Organization requires effective communication to survive. Social media marketing has emerged as a significant pillar in generating business and profits for the organization. Social media marketing is a sub component of external communication where the latter is referred to all the techniques adopted by the organization to communicate their brands, developments and image to the public. Therefore, presence in social networking sites boost the promotion and sales of the product and services in the eyes of the millennial who is suppose to be the high on tech-savvy. Grabbing the attention of the external community is crucial in reaping success for the organization. External communication focuses on connecting with people outside the organization and social media is a tool to acquire this phenomena. Organization must sink up their usage of social media and marketing strategy to reach right prospects. A strong external communication strategy will help the organization to draw attention towards their current marketing activities i.e. how their organization compare with their competitors, is the company worth investing or what are their recent improvements or developments. On the other hand social media is no longer only a platform for friends and peers but it is also utilized as sharing information, raising interest and information. Drawing strength from the past research and literature this paper will throw light on social media and its significance in external environment communication. It will also suggest certain strategies that can be adopted on using source media as a tool to bring organizations communication effectiveness.

Keywords- *social media, external communication, significance.*

I. INTRODUCTION

Social media is an online communication platform which the people use to share contents, personal opinions, exchange different viewpoints & insights. Social media website content can come in many shapes and forms such as text, images, audio and video. The list of various social media websites is enormous A few examples of this social media websites are social networking websites that allows you to create a personal profile about yourself , then chat, discuss and share information with others (such as family and friends). Prime examples of social networking sites are MySpace, bebo and Facebook, wikis (ex. Wikipedia), video sharing (ex. YouTube), photo sharing website (ex. fickr), news aggregation (ex. digg), social bookmarking (ex, online gaming), presence app (ex. twitter). External communication on the other hand is defined as the transmission or exchange of information and message between a business and another person or entity in the company's external environment. Some of the examples of these entities can be target customers, end consumers, investors, stakeholders, creditors, debtors, investors, suppliers and of course society at large. Several channels of communication are available for external communication including verbal, print, broadcast and electronic channels, social channels. Now-a-days the purpose of social media is no longer to keep us up to date with our friends and peers but to raise awareness and share information instantly- which is important in a fast paced world. Social media has now changed the way we communicate at different levels such as personal, B2B and B2C. For example, LinkedIn allows business to create long term connections with customers, stakeholders and clients, whilst Facebook and Instagram are often used to keep in contact, on sales formal basis, with personal network, contacts, friends and small business. One thing is for sure, smart phones have completely transformed the way business engages with customers

through social media. Today social media has become one of the most important communication channels where business get more loyal customers, they interact and engage with them directly and create an environment in which they want to return time and again and tell their friends and family about it as well.

II. SOCIAL MEDIA USAGE TO ENHANCE EXTERNAL COMMUNICATION

Social media has come to play important role in today's society from putting photos on Facebook, sharing thoughts on twitter, joining online gaming communities, putting videos on YouTube or creating professional networks through LinkedIn. Most of us now use social media in our everyday lives. Social media can bring huge benefits to business and organizations. We can use it to promote goods and services, follow market trends, build professional relationships and recruit the best people. Drawing up social media policies and providing training for employees is the key to managing social media use in today's workplace. Companies use social media for variety of reasons that includes attracting employees, connecting with customers and prospects, build brand, drive traffic to company's website, increase sales and build community. Below is a list that shows the reasons why one must be on a social media platform today.

- **Communication:**

Now finding and identifying someone is a cake walk. Credit goes to social media platforms like Google Facebook, Twitter has made it easier for people to connect, contact and messages someone they are looking for. The device in our hands without which our lives feel so missing without it- our Smartphone has also plays a vital role because earlier one needed a PC or computer to connect and go online but with Smartphone getting in touch with friends, family or even managing business from a diverse location has now become possible

- **Photo sharing:**

With the advent of Facebook, Instagram, and Snapchat, one can now share photos about exciting moments of our lives with friends and family member's miles away from us. In the past it was impossible or took many days to connect with a distant person and now they are just a click away from sharing and cherishing the loving moments with their loved ones who are distantly located across the globe.

- **Recruitment**

Online recruiting is about finding right job seekers and making connections with them using a virtual platform. And social media is a platform where people hang out online to express themselves and interact with each other. Thus this phenomenon is used by the companies to hire their pool of right candidates

- **Awareness Campaign:**

From a research it is evident that 78% of businesses have a dedicated team for their social media. Campaigns are strategically focused on the issues, have measurable outcomes, and are ultimately aimed at influencing and spread awareness among social media users to feel or act in a certain way. During natural calamities or social causes like banned child labor, rape, acid attacks or any other burning issues can gather maximum apathy and charity. Last year India witnessed many such issues like Kerela Floods, Excessive rainfall in parts of Maharashtra, Priyanka Reddy murder case ignited many responsible citizens to come forward and raise their voices. When it comes to raising funds or helping the poor, social media has always acted as a big platform to raise money for charity or different awareness campaign.

- **Promotions:**

In today's world, social media has taken height from a new idea to an absolute necessity for marketers. Of all the new media marketing platforms, social media has most methodically turned traditional marketing to 180 degree contrast. With the traditional outbound marketing strategies messages were conveyed to potential customers and the communication was one way but with social media, customers and businesses can directly connect and interact. Both parties can raise questions, repost each other's content and work on building relationships. Promotion on Social Media sites has acquired a lot of eye and confidence in the world of business. Now people can promote their work and increase their

customer base by sharing information about them. Also, businessmen can get feedback about what the people feel about their products through reviews.

Chart.1: general social media statistics
(SOURCE: DAVE CHAFFEY, GLOBAL SOCIAL MEDIA RESEARCH SUMMARY, 12TH FEBURARY 2019)

Social media use is growing now-a-days. About 45% of the total world population are using social networks and more than a million new people join social media every single day. 9 out of 10 people access social media via a mobile device. Majority of the businesses are using social media platform to market and generate revenues for their businesses. More than 70 percent teenagers know and use most of the social networking websites. They use these website to make new friends and share their activities (ex. Pictures and thoughts,etc)

III. DRAWBACKS INVOLVED IN USING SOCIAL MEDIA

- The misuse of social media can pose serious risks to business and organization. For example once a company has published something, either by twitter or Facebook or Email you absolutely lose control of it. Company cannot control how many times it's forwarded or re-twitted.
- Social media is a good place for a business but can also be a scam or fraud in the name of a company. For example, consumers might be contacted by telephone, posts, email or even on their doorsteps; also the personal data of the consumers are accessed by the criminals.
- Nowadays security agencies have access to peoples' personal accounts for example all the ecommerce sites uses personal bank accounts of their customers while completing an online transaction.
- By spreading rumors about someone all over the internet can ruin his reputation. If a business owner posts something even on his private pages, it reflects his company's reputation.
- Social media can adversely affect mental or physical health of an individual if it is not used wisely. For example; cyber bullying can lead to depression, anxiety, social isolations and suicide.

IV. SUGGESTIVE STRATERGIES TO AVOID ROADBLOCKS CREATED BY SOCIAL MEDIA

- **Security**-Never share too much information over the internet. One must only talk to people he knows and not complete strangers. Because this can sometime put someone at the risk of identity theft. For example, if a thief manages to get a grasp over someone's financial info or

if someone wants to target a particular individual they can easily get the information needed form the Facebook profile of an individual.

- **Define uniqueness**-A company must define its unique characteristics which are different from its competitors so that individuals or customers will choose them and not their competitors and also identify its brand and its valuable products.
- **High involvement**-A company must always be active on its social channels and treat these channels as communities where people with similar thoughts come to hang out. Also a company must appoint a person as a "community manager" who looks after this community and listens to the needs and concerns and also give answers to the questions raised by people on these community.
- **Study & groundwork**-A company must monitor all its social media channels and take feedbacks from individuals and offer help regarding any of the problems and also ask different questions and provide insights.
- **Improve Visibility:** A company must find different tactics to publish links of its contents that goes directly on company's websites also it must improve its search visibility on Google. These give good rankings to your company's website and also increase its site authority.
- **Know Your customers:** Facebook ads and strategic ad design identify and reach ideal customers. A company can also use landing pages with lead forms to drive conversions. In order to target the customers on Facebook a company can explore the demographics, interests and behaviors of customers connected to company's page.
- **Compare:** Monitor the use of business related social media versus unrelated social media at the workplace. When a company monitors a social media account of an employee it not only protects itself but also its employees. It is important for a company to be aware of what its employees are posting on the internet because the posts can travel so fast and this could potentially promote or destroy a company within a minute.

VI. THE FUTURE OF SOCIAL MEDIA AS A BASE FOR EXTERNAL COMMUNICATION

Social network started from 1997 with the first social site, SixDegrees.com? it was followed by Friendster in 2001 and MySpace a year later in 2004 Facebook was launched targeting the college students followed by twitter in 2006. Now in 21st century there are many social networking sites nowadays such as WhatsApp, LinkedIn, Google+, Instagram, Pinterest, Flicker, Foursquare, etc. These sites can be easily accessed on Smartphone's. In future social media will come with more privacy and security options, online searches will be carried out through images, companies will connect with its customers at meaningful level by treating them like individuals and not the mass source of revenue. In future external communication will help the company to generate the attention that it needs to grow its presence while developing long term relationships, it will create communication strategies that will speak to the audience outside the company, it will define a unique buyer persona for different persons such as investors, shareholders, clients & customers, etc outside the company so as to connect and focus on right person. Apart from this social media will also have a negative impact on the society such as strong personal relationships will be hard to form and maintain.

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

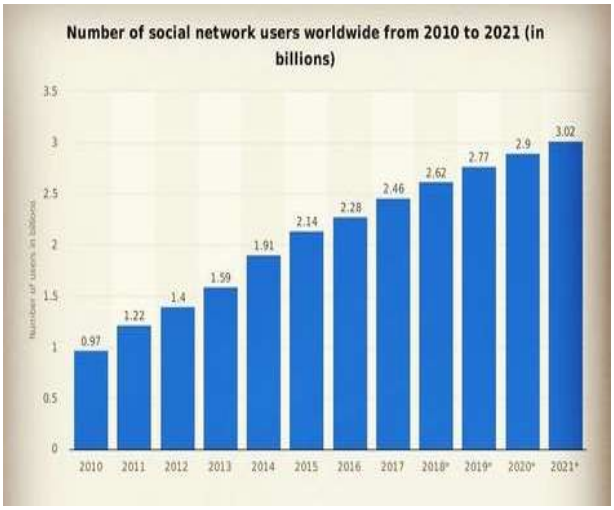


Chart.2: number of social network users worldwide
(SOURCE: J. CLEMENT, NUMBER OF SOCIAL MEDIA USERS WORLDWIDE 2010-2021, AUG 14, 2019)

From the above graph it is obsreved that the number of individuals using social media has continued to rise every year also the time spent by each individual on social media everyday is also growing. In January, 2019 social network penetration stood at 45 percent i.e. 2.77 billion people are on social media. By 2021 the a number projected to increase to almost 3.1 billion. According to 2019 data the average daily time spent on different social channels is as follows: Facebook- 58min, YouTube- 40min, Instagram- 53min, WhatsApp- 28 min, Twitter- 1min, SnapChat- 49.5min, linkedIn- less than min, Pinterest- 14.2min.

V. CONCLUSION

Social media will always be a key factor in communication both in personal lives and the business world. It impacts our lives in so many ways and helps businesses be able to function properly and efficiently. This is all depending on how you choose to present yourself or your business online. It can have positive or negative effects on potential and current customers, present and future employees and partners, and brand awareness. Internet sites such as Facebook, Google, Twitter, Instagram, and others give businesses a cheaper and faster way to reach consumers, market their company or products, look at present or future employees, get product or service feedback, and build relationships. External communication is strongly present in winning companies. The traits of visionary companies are exhibited by these companies with good external communications. The net is presently a hub for all different people to connect online. In future social media will bring more platforms, more advancement in regards to how we engage, and inevitably, more security and privacy issues. It will not only enhance communication, in ways of personal relationships but it will also boost the organizational relationships.

REFERENCES

[1] J. Clement, “Number of social network users worldwide from 2010 to 2021*(in billions)*,” Aug 14, 2019.

[2] Asad Awan,” Social media in 2030(and how it will affect YOU),” Nov 15, 2019.

[3] LogoGrab Blog,” What Will Social Media Look Like in the Future?” Feb 15, 2019.

[4]” Future of Social Media In Personal Relationships In 2030”.

[5] Dave Chaffey, "Global Social Media Research summary", Feb 12, 2019)

[6] AustinGroth20, "Conclusion Social Media Will Always Be A Key Factor",The University Of Alabama.

YouTube Lectures:

[7]https://www.youtube.com/watch?v=e5oXygLGMuY

[8]https://www.youtube.com/watch?v=yueGlUt2qMA

.

Sinhgad Institutes

Sinhgad Technical Education Society's

SINHGAD INSTITUTE OF MANAGEMENT, PUNE-41

In Association with
Savitribai Phule Pune University

Under
Quality Improvement Programme (QIP)

NATIONAL CONFERENCE

On

"Data Science & Analytics Innovation Summit"
22nd & 23rd January, 2020

This is to certify that Dr. /Prof. /Mr. /Ms. Anjit Jha of Sinhgad Institute of management has participated/presented & published a paper titled A study on Business Transformation through Industrial Metamorphosis and challenges encountered by HRM: HR perspective. in the National Conference on "Data Science & Analytics Innovation Summit "dated 22nd & 23rd January, 2020.

Dr. Chandrani Singh

Dr. Daniel Penkar

OUR HERITAGE
ISSN: 0474-9030 Vol-68, Special Issue-27 (Feb. 2020)
5th International Conference On "Innovations in IT and Management"
Organised by: Sinhgad Technical Education Society's
SINHGAD INSTITUTE OF MANAGEMENT AND COMPUTER APPLICATION (SIMCA),
Narhe Technical Campus, Pune, Maharashtra (India) 411041.
Held on 6th & 7th February 2020

A study of relationship between Parental negligence and Child obesity.

[1]Mr. Anshul Nakhate, [2]Prof. Pradop S Thombare
[1] MBA First year SIOM, Pune, [2]Asst.Prof. SIOM, Pune

ABSTRACT:

Childhood obesity is a significant and growing health problem in the India and other parts of the world. Secular trend data in the India suggest that children have become substantially heavier over the last several decades and that their risk for a number of health problems is increasing as a result.

Childhood obesity is associated with both physical and emotional morbidity. Discrimination against obese children begins early in childhood and becomes progressively institutionalized. Because obese children tend to be taller than their non-obese peers, they are apt to be viewed as more mature. The inappropriate expectations that result may have an adverse effect on their socialization (Dietz, 1998). Childhood obesity affects self-esteem and has negative consequences on cognitive and social development.

SIGNIFICANCE OF THE STUDY:

This survey of parents provides preliminary data on parental and family factors in relation to the child's BMI percentile. These data are helpful in identifying the specific parental and family related factors that may have a significant impact on the child's BMI percentile. The

Identified target behaviors could be further intervened. The information and understanding of these factors gained from the study can be helpful in designing effective treatment and prevention strategies. Eighty percent of overweigh 10-14 year old adolescents are at risk of becoming overweight adults compared to 25% of overweight preschool children (< 5 years old) and 50% of 6-9 year old overweight children. Obesity in childhood and adolescence has been related to an increase in mortality in adulthood on follow up. Hoffman et al observed almost twice the risk of death in adolescents (> 18 year olds) with BMI > 25 kg/m^2 (compared to subjects with BMI <25kg/m2) during 20 year follow up.

RESEARCHOBJECTIVES:

1) To conduct study of Relationship between Parental negligence and child obesity.
2) To identify and analyze the impact of parental negligence on child's mental and physical health.
3) To study about Parent's perception and thought on the importance of physical fitness and healthy food habits
4) To understand and evaluate the rising child obesity problems and ways to eliminate it.

LITERATURE REVIEW:

Defining obesity in children has been difficult as assessing body fat is expensive and impractical. Body mass index (BMI), derived from weight and height is used as a surrogate indicator in adults. In children, the consensus is to use BMI percentiles statistically derived from
a reference population (Kaur et al., 2003).

BMI is defined as weight in kilograms divided by the square of height in meters (Ogden, Flagel, Carroll, & Johnson, 2002). The CDC uses the term "overweight" rather than "obesity" in the child and adolescent populations. Based on the Centers for Disease Control and Prevention (CDC), overweight is defined if the BMI percentile derived from the CDC's sex and age specific growth chart is at or above the 95th percentile. At risk for overweight is defined if the BMI percentile is at or above the 85th percentile, but less than the 95th percentile of BMI.

The American Obesity Association uses the 85th percentile of BMI as a reference point for overweight and the 95th percentile for obesity. Over the past three decades, the rate of childhood obesity has more than doubled for pre-school children aged 2 to 5 years and adolescents aged 12 to 19 years, and it has more than tripled for children aged 6 to 11 years. At considered obese. Because an increasing number of children in the United States are obese, childhood and adolescent obesity is one of today's most important health challenges and public health concerns. Further exacerbating this challenge are many immediate and long-term adverse outcomes associated with obesity.

RESEARCH METHODOLOGY:

Place of study

The purpose of research is to study the relationship between parental negligence and child obesity. The data is gathered randomly from various age groups and various professions through survey questionnaire.

Population

Through the questionnaire prepared we were able to get response from 93 respondents. The main aim of selecting respondents from various fields is to get opinion from a diverse group of people so that result can be generalized and evaluated on the vast group of population.

Sampling unit: 93 samples

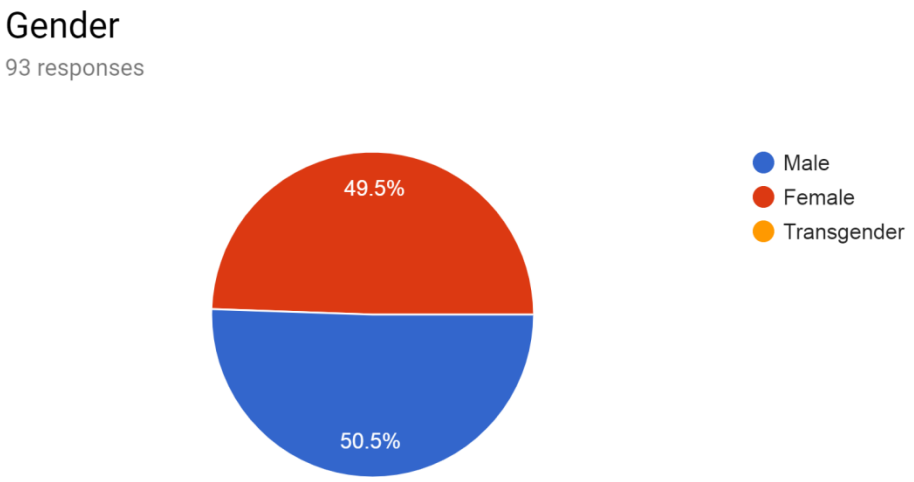
Collection of data

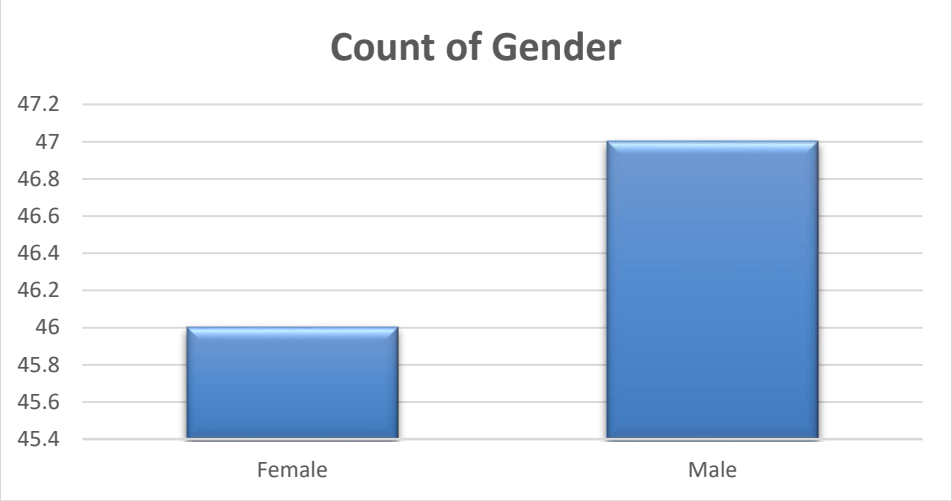
Once the data has been collected through questionnaire then the simplest and most revealing devices from summarizing data is the statistical table. A table will be systematic arrangement of data in column and rows. The purpose of table is for simplifying the presentation and to facilitate results.

Sampling methods used:

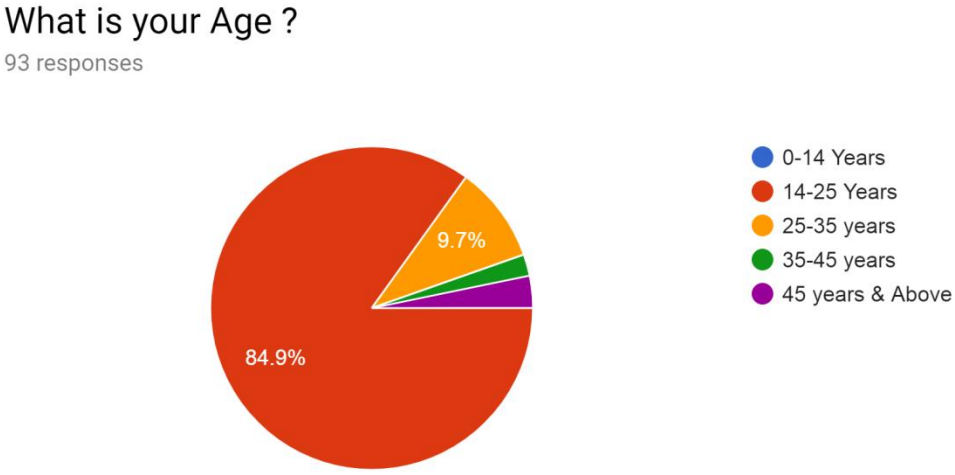
1) Convenient sampling

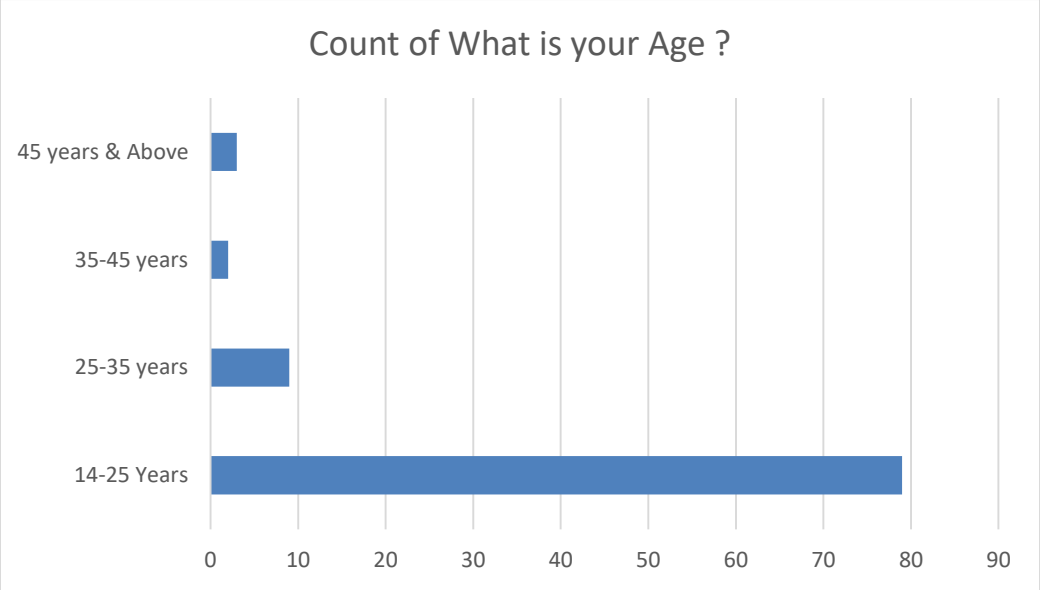
Data Analysis and findings



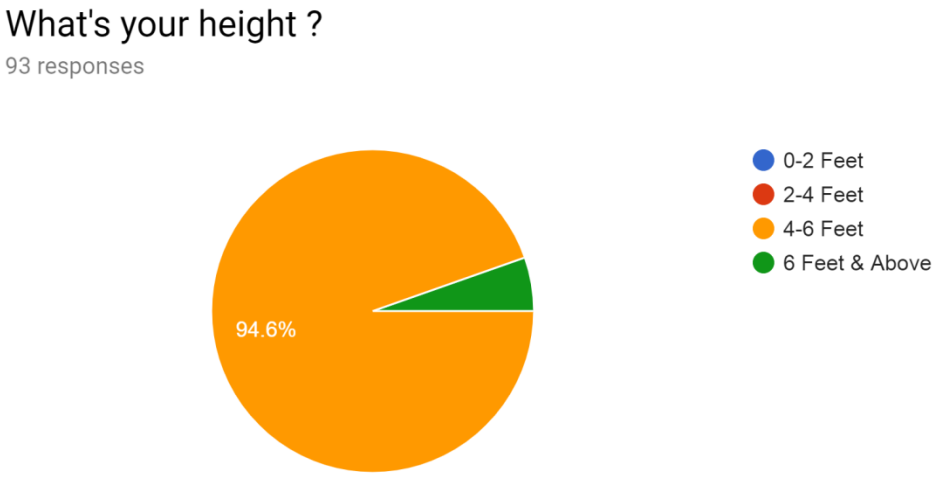


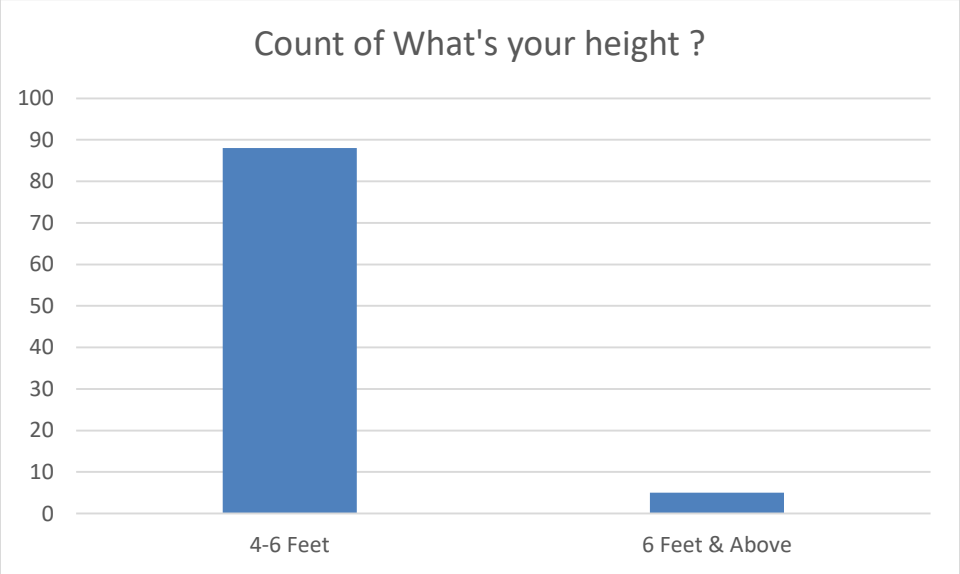
Out of total 93 respondent 42 were Male and 41 were Female.



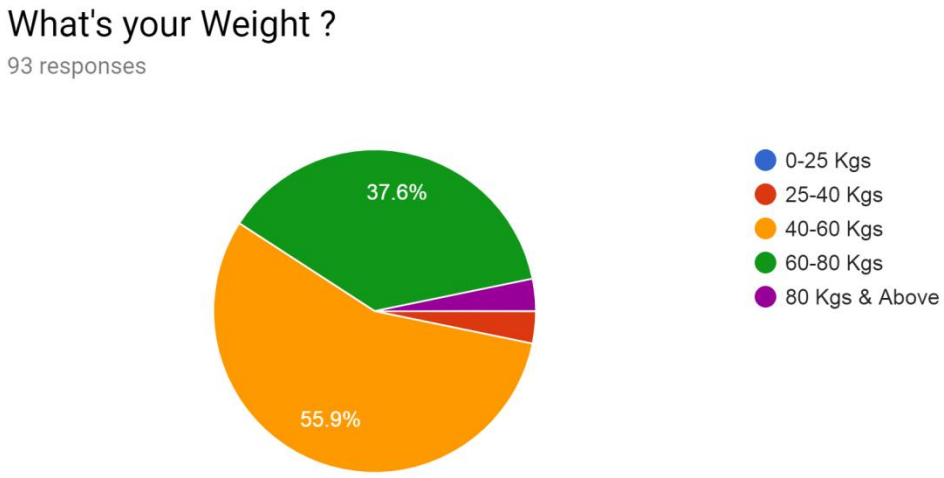


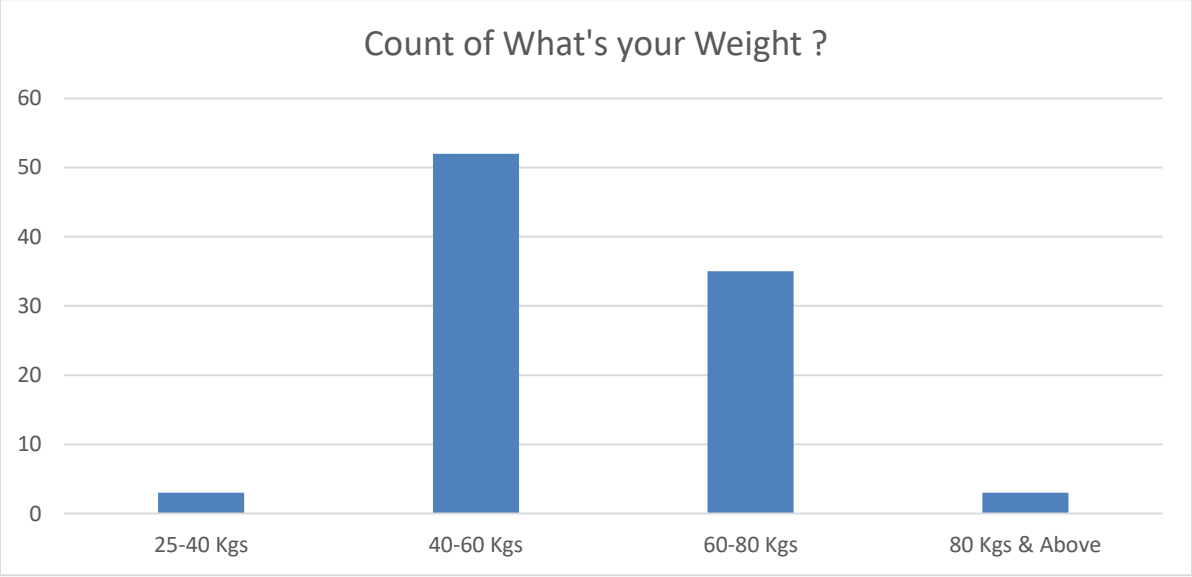
From the survey it was evident that maximum respondents were from the age group 14-25 Years constituing around 84.9% of total respondents , 9.7% were between 25-35 year of age.





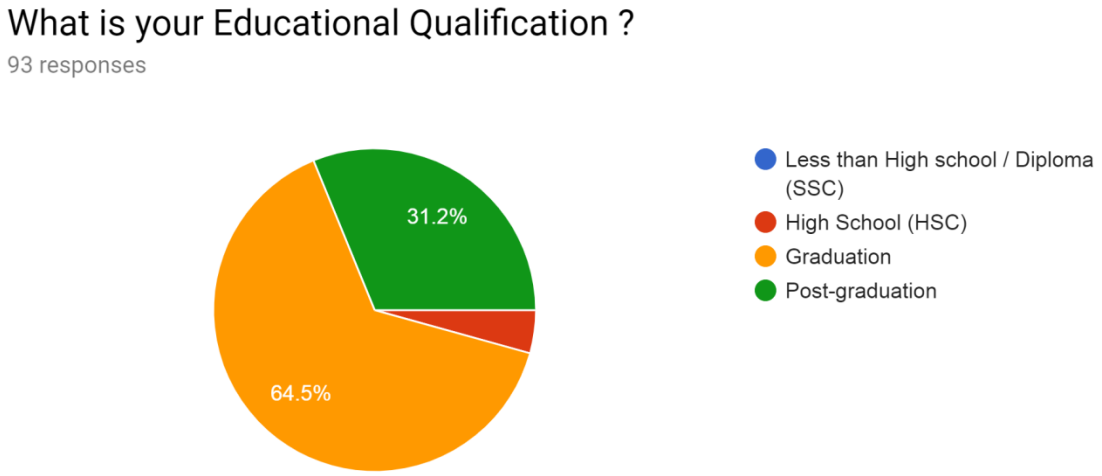
It was observed that maximum counts of respondents were from height between 4-6 feet constituting total of 94.6% and remaining were from the group 6 feet and above.

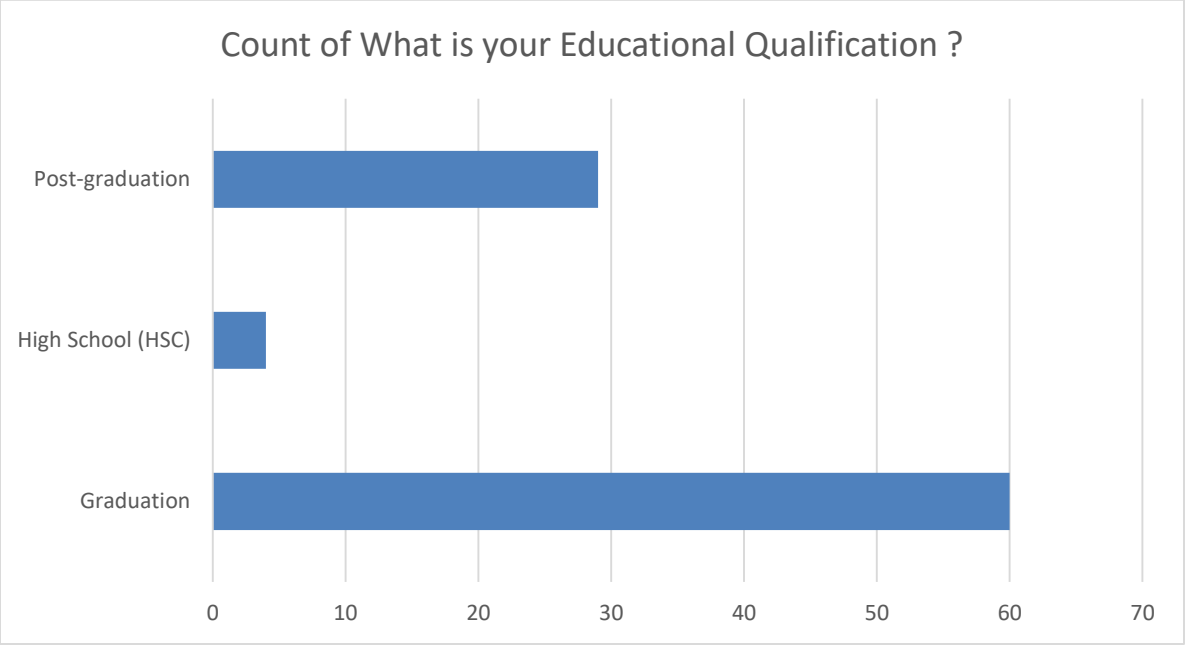




From the above survey it was evident that maximum respondents belonged to the weight group 40-60 Kg's constituting 55.9%, followed by weight group 60-80 Kg's constituting 37.6%.

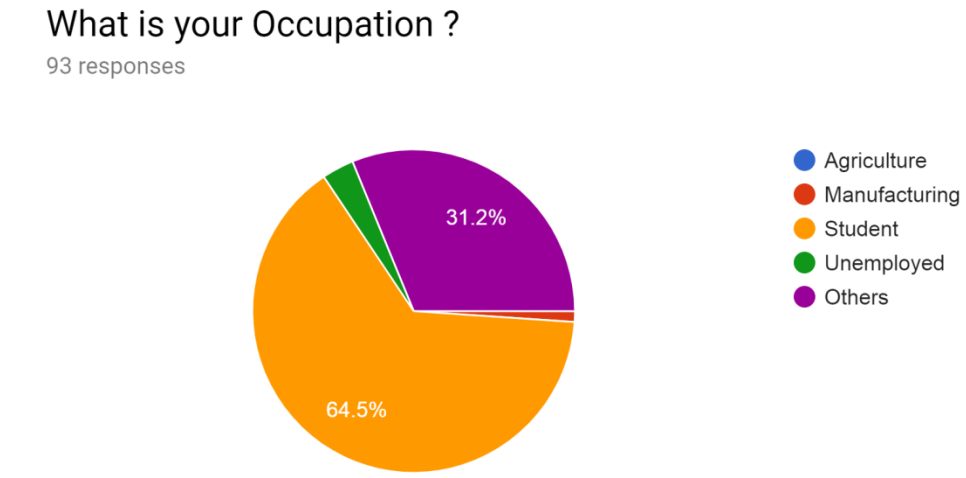
OUR HERITAGE
ISSN: 0474-9030 Vol-68, Special Issue-27 (Feb. 2020)
5th International Conference On "Innovations in IT and Management"
Organised by: Sinhgad Technical Education Society's
SINHGAD INSTITUTE OF MANAGEMENT AND COMPUTER APPLICATION (SIMCA),
Narhe Technical Campus, Pune, Maharashtra (India) 411041.
Held on 6th & 7th February 2020

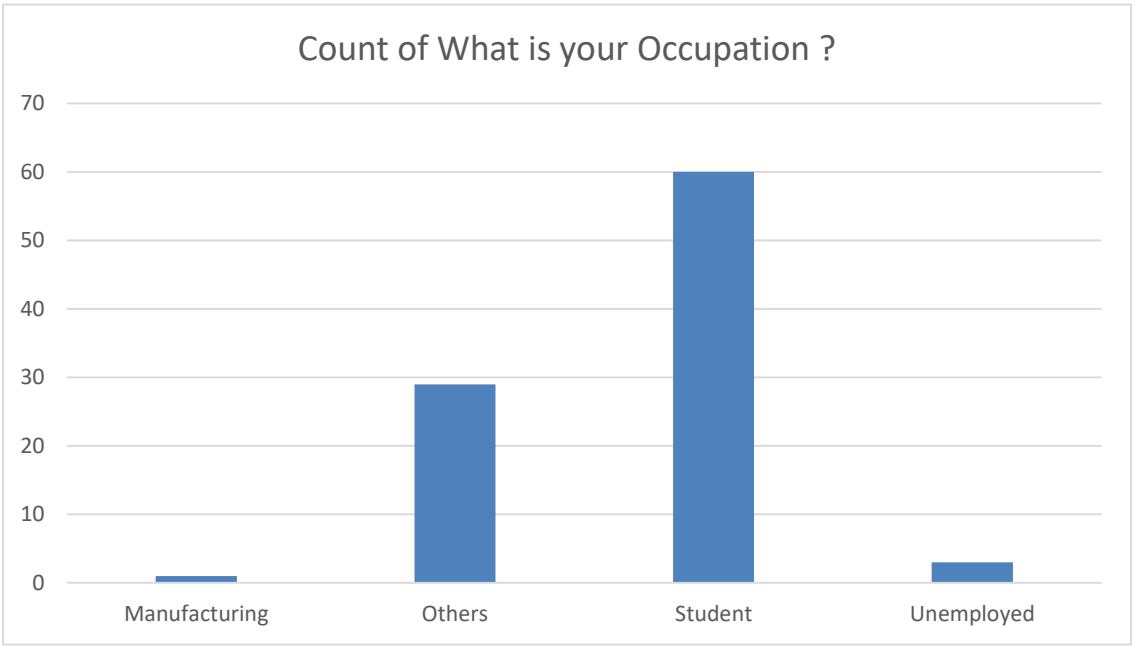




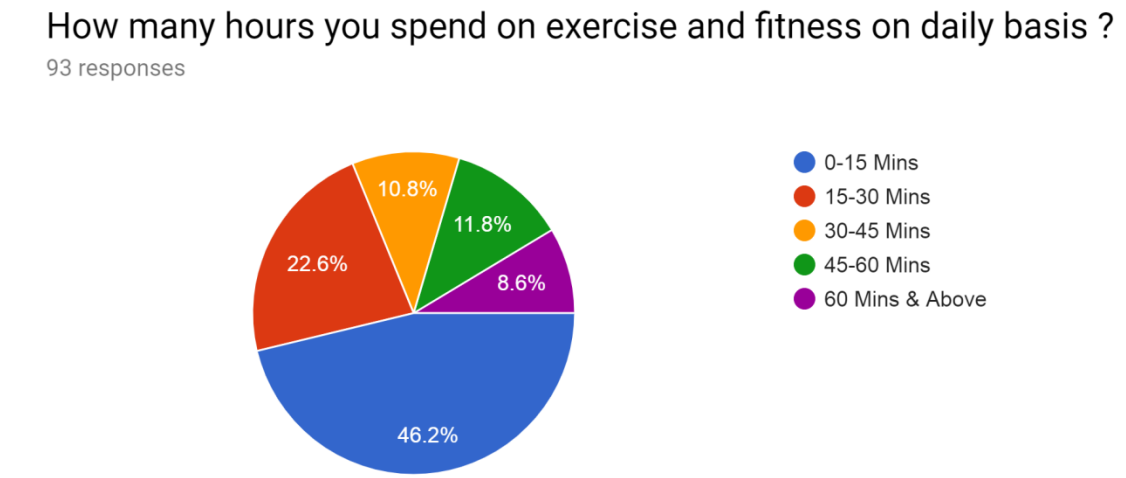
It was evident from the survey that the maximum respondent were perusing there graduation with

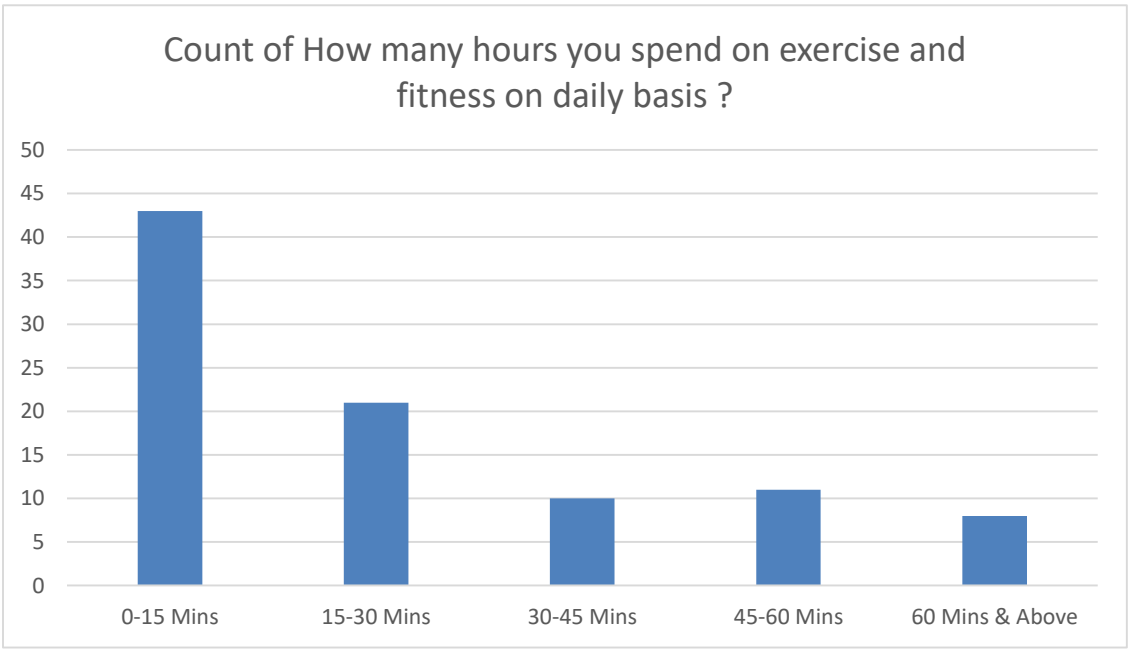
total of 64.5% share followed by 31.2% perusing post-graduation and remaining 4.3% were perusing High school education.



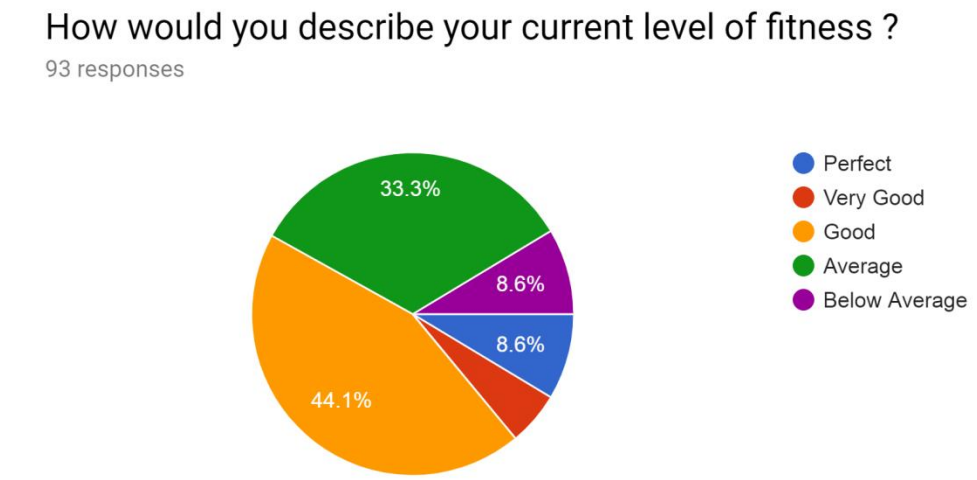


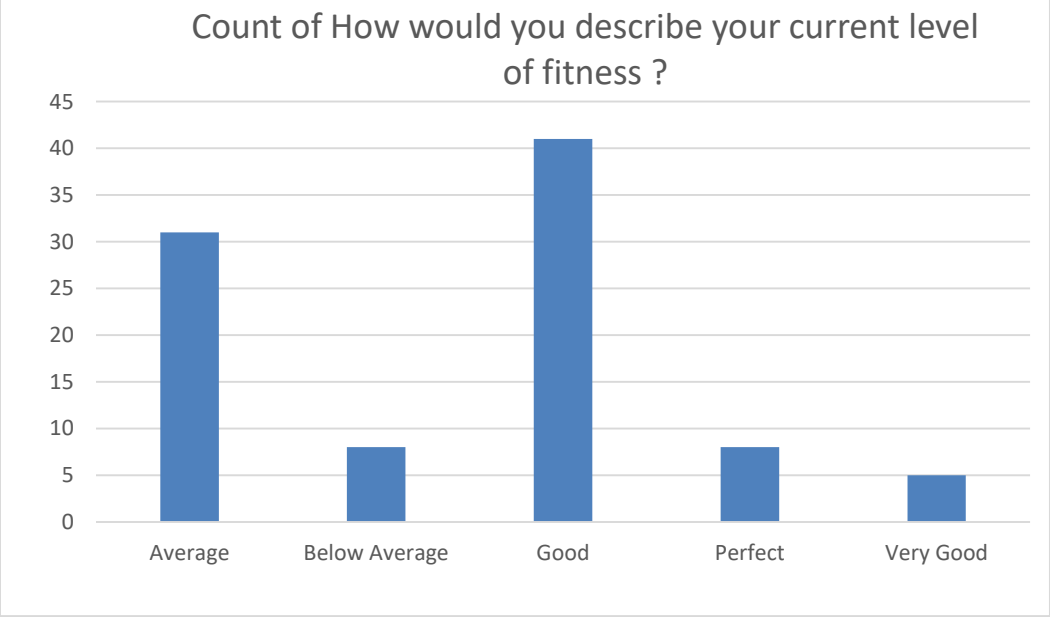
Maximum of the respondents that is 64.5% were students, followed by 31.2% of other occupation and minimal shares from manufacturing and unemployed respondents.



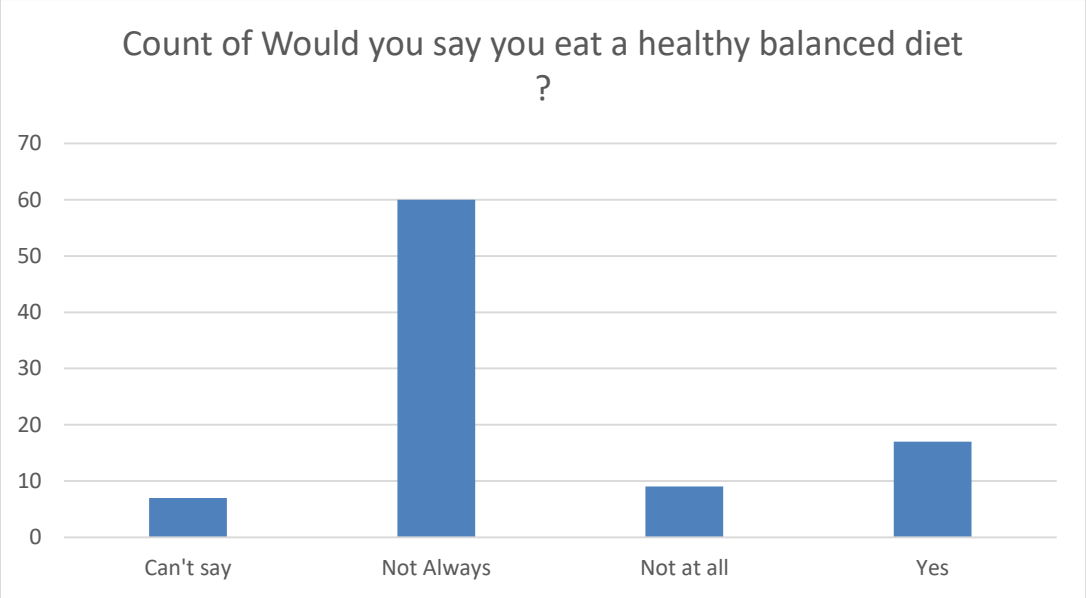


It has been observed that maximum respondents that is 46.2% of people take 0-15 min's for exercise on daily basis and only 6.8% of respondents take 60 min's or above for exercise on daily basis.

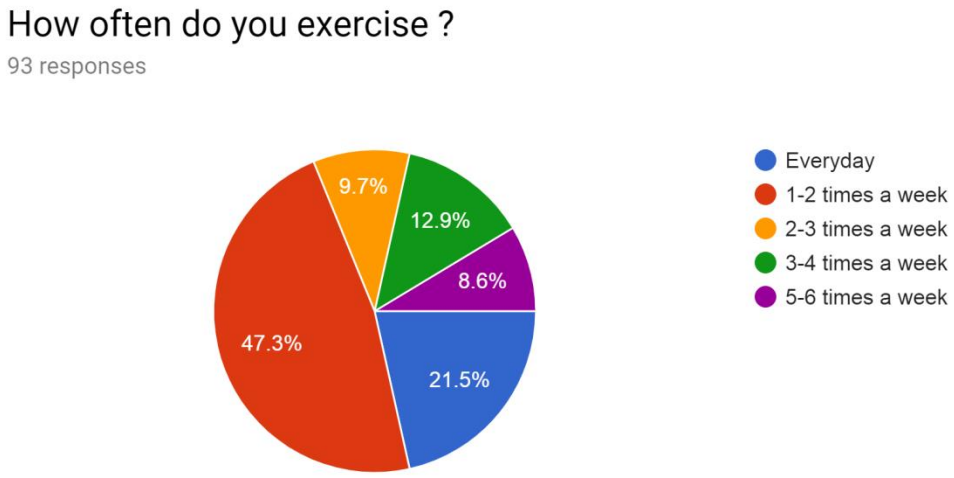


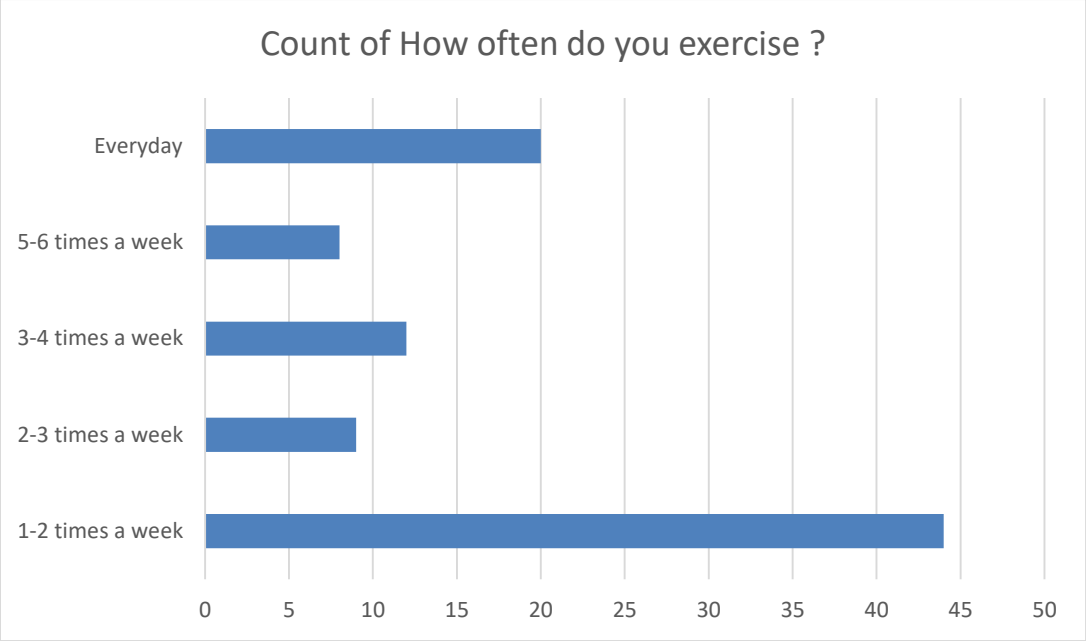


From the above survey we were able to find out that over 44.1% of respondents described their current fitness level as good followed by 33.3% describing it as Average however only 8.6% of the respondents felt that their current level of fitness was perfect.

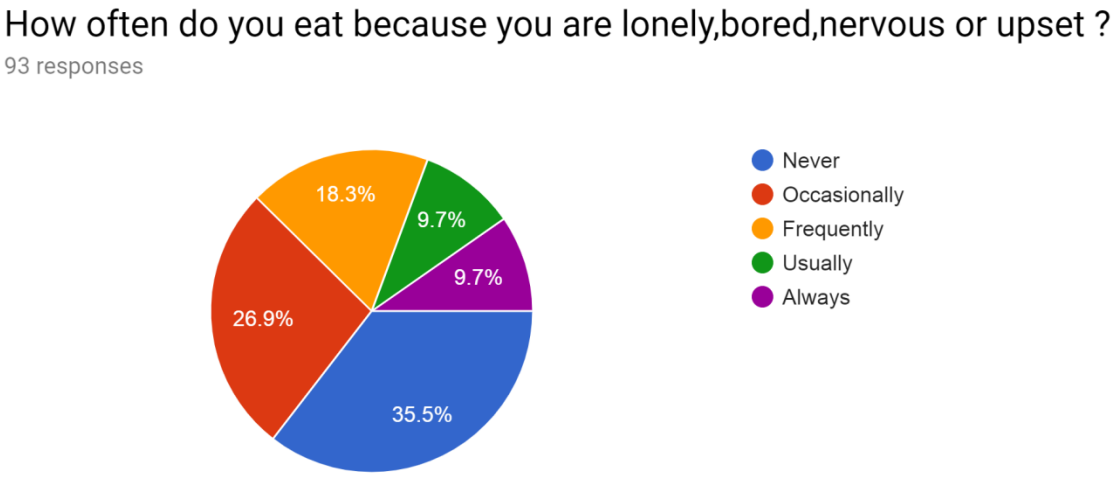


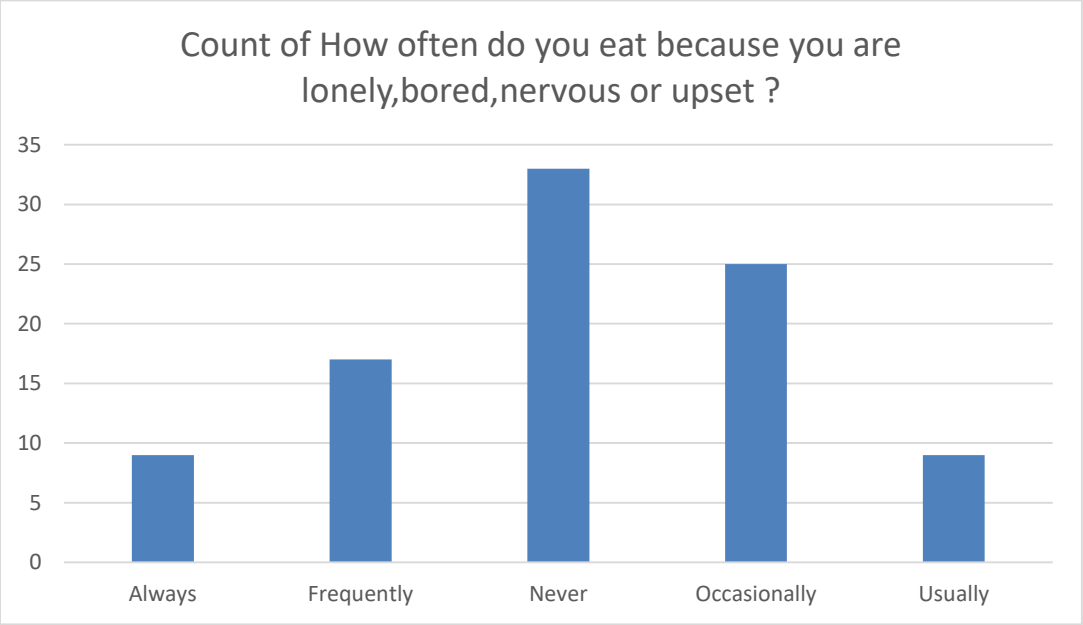
It was evident from the survey that the total 64.5% respondents agreed that they were not having healthy diet on regular basis and it was observed that only 18.3% respondents had balanced diet on regular basis.



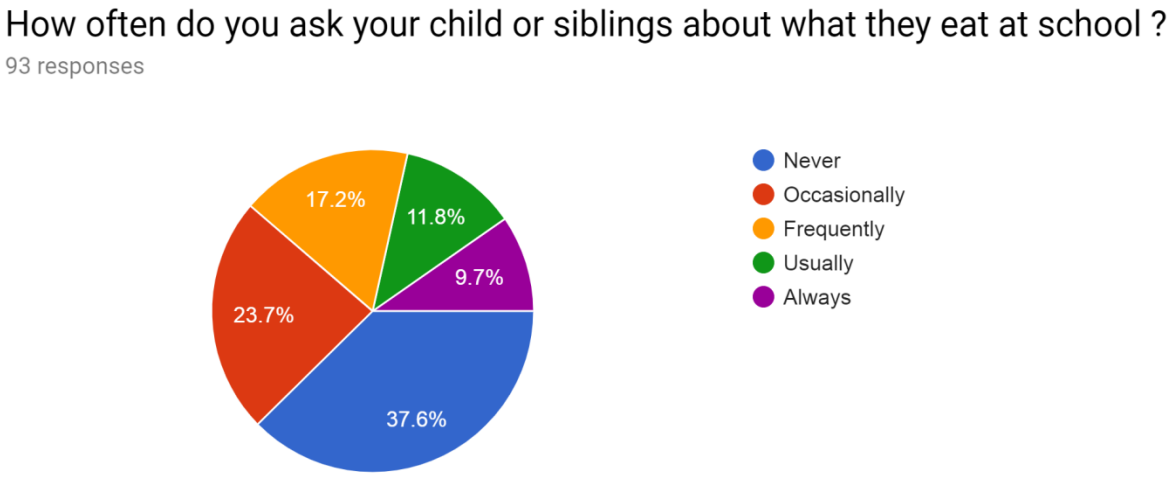


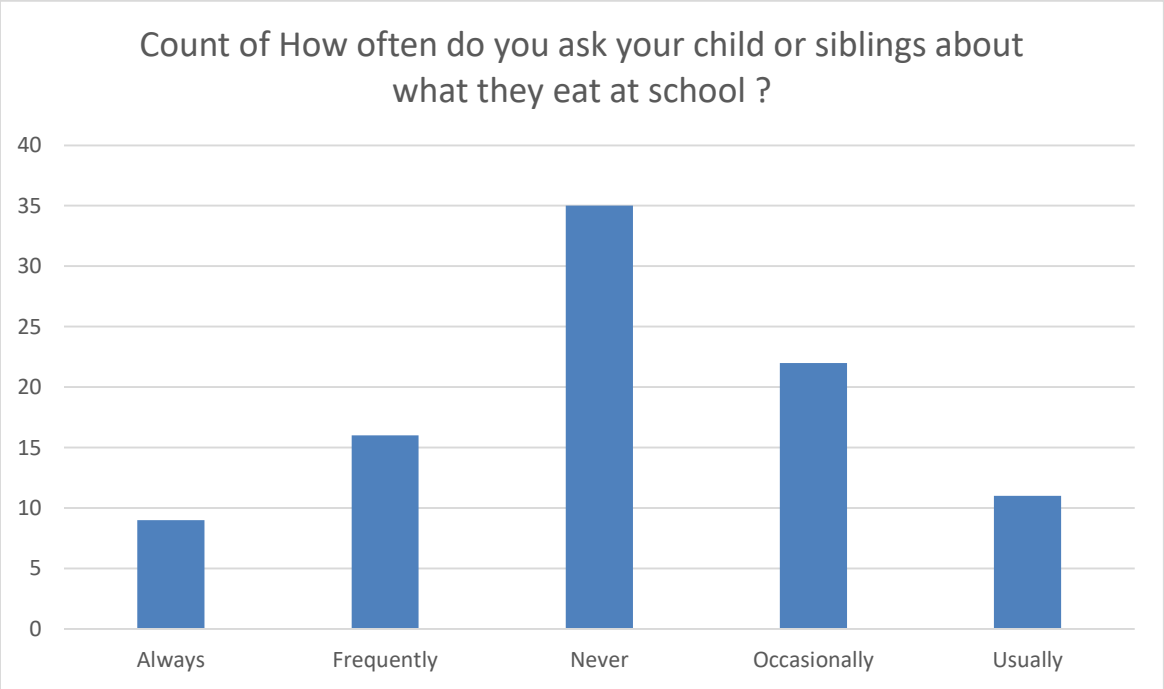
Survey depicted that 47.3% of respondents exercised 1-2 times a week followed by 21.5% respondent's exercising on daily basis and 12.9% of respondent's exercising 3-4 times a week.





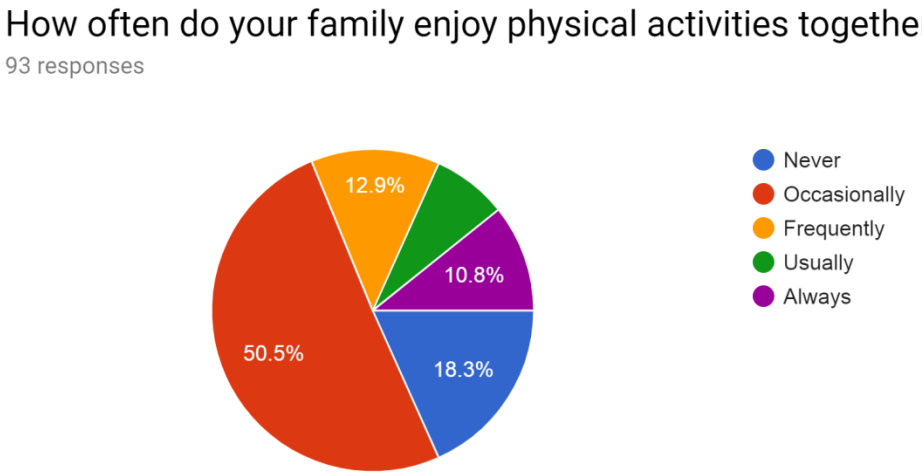
It was concluded from the above study that 35.5% (majority) of respondents never ate because they were lonely, upset or bored. However worrying figures were of 9.7% respondents who regularly ate when they were lonely, upset or bored.

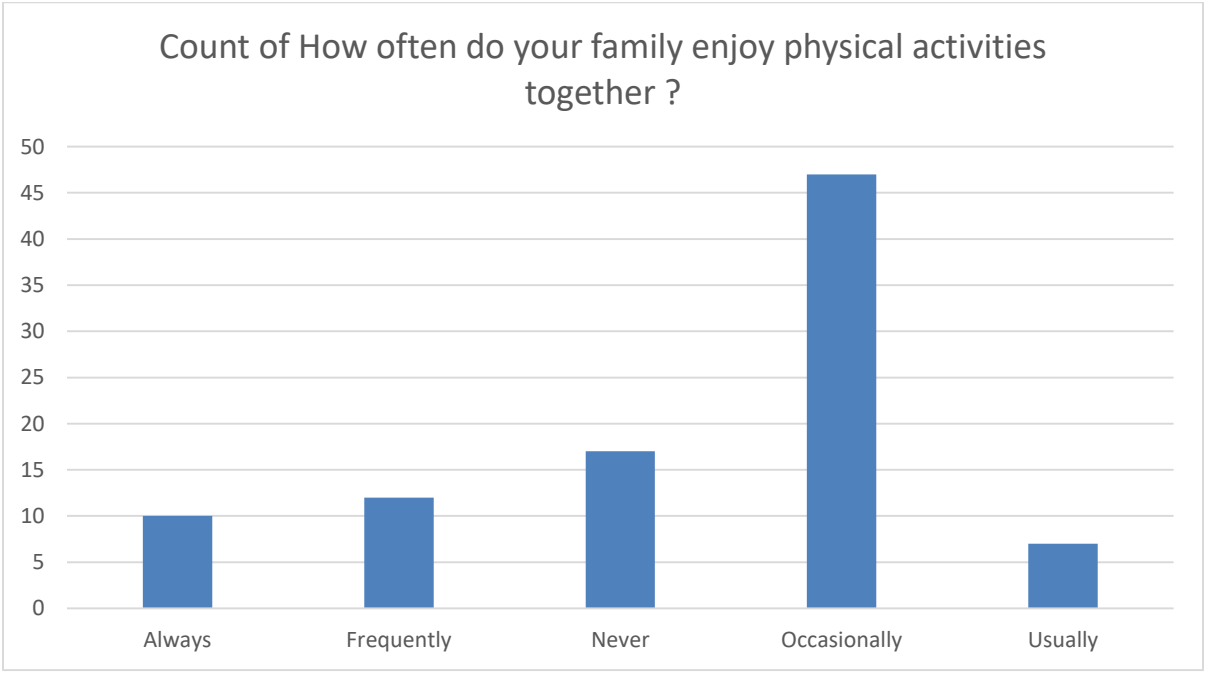




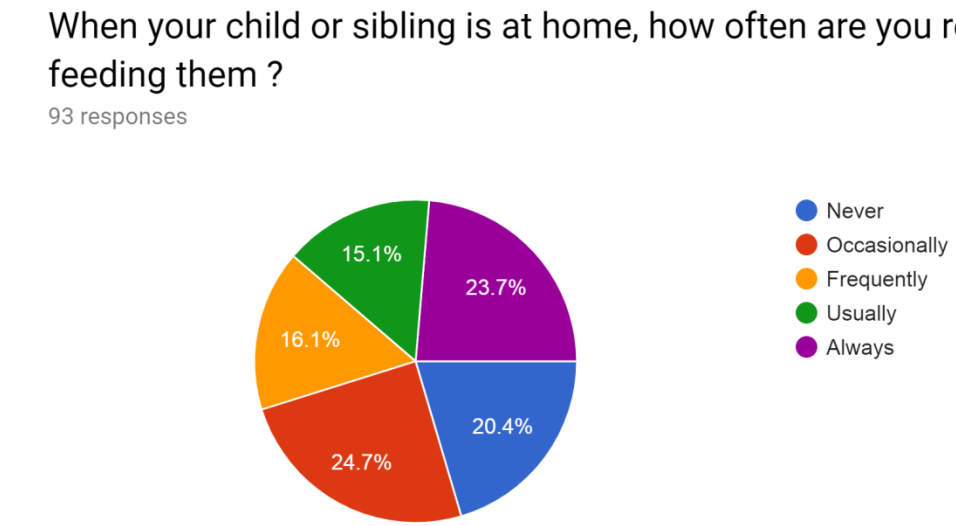
It was evident from the above study that the majority of respondents that is 37.6% of total never asked their child or sibling about what they ate in school followed by 23.7% who occasionally asked their child

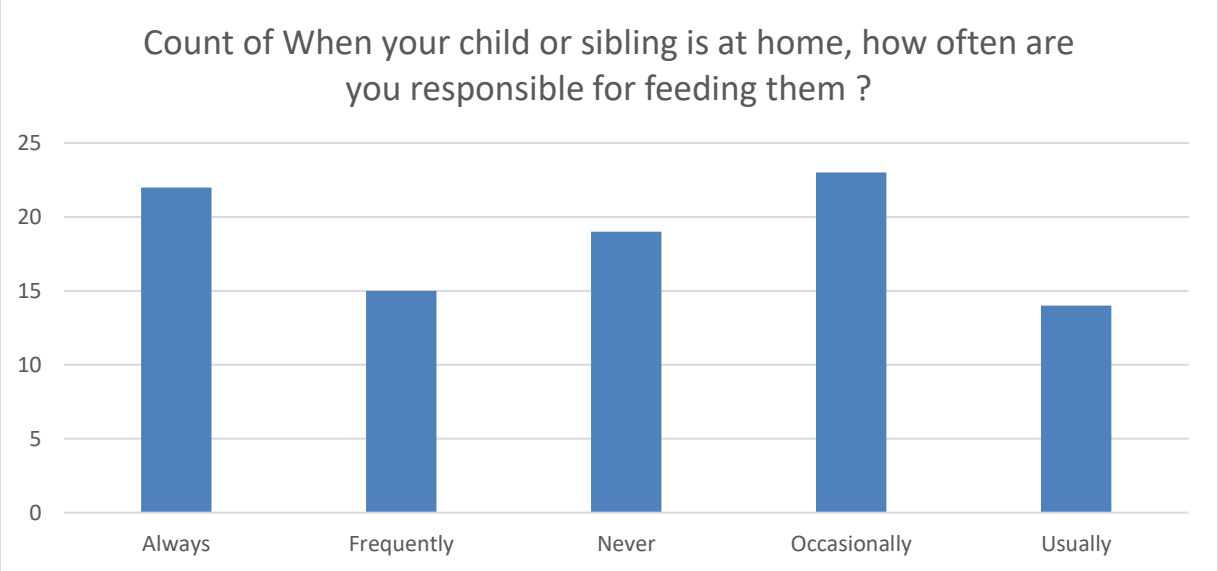
OUR HERITAGE
ISSN: 0474-9030 Vol-68, Special Issue-27 (Feb. 2020)
5th International Conference On "Innovations in IT and Management"
Organised by: Sinhgad Technical Education Society's
SINHGAD INSTITUTE OF MANAGEMENT AND COMPUTER APPLICATION (SIMCA),
Narhe Technical Campus, Pune, Maharashtra (India) 411041.
Held on 6th & 7th February 2020



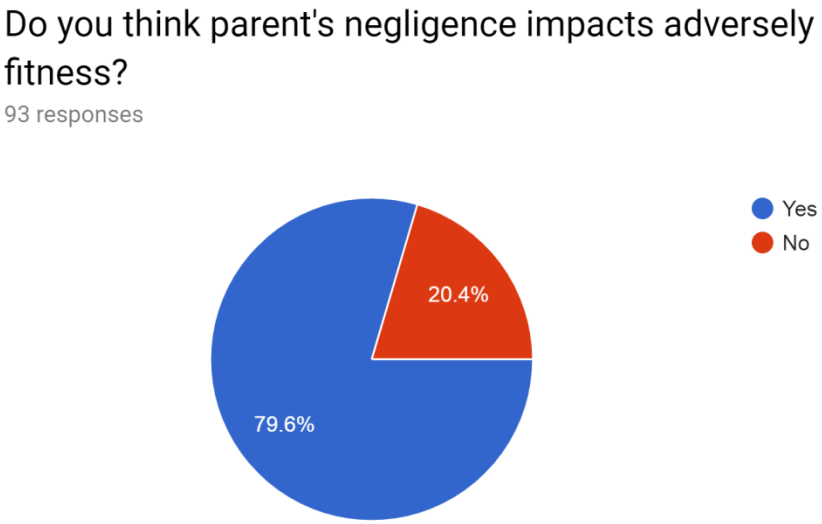


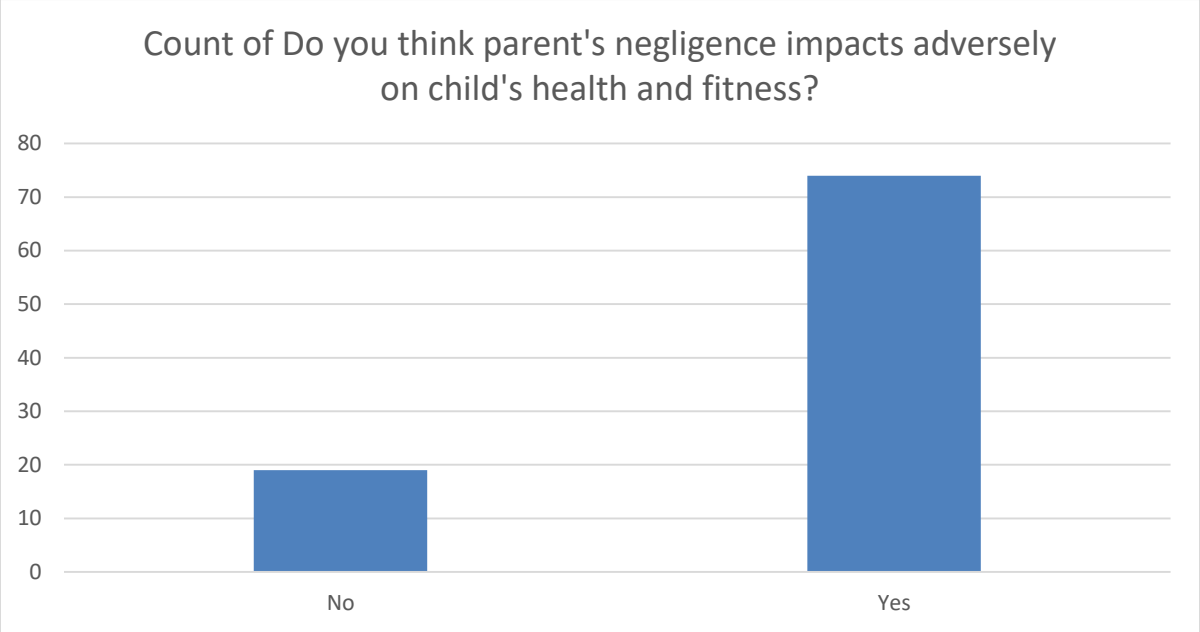
From the survey we came to know that 50.5% of respondents enjoyed physical activities with family occasionally followed by 18.3% who never enjoyed enjoyed physical activities with family





Only 23.7 % respondents take the responsibility of feeding there child or sibling at home and 20.4% never fed there child or sibling

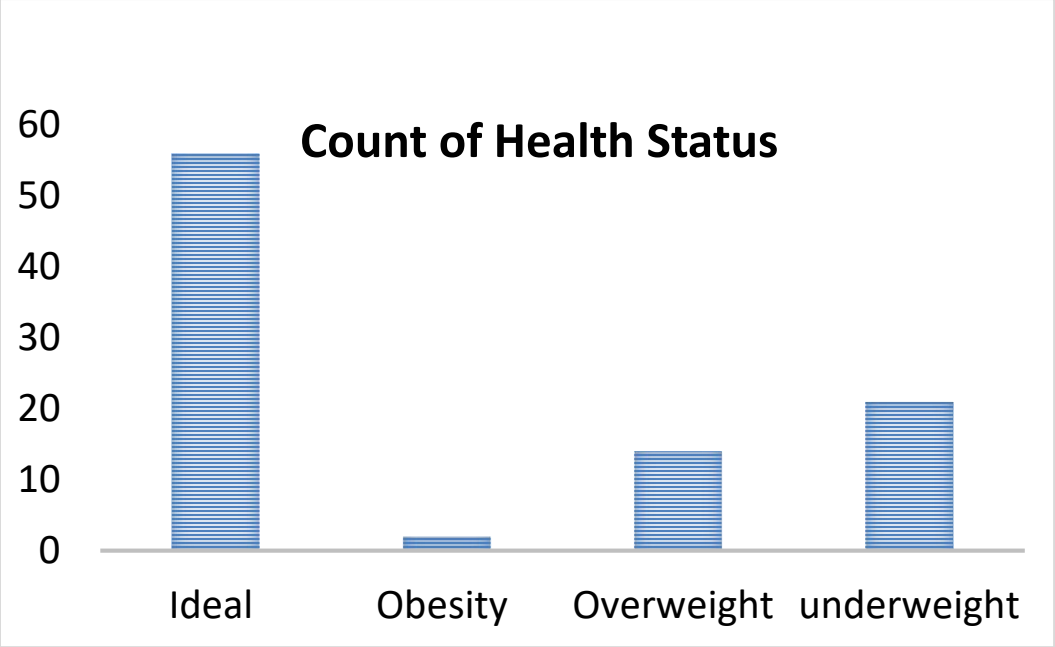




It was observed from the survey that 79.6% people agreed to the fact that parents negligence impacts adversely on child's health and fitness.

Conclusions and Findings

From the survey we were able to find out the total number of people that were falling under the Ideal health status on the basis **BMI** count and it was our finding that out of the total **93** respondents who filled the survey **56** of the respondents were falling under **Ideal health status**. **2** of the respondents were **obese**, **14** were Overweight and **21** of themwere falling under the status **Underweight**



Bibliography

- Lalley J. and N. Ahsan (1998) Youth development: Family and community strategies.Family Resource Coalition of Amerika report 17(1).
- Lansky .M. (1991).Shame and the problem of suicide: A family systems perspective. British Journal of Psychotheraphy7 (3):230-242.
- Lanz, J.B. (1995).Psychological, behavioral, and social characteristics associated with early forced sexual intercourse among pregnant adolescents. Journal of Interpersonal Violence10 (2):188-200
- Lauritsen,J.L. (1994). Explaining race and gender difference in adolescent sexual behaviour. Social Forces 72(3):859-883
- Lefkowitz, E.S.,M.Sigman,et al. (2000).Helping mothers discuss sexuality and AIDS with aolescents. Child Development 71(5):1385-94.
- C.R.Kothari, Research Methodology

- Marketing Research, G.C.Beri

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Analysis of FII's on Indian Stock Market with Reference to NSE

Pradip S Thombare,

Research Scholar

Asst.Prof.Sinhgad Institute OF Management, SPPU, Pune

Dr.Ravikumar Chitnis
Principal,
MITSOM-WPU, Pune

Abstract:The issue of whether FII flow affects stock market returns or the other way round is a matter of some controversy. It has been perceived in some quarters that FII flows are the major drivers of stock markets in India and hence a sudden reversal of such flows may harm the stability of its markets. Contrary to this belief, it is viewed by others that FII flows react to the existing crisis in the stock market, possibly exacerbating it rather than causing it.In light of these events, Grand Project taken up dealt with three objectives. One objective is to find out the cause and effect relationship between the FII and BSE, NSE .Second, objective is to know how much FII and BSE, NSE affect each other through Regression. Introduction:FIIs were allowed to trade in the Indian stock market from 14th September 1992 but they made first investment in the month of January 1993. FII is defined as an institution organized outside of India for the purpose of making investments into the Indian securities market under the system prescribed by SEBI. „FIIs" include "Overseas pension funds, mutual funds, investment trust, asset management company, nominee company, bank, institutional portfolio manager, university funds, endowments, foundations, charitable trusts, charitable societies, a trustee or power of attorney holder incorporated or established outside India proposing to make proprietary investments or investments on behalf of a broad-based fund. FIIs can invest their own funds as well as invest on behalf of their overseas clients registered as such with SEBI. These client accounts that the FII manages are known as „sub-accounts". Foreign institutional investor means an entity established or incorporated outside India which proposes to make investment in India. Positive word about the Indian economy combined with a fast-growing market has made India an attractive destination for foreign institutional investors. FII is defined as an institution organized outside of India for the purpose of making investments into the Indian securities market under the regulations.

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

With the buying of securities by these big players, markets trend to move upward and vice-versa. They exert strong influence on the total inflows coming into the economy. The FIIs are considered as both a trigger and a catalyst for the market performance by encouraging investment from all classes of investors which further leads to growth in financial market trends under a self-organized system.

FIIs are those institutional investors which invest in the assets belonging to a different country other than that where these organizations are based.

\Foreign investments in the country can take the form of investments in listed companies (i.e. FII investments); investments in listed/unlisted companies other than through stock exchanges (i.e. Foreign Direct Investment, Private Equity / Foreign Venture Capital Investment route); investments through American Depository Receipts / Global Depository Receipts (ADR/GDR) or investments by Non Resident Indians (NRIs) and Persons of Indian Origin (PIO) in various forms.

Indian Stock Market:

Most of the trading in the Indian stock market takes place on its two stock exchanges: the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE). The BSE has been in existence since 1875. The NSE, on the other hand, was founded in 1992 and started trading in 1994. However, both exchanges follow the same trading mechanism, trading hours, settlement process, etc. At the last count, the BSE had about 4,700 listed firms, whereas the rival NSE had about 1,200. Out of all the listed firms on the BSE, only about 500 firms constitute more than 90% of its market capitalization; the rest of the crowd consists of highly illiquid shares.

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Almost all the significant firms of India are listed on both the exchanges. NSE enjoys a dominant share in spot trading, with about 70% of the market share, as of 2009, and almost a complete monopoly in derivatives trading, with about a 98% share in this market, also as of 2009. Both exchanges compete for the order flow that leads to reduced costs, market efficiency and innovation.

The issue of whether FII flows affects stock market returns or the other way round is a matter of some controversy. It has been perceived in some quarters that FII flows are the major drivers of stock markets in India and hence a sudden reversal of such flows may harm the stability of its markets. Contrary to this belief, it is viewed by others that FII flows react to the existing crisis in the stock market, possibly exacerbating it rather than causing it. An analysis of the direction of causality to understand the possible devastating Impact of FII flows on the Indian economy is important from the viewpoint of Indian policy makers especially when such flows have recorded a sharp rise over the last decade. But, as very few studies have been done so far in this regard, the present empirical study has been undertaken to throw some light on the cause and effect relationship between FII flows and Indian stock market returns.

Literature Review:

Dr. Kajal Gandhi (May 2015) in his paper" Foreign Institutional Inflows and Indian Stock Market Volatility". In this context these paper examine the dynamic linkage between foreign institutional investments and Indian stock market was examined by applying Grangers causality test. The empirical study shows a causal relation of foreign institutional investments on Indian stock market. During recent times since FIIs are playing a dominant role in driving Indian stock market, they have almost one-third of all the assets under the custody of custodians in any period of time. But they have a thirst for

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

short term profitability for which they often mobilize funds. The results are however, are tentative and there is a need to undertake an in- depth research to address the issue.

Krishna Prasanna& Bharat Bansal(May 25, 2014) in his paper" Foreign Institutional Investments and Liquidity of Stock Markets: Evidence from India". In these context these paper examine empirical assessment of this claim using alternative liquidity measures. FIIs and the portfolio flows have certainly contributed to the growth of stock market activity in India. Market capitalization, volume and value traded grew significantly along with FII flows. The results indicate that the foreign institutional trading significantly influences the market liquidity in a negative direction. An increase in the Gross Sales leads to an increase in the spread and the Illiquidity as measured by the Amihud illiquidity ratio and hence a decrease in future market liquidity. Similarly, an increase in Gross Purchases significantly reduces the future market liquidity.

BikramadityaGhosh, Dr. Padma Srinivasan (august 2014) in his paper" An Analytical Study to Identify the Dependence of BSE 100 on FII & DII Activity". In these context these paper examine Conventional wisdom confirms that FIIs & DIIs are the principal movers & shakers in the Indian equity market. They are seen as the cardinal constituents of the entire investment domain in the union of India. This study is carried out to measure their impact in a mathematical way, and to figure out whether they are the true market movers or not.BSE 100 is a large Cap broad- based Index & FII; DII data is from Sept 2007 to October 2013 for the said Index. This study is intended to measure the impact of FII, DII trading activity from September 2007 to October 2013 on BSE 100.Adjusted R Square is most important in such a multivariate analysis, here it is found to be quite feeble (0.02838). A relative high value of R Square increases the predictability of the model, such a low value doesn't help the cause at all.74 observation points are in

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

consideration over a little more than 6 years. Degree of Freedom (DF) suggests the number of variables, here there are two (namely FII Activity/DII Activity. It is tested that BSE 100 does depend upon the DIIs (period Sept 2007 to Oct 2013). Now the next question is, what the impact of DIIs in BSE 100 is; is it strong or feeble. The difference between the observed value of the dependent variable (y) and the predicted value (ŷ) is called the residual (e). So, each data point has one residual.

Dr. Rakesh Kumar Miss SaritaGautam (Octomber-2014)In his paper" An Empirical Study on impact of FII and other stock exchanges volatility on BSE stock exchange volatility". In these context these paper examine theimpact of various factors through Multivariate Regression Analysis. This analysis defined the degree as well as relationships among the factors. Volatility of Stock market changed very rapidly, so except these others factors should also consider for research work. FII and Nikkei have an inverse relation whereas NASDAQ and FTSE have positive relations with the BSE SENSEX. When investors are trading in secondary capital market in this case they should consider these studied factors for the minimization of risk and increase the return.

AnubhaShrivastav(2013) in his peper" A Study of Influence of FII Flows on Indian Stock Market". In these context these paper examine that investments by FIIs and the movements of Sensex are quite closely correlated in India and FIIs wield significant influence on the movement of sensex. There is little doubt that FII inflows have significantly grown in importance over the last few years According to findings and results, I concluded that FII did have high significant impact on the Indian capital market.

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Therefore, the alternate hypothesis is accepted. FII'S have positive impact on BSE Sensex and Nifty. However there are other major factors that influence the bourses in the stock market, but FII is definitely one of the factors. This signifies that market rise with increase in FII's and collapse when FII's are withdrawn from the market. Also BSE CG, BSE CD, and BSE IT showed positive correlation but BSE FMCG showed negative correlation with FII. The degree of relation was low in all the case. It shows low degree of linear relation between FII and other stock index. This implies that their impact on the stock prices varies from sector to sector which is further influenced by the industry to which it belongs to and the sectoral performance.

SanjanaJuneja (December-2013) In her paper"Understanding the Relation between FII and Stock Market". In these context these paper examine Compared to security markets in developed economies, Indian markets being narrower and shallower, allows foreign investors with access to significant funds, to become the dominant player in determining the course of markets. Because of their over sensitive investment behavior and herding nature, FIIs are capable of causing severe capital out flight abruptly, tumbling share prices in no time and making stock markets unstable and unpredictable. In the process, more often than not, the domestic individual investors are on the receiving end, losing their precious savings in such outrageous speculative trading. India as an emerging economic power cannot afford to be intimidated down by the FIIs every now and then. We need formidable Domestic Investors which can pump in liquidity even during cash crunch circumstances thereby fueling the development.

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Objectives:

To identify whether there exist a causal relationship between net investments made by FIIs and the stock market indices in the Indian Stock Market.

To analyze the relationship between foreign institutional investment and stock indices in India (CNX NIFTY ,CNX 500)

Scope of Study:

The study takes 17 years data into consideration. To study the impact of FII on Indian stock market, Nifty was selected in the study, as it is the most systematic stock market indices and widely used by market participants for benchmarking.

The CNX Nifty is a well diversified 50 stock index accounting for 13 sectors of the economy. It is used for a variety of purposes such as benchmarking fund portfolios, index based derivatives and index funds.CNX Nifty is owned and managed by India Index Services and Products Ltd. (IISL).

The CNX 500 is India's first broad-based stock market index of the Indian stock market. The CNX 500 represents about 96% of total market capitalization and about 93% of the total turnover on the National Stock

The S&P CNX 500 companies are disaggregated into 72 industry indices, the S&P CNX Industry Indices. Industry weights in the index reflect the industry weights in the market. The CNX 500 Index represents about 95.77% of the free float market capitalization of the stocks listed on NSE as on March 31, 2017.

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

The S&P BSE SENSEX (S&P Bombay Stock Exchange Sensitive Index), also-called the BSE 30 or simply the SENSEX, is a free-float market-weighted stock market index of 30 well-established and financially sound companies listed on Bombay Stock Exchange. The 30 component companies which are some of the largest and most actively traded stocks are representative of various industrial sectors of the Indian economy.

Hypotheses:

H01: There is no significant relation between FII and CNX NIFTY.

H02:- there is no significant impact of FII on CNX NIFTY.

H03:- there is no significant impact of FII on CNX 500.

H04: There is no significant relation between FII and CNX500.

Research Methodology:

Data Collection:

This study is based on secondary data. The required data related to FII have been collected from various sources i.e. Bulletins of Reserve Bank of India, publications from Ministry of Commerce, SEBI Handbook of Statistics, Govt. of India. CNX Nifty data is down loaded from the websites of NSE. Daily closing index value are taken and averaged to get the index value for each year, which is considered as more representative figure of index for the entire year. The current study considers 17years data starting from 2002 to 2018.

Data Analysis:

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Year	FII (Calendar Year) In Crores	NIFTY	CNX 500

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

2002	3677	772	1093
2003	35153	1531	1879
2004	42049	1804	2080
2005	41663	2459	2836
2006	40589	3295	3966
2007	80914	5354	6138
2008	-41215	2295	2959
2009	87987	4329	5201
2010	179674	4940	6134
2011	39352	3597	4624
2012	163350	4743	5905
2013	62287	4914	6304
2014	256211	6773	8282
2015	63662	6724	7946
2016	-23079	6982	8185
2017	20048	9490	10530
2018	-83254	9170	10862

Regression Statistics	FII AND CNX NIFTY
Multiple R	0.709377744
R Square	0.503216784
Adjusted R Square	0.420419581
Standard Error	47645.85107
Observations	8

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	13797157797	1.38E+10	6.07770272	0.048767579
Residual	6	13620762744	2.27E+09		
Total	7	27417920542			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-40134.53157	43355.38301	-0.92571	0.3903111
772	30.29531482	12.28869437	2.4653	0.04876758

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

- From the above table we can see that Multiple R is 0.7093 that means there is a positive correlation between FII and Nifty.

- As the f value= 0.0487 less than 0.05.We can reject the null hypothesis H02. There is significant impact of FII on CNX NIFTY

Regression Statistics(FII AND CNX NIFTY)	
Multiple R	0.546997315
R Square	0.299206063
Adjusted R Square	0.159047275
Standard Error	104557.2509
Observations	7

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.33E+10	2.33E+10	2.134765	0.20383235

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Residual	5	5.47E+10	1.09E+10		
Total	6	7.8E+10			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	300938.9379	165846.3	1.814565	0.12931
3597	-33.75988944	23.10606	-1.46108	0.203832

Data analysis for the period 2011-2018 FOR FII AND CNX NIFTY:

From the above table we can see that Multiple R is o.5469 that means there is a positive correlation between FII and Nifty.

As the f value= 0.2038 is greater than 0.05.We can accept the null hypothesis H02. There is no impact of FII on CNX NIFTY

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Regression Statistics(FII AND CNX500)	
Multiple R	0.718871845
R Square	0.51677673
Adjusted R Square	0.436239518
Standard Error	46991.09354
Observations	8

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Regression	1	14168943311	1.4169E+10	6.416621	0.044492862
Residual	6	13248977231	2208162872		
Total	7	27417920542			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-42662.78386	43200.18035	-0.9875603	0.361504
1093	25.90697499	10.2273596	2.53310493	0.044493

Data analysis for the period 2002-2010 FOR FII AND CNX 500:

From the above table we can see that Multiple R is 0.7188 that means there is a positive correlation between FII and CNX 500.

As the f value= 0.04449is less than 0.05.We can rejectnull hypothesis H04. There is impact of FII on CNX NIFTY

Regression Statistics	FII AND CNX500
Multiple R	0.544193206
R Square	0.296146246
Adjusted R	0.155375495

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Square	
Standard Error	104785.262
Observations	7

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	23099054952	23099054952	2.103748	0.206634241
Residual	5	54899755654	10979951131		
Total	6	77998810606			

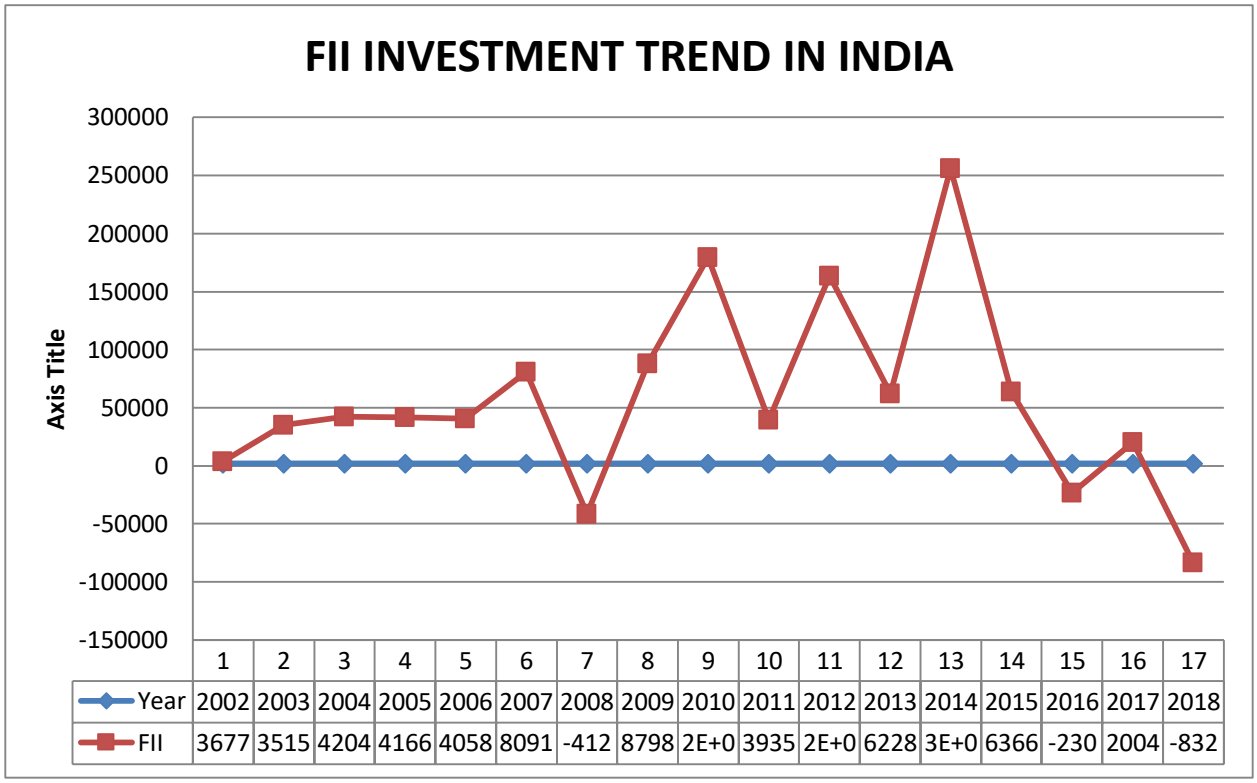
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	337923.7717	191883.0777	1.761092097	0.138528
4624	-32.85829975	22.65417154	-1.45043043	0.206634

Data analysis for the period 2011-2018 FOR FII AND CNX 500:

From the above table we can see that Multiple R is0.5441. That means there is a positive correlation between FII and CNX 500.

As the f value= 0.2066 is greater than 0.05.We can accept thenull hypothesis H04. There is no impact of FII on CNX NIFTY

ISSN: 2394-3114
Vol-40-Issue-27-February -2020



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
FII	3677	3515	4204	4166	4058	8091	-412	8798	2E+0	3935	2E+0	6228	3E+0	6366	-230	2004	-832

FINDINGS:

Calendar Year 2002 to 2006 FII increase theirinvestment.

Calendar year 2007 FII is withdraw their investment because of world marketrecession.

Calendar Year 2008 to 2016FII increase their investment in debt market.

CONCLUSION:

There is a positive impact of FII and Indian stockmarket

Its Positive impact of FII on CNX NIFTY.

There is no impact on FII and CNX 500.

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Bibliography:

Bansal, K. P. (2014). Foreign Institutional Investments and Liquidity of Stock Markets: BikramadityaGhosh, D. P. (2014). An Analytical Study to Identify the Dependence of BSE 100 on FII & DII Activity. 5.

Dr. Rakesh Kumar, M. S. (2015). An Empirical Study On Impact Of Fii And Other Stock Exchanges Volatility On Bse Stock.

Gandhi, D. K. (2015). A Study of Foreign Institutional Inflows andndian Stock Market Volatility. 4. Juneja, S. (2013). Understanding The Relation Between FII and Stock Market. 7.

Shrivastav, A. (2013). Influence of FII Flows on Indian Stock Market..

www.moneycontrol.com

www.sebi.gov.in

www.nse.com

www.trendlyne.com

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

A study of Usage of social Media on Student Behaviour with Reference to Pune City Region

Prof. Pradip S Thombare,

Asst.Prof. SIOM, Pune

Prof. Omkar Lad,

Asst.Prof. SIOM,Pune

Mrs.Prajakta Jachak,

MBA Student, SIOM,Pune

ABSTRACT:

A social media is an online platform which people use to build social networks or social relations with other people who share similar personal or career interests, activities, backgrounds or real-life connections. The impact of social networks on young people is significant. It is becoming increasingly clear that social networks have become part of people's lives. Many adolescent people are using their laptops, tablet computers and smart phones to check Tweets and status updates from their friends and family. Due to the advancement in technology, people are pressured to accept different lifestyles.

Social networking sites can assist young people to become more socially capable. Social media is a web-based form of data communication. Social Media is a innovative idea with a very brilliant opportunity with additional scope for advancements. With the advancement of social media many organizations are making use of this medium to better their practices. With the use of social networking we can advertise or communicate in a more efficient way. Likewise people don't have to rely on the media or TV to get their daily dose of news it can all be obtained from a social networking site. People can track or get information from all over the world.

Key words: Social Media, Society, Facebook

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

SIGNIFICANCE OF STUDY:

- Social Medias are becoming more popular among university students and are a new way of
- Spending free time and serve as a separate channel for finding the necessary information, both
- Educational and entertaining. Therefore, it is urgent to examine the question of what effect social
- Networks have on their users, in particular, how the use of social networks affects the academic.
- Opportunity to explore and gain new knowledge. Furthermore, it can be used for future studies.

RESEARCH OBJECTIVE:

- To determine the usage of specific social networking sites by the youth.
- To analyse the credibility over the information received from social networking sites.
- To understand the pros and cons of social networking sites known by the youth.
- To study the influence of social networking sites on the personal and professional life of the youth.

IMPACT OF SOCIAL MEDIA ON SOCIETY:

As we all are well aware of social media to facilitate a massive impact on our society. Some social media destinations have changed the way where individuals convey and mingle on the web. Person to person communication destinations render the open door for individuals to reconnect with their old companions, partners and mates. Person to person communication destinations render the opportunities for individuals to reconnect with their old companions, partners and mates. It additionally causes individuals to

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

influence new companions, to share content, pictures, sounds, recordings among them. Web based social networking moreover changes the life style of society.

A. Positive Effect of Social Media on Society

- Connectivity – The first and foremost benefit of the social media is connectivity. People from anywhere can connect with anyone. Regardless of the location and religion. The prettiness of social media is that you can attach with anyone to learn and share your thoughts.

- Education – Social networking provide various benefits to the students and teachers. It is very easy to educate from others who are experts and professionals via the social media. One can follow anyone to learn from him/her and enhance his knowledge about any field. Regardless of our location and education background we can educate ourself, without paying for it.

- Advertising – We can promote our business to the largest audience. The whole world is open for you, and can promote to them. It will help in increase the profits and achieves the targets of Business.

B. Negative Effect of Social Media on Society

- Cyber Harassing – According to a report distributed by PewCenter.org the greater part of the youngsters have progressed toward becoming casualties of the digital bulling over the past. Since anyone can make a phony record and do anything without being tailed, it has ended up being exceptionally straightforward for anyone to spook on the Internet.

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Dangers, terrorizing messages and bits of gossip can be sent to the majority to make inconvenience and uproar in the general public.

- Hacking – Personal information and security can be hacked and shared on the Internet.[5] Some twitter and Facebook accounts have been hacked in the past and the programmer had posted materials that have influenced the person's lives.

- Addiction – The addictive piece of the online networking is awful and can exasperate individual lives also. It can likewise squander individual's time that could have been used by profitable tasks and exercises.

- Fraud and Scams – Several cases are available where people have committed fraud and scams through the online networking.

RESEARCH METHODOLOGY

Place of Study

The purpose of study is to study the impact of social media on youth and society. The data is been gathered randomly from various age groups from different profession through survey questionnaire.

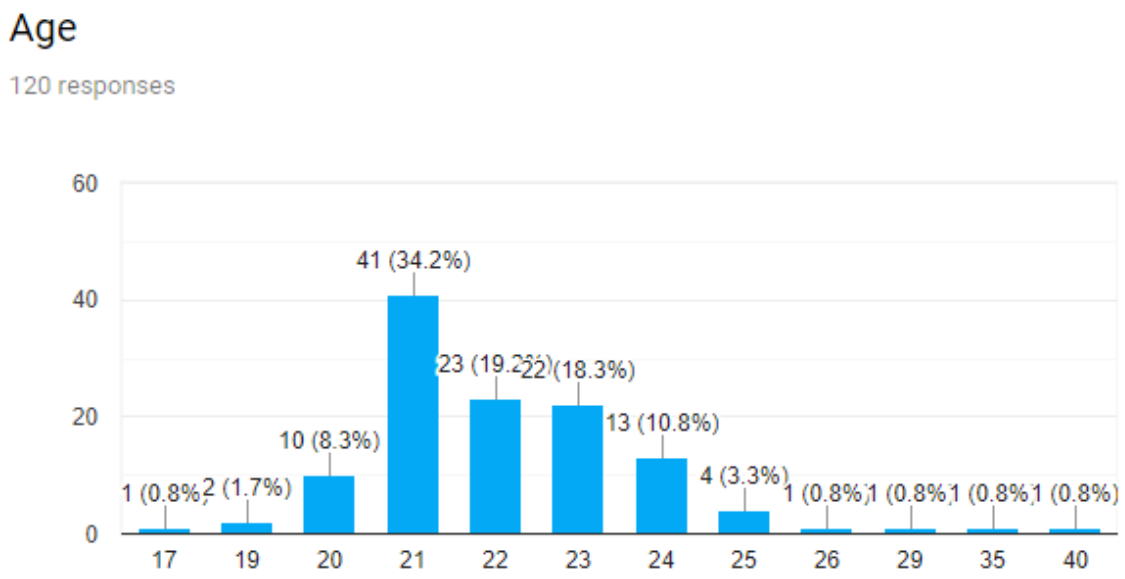
Population:

Through questionnaire we get approx. 124 respondents. The main air of selecting diverse group of population (respondents) from various age groups is to get opinion from a diverse group of people so that result can be generalized on a vast group of population.

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Sample Size: 124

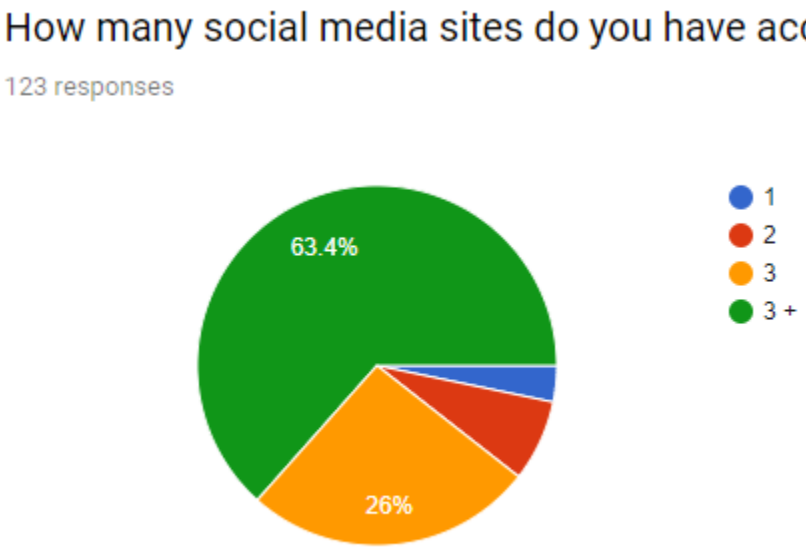
DATA ANALYSIS AND FINDING



ISSN: 2394-3114
Vol-40-Issue-27-February -2020

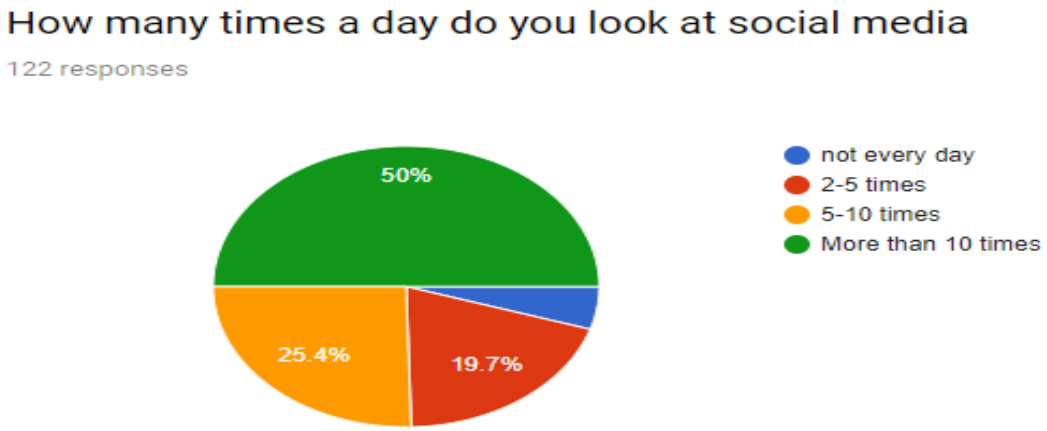
Following are the graphical representation of the responses according to the questionnaire:

Question no. 1 response:

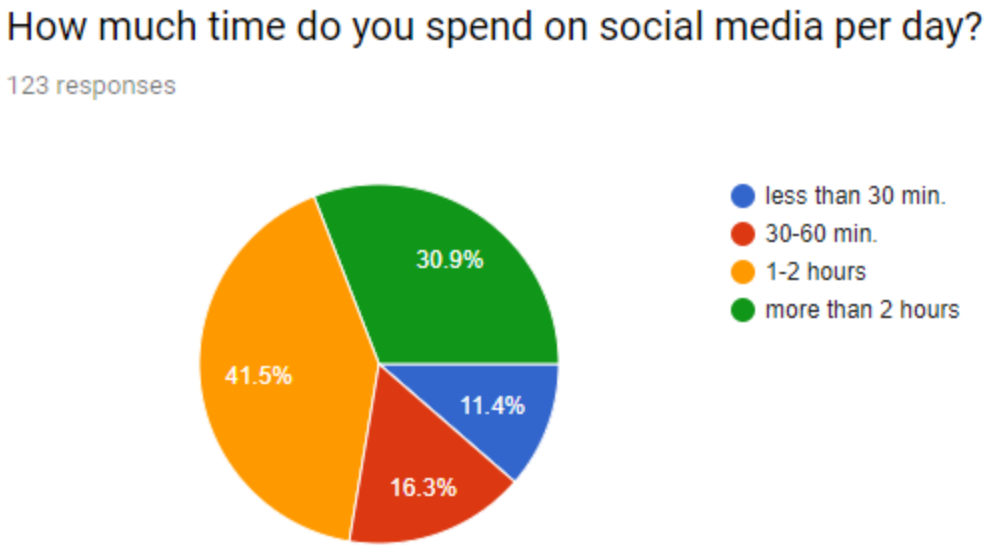


Question no. 2 response:

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

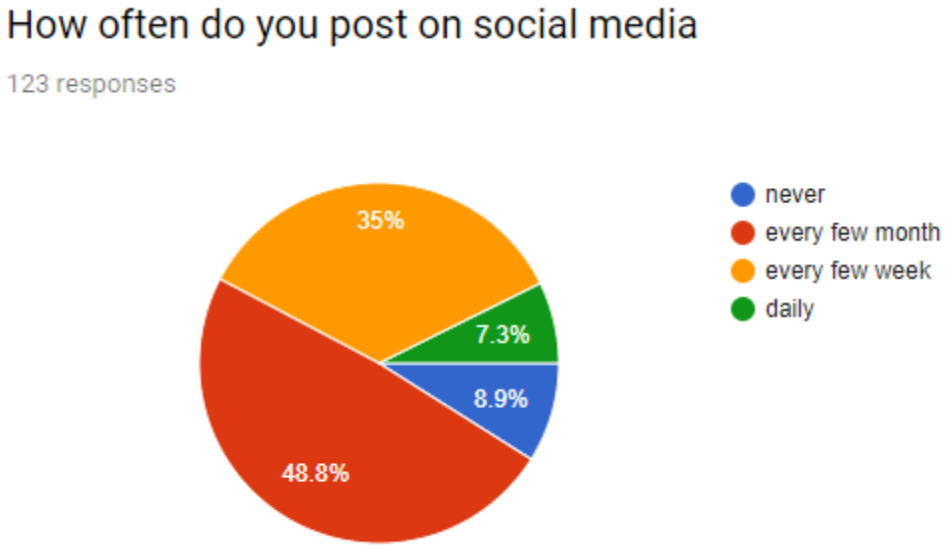


Question No. 3 response:



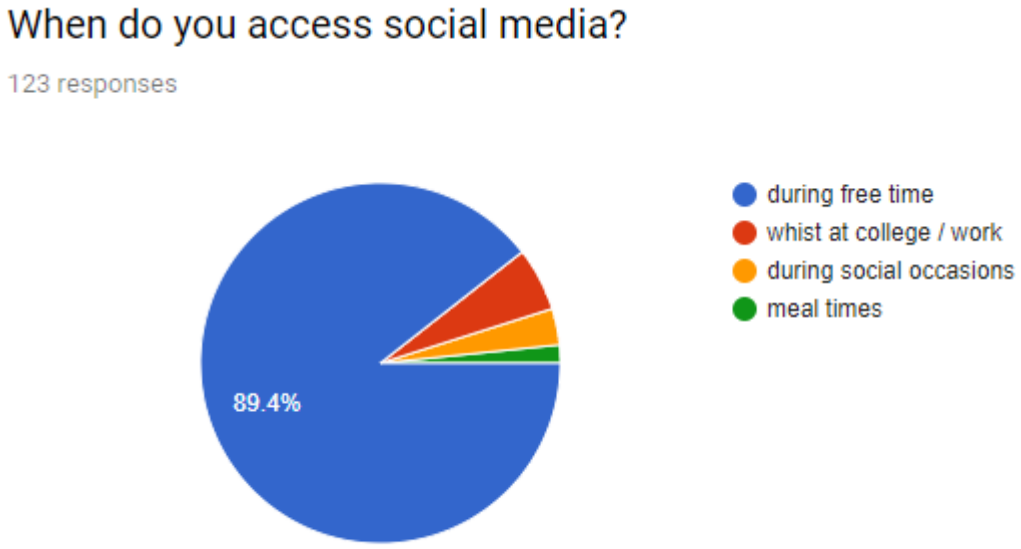
Question No. 4 response:

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

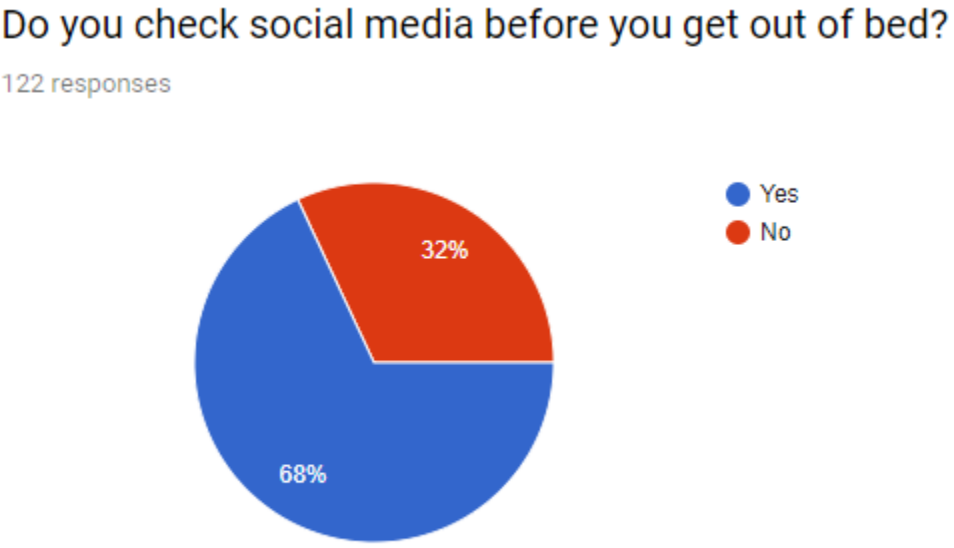


Question No. 5 response:

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

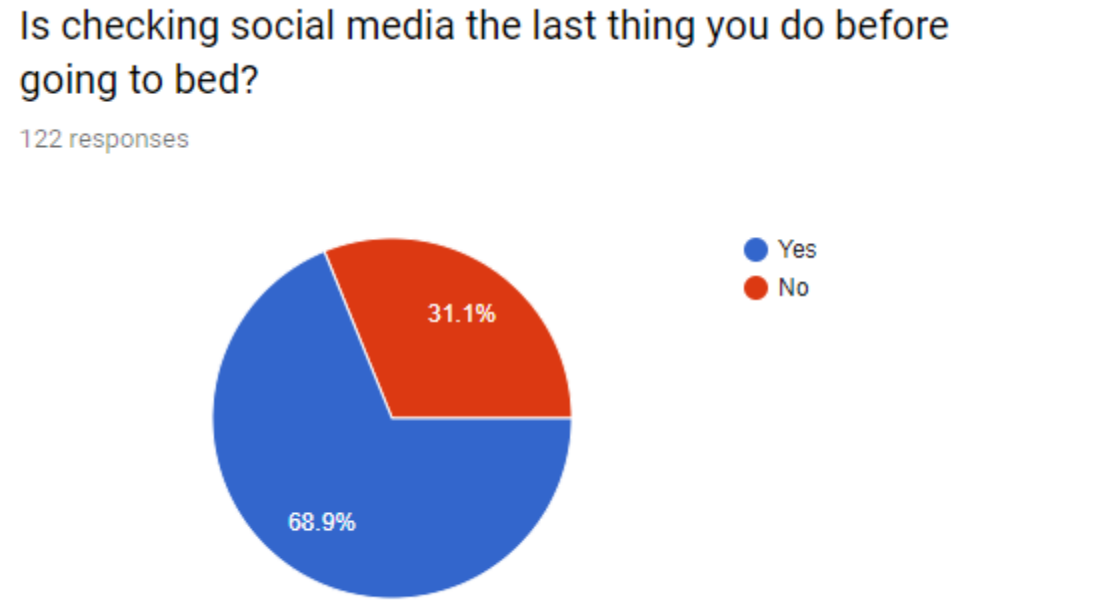


QuestionNo..6.Response:

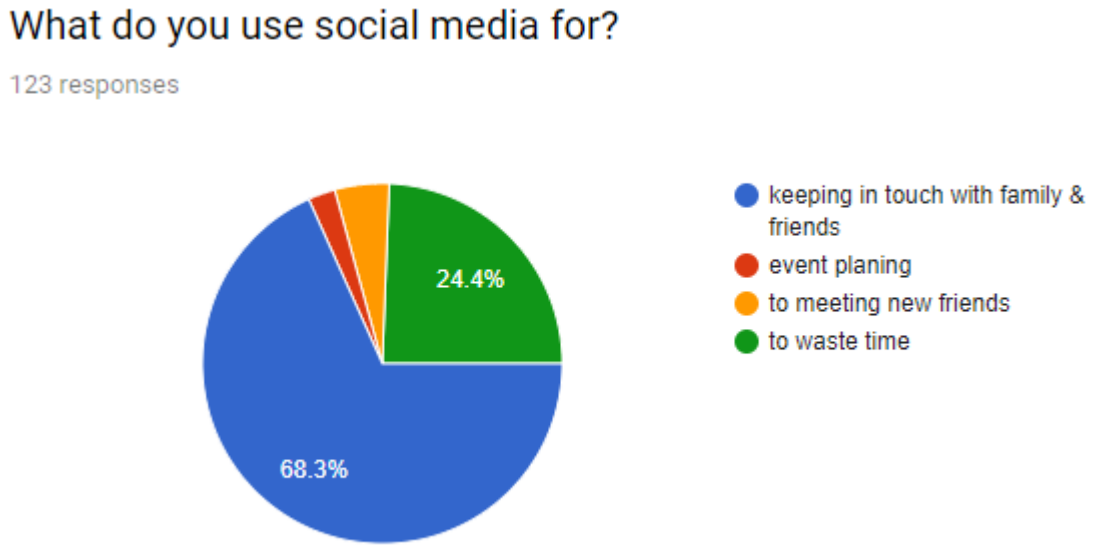


Question No. 7 Response:

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

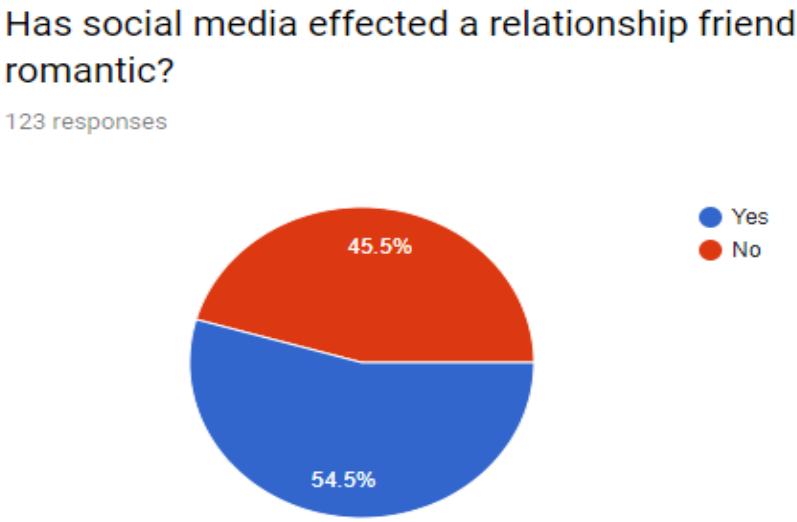


QuestionNo8

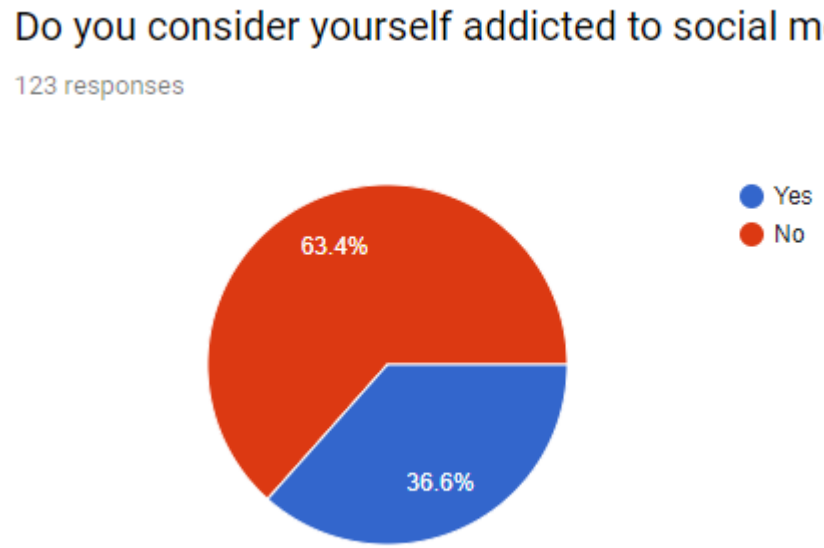


ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Question No. 9 response:



Question No. 10 Response



:

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Conclusion

- As the technology is developing, the web-based social media has turned into the routine for every last individual, people; groups are seen dependent with this technology consistently.
- Online networking has expanded the quality and rate of coordinated effort for students. Business uses online networking to upgrade an organizations execution in different courses, for example, to fulfil business goals, expanding yearly offers of the organization. Youths are found in contact with these media every day
- Social media has different merits yet it likewise has a few faults which influence individuals contrarily. False data can lead the training framework to disappointment, in organizations wrong promotion will influence the productivity, online networking can manhandle the general public by attacking on individuals' security, some pointless sites can impact youth that can end up plainly savage and can take a few wrong activities.
- Last but not least, all the citizens are advised to adopt the positive aspects of social media and avoid negative effects, So that we can avail the benefits of these latest and emerging technologies.

Bibliography

- Abhimanyu Shankhdhar, JIMS / Social media and business /
- S.Shabnoor,S.Tajinder,Social Media its Impact with Positive and NegativeAspects IJCATR, Volume 5– Issue 2, 71 - 75, 2016
- A.T.M Shahjahan, K.Chisty, “Social Media research and its effect on our society” International journal of Information 7 communication Engineering , Vol:8, No:6,2014 W.Tariq, M.Mehboob, M.A.Khan, F.Ullah “The Impact of social Media and Social

ISSN: 2394-3114
Vol-40-Issue-27-February -2020

Networking on education and Students of Pakistan" international Journal of Computer sciences issues, Vol:9,No:3,July 2015

- Research Methodology by C.R.Kothari

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Long Tail Business Model in Digitalization

Monika Sajgure[#], Dr. Rijwan M. Shaikh[*]
Sinhgad Institute of Management,
Vadgaon Bk., Pune, India.

Abstract *:*
The long tail marketing is the market strategy wherein obscure products are them to compete with the popular products in the same market. This concept of marketing is "The long tail marketing" was coined by Chris Anderson in 2004 and was introduced in 2006, titled as "The long tail" which was focused on the book publishing industry of U.S. The paper focuses on the theory suggesting that internet drives demand away from popular products with mass appeal and directs that demand to more obscure non-popular offerings; it describes an emerging business model that comes from the digitalization for making the product tangible.

Keywords *: Long tail, Open business model, popular products, Product variety, Internet, Digitalization.*

I. INTRODUCTION

The Internet has, over the past two decades, had a significant influence over business practices and the economy. This is evident in many facets of commerce: pre-recorded music and film; the news media; advertising. In general, the Internet simplifies many of the critical components of profit making. Whether a company is looking to reduce the costs of distribution, seeking a cheaper alternative to current production methods, or simply trying to establish a connection with customers, the Internet is a popular tool with which to accomplish the end of more fluid, diverse business.Research surrounding the effects of the Internet on markets has, in turn, surged in the past two decades—when it began to assume a more significant role in business processes1. Of particular interest is a line of literature beginning with an article published in 2004 titled “The Long Tail,” which debuted in Wired magazine2. In it, Chris Anderson, Wired’s chief editor, describes a type

market distribution wherein “niche products” are a force with which to be reckoned. In a market with a “long tail,” he says, we find “an entirely new economic model.”He articulates three main “rules” that he claims lead to the emergence of a long tail. In his 2006 book, The Long Tail: Why the Future of Business is Selling Less of More; he develops these rules further, into conditions for long tail emergence. In markets where producers are “democratizing production,” “democratizing distribution,” and bridging the gap between supply and demand, a long tail will certainly surface3. In evaluating the literature since 2003 as well as developing a possible research agenda to explore these assumptions in the United States book publishing industry, this paper hopes to show that the causal inferences Anderson makes are flawed for being causal.

II. DIGITALIZATION AND LONG TAIL MARKETING

In the past two decades internet has played a significant role in influencing various business practices and the economy. This is evident in many facets of commerce: pre-recorded music and film; the news media; advertising. In general, the Internet simplifies many of the critical components of profit making. Whether a company is looking to reduce the costs of distribution, seeking a cheaper alternative to current production methods, or simply trying to establish a connection with customers,the Internet is a popular tool with which to accomplish the end of more fluid, diverse business.Long tail marketing was introduced by Chris Anderson in an article, which was published in the year 2004 in a magazine. In this article he also articulated three rules that led to the emergence of long tail marketing. According to Chris Anderson if the producer of the product follows these three

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

rules then the long tail marketing will certainly be surfaced.Long tail marketing is nothing but a strategy to target a large number of niche market with a product or service. Long tail marketing is usually used be the businesses which are struggling to grow or by a business who wants to shift its focus to niche markets having less demand. Rather than traditional retailers Online services carry far more inventory. Rhapsody, for offers 19 times as many songs as Wal-Mart's stock of 39,000 tunes. The appetite for Rhapsody is more obscure and tuned (charted in red) that makes up the so-called Long Tail. There is real demand for niche fare found only online, meanwhile, even as consumers flock to mainstream books, music, and films.

Fig. 1 Example of Inventory online to offline

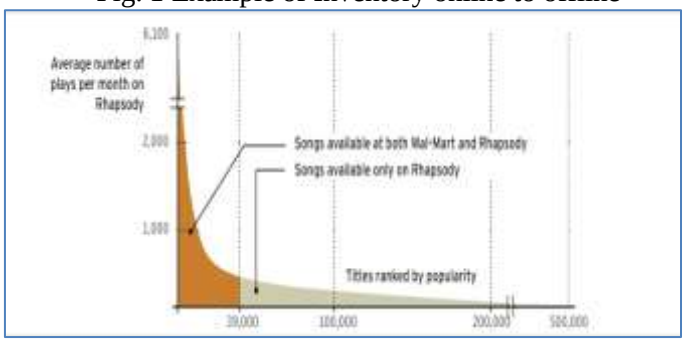


Fig. 1 Long Tail Concept experienced in music play

In each case, retailers will carry only content which will generate sufficient demand to earn its keep. But each can pull only from a limited local population- perhaps a 10- mile radius for typical movies, but that for music and bookstores, and even less a mile for video rental shops. It's not enough for an excellent documentary to possess a possible national audience of half a million; the thing that matters is the percentage within the northern part of Rockville, Maryland, and among shoppers of the mall of Walnut Creek, California.The physics itself is the constraint of the physical world. The radio-frequency spectrum can carry only numerous stations and a coax numerous TV channels. And, of course, there are only 24 hours each day of programming. The curse of broadcast technologies is that they're profligate users of limited resources

The past century of entertainment has offered a simple solution to those constraints. The Hits fill theaters, fly off shelves, and keep listeners and viewers from touching their dials and remotes. Which is exactly right; indeed, sociologists tell you that hits are hardwired into human psychology, the combinatorial effect of conformity and word of mouth. And to make certain, a healthy share of hits earn their place: Great songs, movies, and books attract big, broad audiences. But most folks want quite just hits. Everyone's taste departs from the mainstream somewhere, and therefore the more we explore alternatives, the more we're drawn to them. Such alternatives are pushed to the fringes by pumped-up marketing vehicles built to order by industries that desperately need them in recent decades. To hold everything for everyone Hit-driven economics may be a creation of an age without enough room. Not enough shelf space for all the CDs, DVDs, and games produced, not enough screens to point out all the available movies. There aren't enough broadcast channels to telecast all TV programs, no enough radio waves to play all the music created, and not enough hours within the day to

utilize everything in and out through either of those sets of slots. The result of this resource is scarcity. Now, with online internet distribution and retail, we are entering a world of abundance. And the differences are profound.

III. DRAWBACKS INVOLVED IN LONG TAIL MARKETING

Long tail concept and digitization may not be successful for all types of products.

- In physical world long tail marketing is not that effective as much as in e-commerce in terms of economy.
- If long tail marketing is not used effectively then the customers may get confused with the availability of humongous choices and in this case long tail may not give desired results.
- Challenge faced by the systems to go through long tail marketing is to predict the items for the future needs of the customer.
- One should not invest much in long tail because the maximum profit is going to come from the niche (popular) products only.

IV. SUGGESTIVE STRATEGIES TO AVOID ROADBLOCKS CREATED BY SOCIAL MEDIA

- Never share too much information over the internet. Only talk to people you know and not complete strangers.
- Steps must be taken to identify what makes the company and increase the value of its products. It must define why consumers choose you rather than your competitor.
- Social channels should be treated as communities where similar minded people come to hang out. A "community manager" should be engaged to support the community and resolve their issues, needs and concerns.
- It helps to scan all social media channels and give authentic responses. Interrogate, provide insights, or to offer help with the problems occurred.
- It helps to improve search visibility on Google, focus tactics on publishing links for the content that goes directly to your website. A "Social Signal" is a ranking factor which will increase a sites authority over time.
- Facebook advertisements identify and reach ideal customers. Strategically planned advertisement design is crucial – advertisements must compel buyers to click. Use landing pages with lead forms to drive conversions.
- Monitor the use of business related social media versus unrelated social media at the workplace.

V. CONCLUSION

The long tail distribution represents an interval of time where sales for un-common products can give a profit due to reduced distribution and marketing costs. In short, the long tail occurs when sales are made for goods not commonly sold. These goods can return a profit through reduced distribution costs and marketing. It also serves as a statistical property that states a larger share of population rests within the long tail of a probability distribution as opposed to the concentrated tail that represents a very high level of hits from the traditional mainstream products which are highly stocked by the mainstream retail stores.

REFERENCES

[1] Chris Anderson; "The Long Tail";2006
[2] Troy Lee Hales II; The Long Tail; An evaluation of the causal assumption in market determination; April 2013.
[3] Karl Taeuscher; Uncertainty kills the long tail: demand concentration in peer- to- peer marketplaces; Electronic markets (2019) 29:649-660; 23rd March 2019.

[4] Erik Brynjolfsson, Yu (Jeffrey) Hu, Michael D.Smith: Long tail versus superstars: The effect of IT on product variety and sales concentration pattern; Sep 2010.

[5] Anita Elberse : "Should you invest in the long tail?" : Havard Business Review: July-August 2008 Issue

[6] J. Sonia Huang And Wei-Ching Wang: "Application of the long tail economy to the online news market: examining predictors of market performance": Journal of media economics: 8th August 2014.

[7] Alison Riepel, Paola Pisano: "Business models in a new digital culture: The open long tail model": Symphonya emerging issues in management: 2015.

[8] https://neilpatel.com/blog/7-brilliant-examples-of-brands-driving-long-tail-organic-traffic/

[9] https://blog.hubspot.com/blog/tabid/6307/bid/4723/6-ways-to-leverage-the-long-tail-in-your-marketing.aspx

[10] https://nextbigwhat.com/the-long-tail-in-ecommerce-opportunity-and-challenges/

[11] Https://Www.Researchgate.Net/Publication/227576334_ECONOMICS_OF_LONG_TAIL_A_CHALLENGE_FOR_BRANDING

Impact of Information Technology in Investment Banking

Akansha Tiwari[1], Manisha Kumbhar[2], Shobha Sachendra Mishra[3]
[1]*Manager, Deutsche Bank Operations India*
[2,3]*Sinhgad Institute of Management, Pune-41*

Abstract- Information Technology (IT) has always had a noticeable impact on their various fields of human life. This paper focuses on the impact IT has left and is expected to leave on banking more specifically Investment Banking (IB) industry. The paper gives a brief introduction of the Banking industry discussing its historical traces to the growth the industry has achieved today. The growth of banking industry has spurred out a new face known as IB. The paper thus discusses the arriving of IB era and how the IB firms have adapted to the ever changing business world hand in hand with IT. The paper then defines the objectives to study the impact of IT with Content Analysis being the research methodology. To study the impact better the paper bifurcates into the technology which is already in place or has attained maturity on the business development cycle and the technology which is futuristic or is about to take over. This is where the languages, software's and apps are discussed, giving an insight for the job seekers about the in demand language. The futuristic technology is where the paper discusses the new concepts of Artificial Intelligence extending to BOTS, OCR, IVR, Crypto currencies (the infamous controversial Bit coin) and blockchain. After this in depth analysis of data from various sources on each technology, we present our conclusion and infer the impact of IT on business specific to Banking industry.

Keywords: Information Technology, blockchain, investment banking etc.

I. INTRODUCTION

The activities performed by Banks today range from personal banking to Corporate Banking, Consumer Finance, Investment Baking, Transaction Banking, Insurance, Consumer Finance, Trading. While the role IT has played in making these activities possible will never be enough to talk about. This paper concentrates on the impact of IT in one of these functions i.e. Investment banking. An investment bank extends from a typical Bank by extending in the financial services arena. Investment banks specialize in large and complex financial transactions, such as underwriting, acting as an intermediary between a securities issuer and the investing public, facilitating mergers and other corporate reorganizations, and acting as a financial advisor for institutional clients. Few examples of these would be: Barclays, B of A Merrill Lynch, Goldman Sachs, Deutsche Bank, JP Morgan, Morgan Stanley, UBS, Credit Suisse, Citi bank.

When we talk about Investment banking, the Industry saw its birth in the early 19th Century and has been growing leaps and bounds since then. Investment banking not only offers one of the highly paid jobs but has always intrigued people and has drawn attention of the money makers one of the reasons of this tremendous growth of the industry is the way it has adapted to the growing technological advances. The industry has always embraced the use of technology to serve the client‘s faster and to add on to their efficiencies.

Below is a screenshot from news.efinancialcareers.com which depicts J.P Morgan‘s prediction for 2016 and beyond for the investment banking industry. The graph clearly depicts the boom IB witnessed by the year 2009 in comparison to year 1999. Post 2009 the industry though stuck by the infamous Sub-prime crisis has still managed to stay above it‘s position in 1999 and is expected to re-grow from now A Bank in it‘s purest form is a body which accepts deposit from people and creates credit i.e. where people can deposit and borrow money from. Banking is an occupation which has had its roots from ancient times, around 2000 BC where the idea and concept of credit and lending existed. During this time merchants extended grain loans to farmers and traders moving across then there was the 14th Century, Italian Renaissance and archeological evidences from India, China and Greece also show the proof of money lending activity. The development of banking spread from northern Italy throughout the Holy Roman Empire, and in the 15th and 16th century to northern Europe. This was followed by a number of important innovations that took place in Amsterdam during the Dutch Republic in the 17th century and in London since the 18th century. During the 20th century, developments in telecommunications and computing caused major changes to banks' operations and let banks dramatically increase in size and geographic spread. The financial crisis of 2007–2008 caused many bank failures, including some of the world's largest banks, and provoked much debate about bank regulation.

Business models unlike pre-war times have grown to be consumer centric and banking or investment banking is not isolated from this model. Since, maximum revenue can be generated from the strong relationship an institution is

able to maintain with its clients; strong relationships are the key ingredient of IB growth. IT is a magician which helps grow these relationships even stronger with the communication aid, the visual aid and the increasing efficiency prospects. With a sea change in the political environments in the US and Europe, the financial services industry is entering a period where the burden of regulation and compliance will lessen in the coming times. As deregulation progresses and more capital become available to be deployed elsewhere, financial institutions will take a harder look at financial technologies in which to invest. The major areas of investment for the industry are: Blockchain, artificial intelligence and technology focused on regulatory compliance.

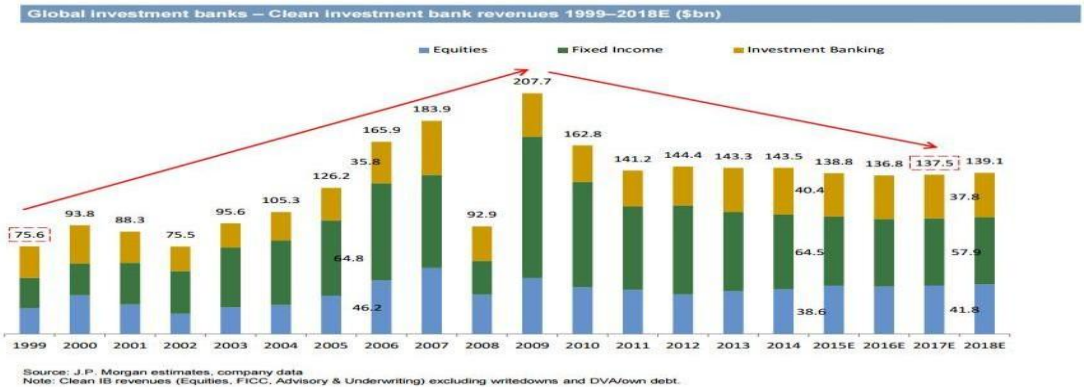


Figure 1 Global Investment banks-Clean investment bank revenues 1999-2018E

II. OBJECTIVE

- To study the existing and budding technology in the IB industry
- To analyze the impact the technology is offering to the industry

III. RESEARCH METHODOLGY

Content Analysis: The method is taken up to analyze content from various sources of data.

3.1 IT currently in place - IB:

IT is already in place in forms of various software and applications which are specific to each organization. Few of the Technology giants have made customized products as well which are commonly used across the industry for data management, processing, communication, payments and many more functions. Some of the commonly available applications and software‘s are JIRA (by Atlaasian), Bancs (from TCS), SWIFT. The last revolution IB underwent was in the 90s with the Internet. The next revolution is with SMAC social, mobile, analytics and cloud), Digital & Robotics.

In the present global work culture, IB needs technological assistance right from Trading to trade processing, settlement, risk management, sales and many more functions. These functions involve activities like transactions, bookings, settlements – payments, delivery which needs to be carried out without any delay. To facilitate such crucial high speed activities almost all major IBs have developed their own in-house software. High performance and low latency are a must for the systems and networks. Electronic trading platforms are further automated and use algorithmic trading. Furthermore, there are software being developed to read the investor moods and alert the traders about the expected bullish or bearish trends on their respective stocks apart from technical analysis.

Technology can be divided into two parts:

1. Application & Software Development: Teams are divided to make new business developing application and providing support like an Android/ IOS app.
2. Server Technology: Maintenance of the network and hardware.

In order to develop and work upon the said technologies, the major skill required is that of programming languages. Taking a look into the most in demand languages Goldman Sachs has programming language Java as the number one of any skill-set found in the bank and 25% of its staff have software development skills, far greater than at any of its peers.

This is according to analysis of the Dice Open Web, a tool created by Work Digital Ltd, which brings together data from over 130 different social websites on past and present employees, aggregates it and presents it in an easily digestible manner for recruitment purposes. On a per company basis, skills are ranked against one another and then normalized with the top skill receiving maximum points.

As per a survey from efinancial careers.com while Java was the number one tech skill across all investment banks, at Goldman Sachs it ranked top across the entire bank. It‘s less important than other skills across most investment banks – at J.P. Morgan it ranked 30th, for example, while it was 15th at Morgan Stanley and Bank of America Merrill Lynch and 19th at Barclays. Tech skills therefore appear to be a lot more central at Goldman Sachs than elsewhere.

―Java has a lot going for it,‖ says Paul Elworthy, senior manager at IT in finance recruiters iKas International. ―We see it used for core trading platforms, reconciliations, PnL attrition and risk management platforms. It‘s well-entrenched in investment banking so there‘s a cost benefit for its reusability and there‘s also a lot of resource available, so recruitment for Java developers is comparatively easy.‖

But don‘t write off C++ in investment banking just yet. ―For pricing and risk, Python and Java (and the Polyglots) are now the go to languages, but all banks have legacy systems that use C++ and they need constant maintenance and upgrading,‖ says Nathan Francis, CEO of recruiters NJF Search. ―High Frequency Trading is still dominated by C++. What‘s more, there are a very few really world class Java developers that can make an engine run as fast as you can in C++.‖

Java, C++ and C# are among the more established programming languages, but a relative new kid on the block is Python. Previously, just Bank of America Merrill Lynch and J.P. Morgan used Python – within their Quartz and Athena programmes respectively – but it‘s now becoming more prominent at banks such as BNP Paribas, Morgan Stanley and Citigroup.

―Everyone at JPMorgan now needs to know Python and there are around 5,000 developers using it at Bank of America,‖ said Kirat Singh, the former head of global risk systems responsible for Quartz at BAML, who now runs his own firm Washington Technologies. ―There are close to 10 million lines of Python code in Quartz and we got close to 3,000 commits a day. It‘s a good scripting language and easily integrated into both the front and back ends, which was one of the reasons we chose it in the first place.‖

―There‘s been a huge spike in demand for Python developers in investment banking,‖ agrees Elworthy. ―We‘ve also seen increased demand for HTML and JavaScript for the front end of banks‘ systems.‖

Here is a break off of the top software development and hardware/embedded software skills, presented together with an overview of the top sectors across each firm. (ref. news.efinancialcarres.com)

Skill-set rank												
Skill-set	Bank of America Merrill Lynch	Barclays	BNP Paribas	Citigroup	Credit Suisse	Deutsche Bank	Goldman Sachs	HSBC	J.P. Morgan	Morgan Stanley	Nomura	UBS
Java	1	1	1	1	1	1	1	1	1	1	1	1
C++	2	2	2	4	2	2	2	2	2	2	2	3
HTML	3	3	3	2	3	3	6	3	3	5	4	4
C#	4	4	4		6	7	10	10	6	8	6	10
Python	7		6						8			
Linux	9	7	10	5	4	6	3	5	10	4	3	5
Unix	10	5	5	6	5	4	9	4	9	6	5	2
JavaScript		10		3	10	8	7	7	7	10	9	7
XML	5	6	8	9	9	5	8	6	4	7	7	6
Microsoft SQL	8	8		8	7						8	
Perl				10		9	4			3	10	8
C			7	7	8		5		5	9		
Solaris												9
Visual Basic			9					8				
.Net	6	9				10		9				

Figure 2 Skill-set rank

3.2 Upcoming Technology:

Here we discuss the technology which is expected to cause the next revolution in IB. These technologies have already taken their shapes and are to achieve a high paced growth for the IB world along with them. Below are the talk of town in IB, when it comes to technical growth:

- AI
- BOTS
- IVR
- OCR
- Crypto
- Blockchain

3.3 Artificial Intelligence (AI):

Artificial Intelligence in simple words is intelligence displayed by machines, in contrast with the natural intelligence displayed by humans and other animals.Artificial Intelligence is the talk of the town in the present times, especially when Sophia got to be the first Robot to get citizenship in Saudi Arabia. Though AI in itself is quite a vast field with

it‘s implications in almost every field of life and study, we would be focussing on the impacts it has on Financial Industry.

Artificial Intelligence (AI) has been touted as the next major disruptor of the financial services sector. Shankar Narayanan, Head of UK & Ireland at Tata Consultancy Services (TCS), reflects on how the novel technology is transforming the banking landscape.

Today, there is one innovation, above all else, that is shaping the future of the financial services (FS) sector through the entire value chain, whether a retail bank or a global financial institution – and this is Artificial Intelligence (AI).

It‘s difficult to read any analyst or trends reports about the future of banking and FS without mentions of AI innovation. In many respects, this is because AI is a tool that‘s already having a significant impact. Take Swiss Bank UBS, which recently announced that it is using robots on the trading floor in an attempt to boost traders‘ performance. With AI set to continue changing the financial services landscape, it‘s essential that business leaders think carefully about where AI can be integrated and how developments in this space are set to impact the banking and FS sector.

3.3.1 AI: Driving innovation, securely

According to a recent TCS study into AI across 13 sectors, 86% of business leaders in the banking and FS sector said they were already using this technology. Fast forward a few years and almost every executive responding believed they will have incorporated AI into their operations at some point along the value chain by 2020. It seems clear that AI will play an increasingly important role in driving change in the financial services sector.

The sector has often been on the front foot when it comes to adopting new innovations and operating models, whether in the retail space with the introduction of the world‘s first cash machine in London as far back as 1967, or the launch of contactless payments in more recent times. In the 1980s, the UK‘s _big bang‘ saw the deregulation of the sector, along with the introduction of electronic trading that fed rapid expansion and growth. But more recently, the wider FS sector has seen areas such as blockchain drive further change.

According to the management consultancy firm Oliver Wyman, one of the major ways in which technology is changing the FS industry is through automation. In a study launched at this year‘s Davos, it claimed that automation would allow the sector to cut costs as a proportion of revenues by 15%. And AI was cited as central to this development.

Take how AI is being used to improve customer service at Barclays Bank. Staff are developing an AI system not too dissimilar to Apple‘s iPhone personal assistant, Siri, to let customers talk to a device and get information they need for vital transactions. And when it comes to the tough decision of whether a bank can lend to customers, AI can help here too. One quarter of banking leaders responding to our study, said that AI would increasingly be used to help them decide who to extend loans to and even where to invest.

Venture capital firm Circle Up uses AI and machine learning to determine which companies to fund. Its crowd funding online platform – Classifier – has evaluated more than 10,000 potential deals carried out by the firm‘s analysts in the last five years. Since March 2014, the system has helped the firm‘s investment analysts screen deals, dramatically increasing the number of possible deal evaluations. And the numbers speak for themselves. With Classifier, a team of less than 10 analysts can review 500 opportunities per month, versus the 500 evaluations done per year by the average private equity firm.

As well as helping the banks that like to say yes, AI can help with banks that have to say no. Goldman Sachs recently invested in a startup called Kensho that uses AI to decipher unstructured data such as online articles and social media to spot trends. This can lead to banks being able to identify potential customer financial problems that might force the bank to withdraw credit.

Finally, with security being an ongoing concern for banking customers, it will come as no surprise to learn that 70% of FS executives are using AI technology to detect and deter security intrusions, according to data from our study. Perhaps more than ever before, with hackers using increasingly advanced tools, it is technology‘s turn to strike back. Ahain, AI is a vital part of the battle.

The view from the boardroom: AI in the black

Investment in AI can bring support for innovative customer solutions and operational improvements, but what about its effect on profit margins? Can it drive revenue and growth? The answer is yes. In fact, based on the TCS research, banking and FS executives found that investment in AI helped them reduce production costs by 13%. Additionally, executives reported a 17% average revenue increase in the area of their AI initiatives.

It comes as no surprise that financial services staff are reaping the rewards of AI. In 2015, the average bank or FS firm spent $77 million on AI initiatives. Remarkably, four companies that TCS surveyed spent at least $1 billion. Beyond cost savings and investment, the industry must address AI‘s impact on jobs. This isn‘t unique to banking and FS, of course, but interestingly, executives reported in our study that AI investment will in fact lead to

significant job creation. Companies will have to add new jobs in order to develop and manage these developing technologies, which will necessitate new skills and approaches.

The banks we surveyed said AI resulted in an average increase of 10% in jobs in 2015 in the departments using the technology. They projected that the number should increase to 13% new jobs on average by 2020, and 16% by 2025 – many of which don‘t yet exist today.

The future

There is no doubt that AI is driving the banking and FS markets of tomorrow. This is according to executives who said that AI will be crucial to their ability to compete in the coming years. 59% said that this technology was highly important to drive competitiveness.

Yet, there are also challenges that must be addressed. For example, banking and FS executives admitted that managing the security risk of AI systems is of paramount importance. Other issues like the challenge of developing AI tools that were able to improve decision-making were also reported as potential buffers to the technology‘s development.

Investing in the right AI technology can have a major impression on operational efficiency, but its success boils down to the customer impact above all else, and like any technological innovation, the best results will be realized only if they are improving the end user‘s experience. So if AI can save time by pointing a consumer in the direction of the most appropriate financial product, then great. However, if it gets in the way of a seamless experience and frustrates end users, then there‘s a problem.

Ultimately, perhaps the best lesson to take from the TCS study is that the technology‘s long term success will be defined by how AI enhances a customer experience or enables a banking employee to service a customer better. The good news is that it looks like AI has the capacity to do this in spades.

BOTS: BOTS (Short term for Robots) is simply a software application that runs automated tasks (scripts) over the Internet. Typically, bots perform tasks that are both simple and structurally repetitive, at a much higher rate than would be possible for a human alone. The largest use of bots is in web spidering (web crawler), in which an automated script fetches, analyses and files information from web servers at many times the speed of a human. More than half of all web traffic is made up of bots.

With AI becoming integral to nearly every industry, it's no surprise that banking is increasingly automated. Chatbots like BankBot and Nao are slowly taking us one step further than digital banking, but there are still privacy risks that come with feeding both banks and their bots more information.

BankBot is an app prototype designed by the Polish digital design and communication agency K2. BankBot itself is a robotic bank teller, financial advisor, and personal assistant all in one. The automated sidekick provides a conversational text-based interface, but users can also use their voices instead of typing.

"It understands natural language, so you can ask BankBot to transfer money, open a new account, cancel a credit card, et cetera," Maciek Lipiec, K2's user experience director told Motherboard.

BankBot has the user's transaction history readily available. Users tell BankBot the amount to send and the recipient's name to pay bills or transfer money. Then it functions via artificial intelligence—using natural language processing and a growing knowledge base. "This is important not only for financial institutions, but for e-commerce as well," the company wrote on its website.

BankBot also provides financial advice. It reminds users of when to pay off their credit cards, when to do their taxes, or suggests better options for interest or investments. "What is really important for us is that BankBot is proactive, unlike Siri, for example," Lipiec said. "It reminds users of necessary information on its own initiative.

BankBot is not the only robotic bank teller out there. For instance, the Bank of Tokyo Mitsubishi UFJ introduced a human-like robotic bank teller into its branches last year. Nao, the robot, could answer customers' questions about banking services. Unlike BankBot, Nao exists in real life, around 23 inches tall, as opposed to within a digital platform.

Other banks in the United Kingdom are also beginning to implement robotic tellers that mimic empathy and otherwise help the bank cut costs on paying human workers. The robot Luvo, for instance, at the Royal Bank of Scotland, is meant to be a human-like AI that answers questions online, such as queries about lost credit cards or pin numbers.

However, with all this automation in your personal finances, security issues may come up when robots have so much information about individuals' accounts and other personal information. There have been multiple reports of bank hackers just in the past year, from Ecuador to Bangladesh. And robots and AI systems are hardly immune to security breaches.

Chatbots, computer programs that typically use text-based live chat as an interface to carry out tasks for customers on behalf of the business, are emerging as an inexpensive way to introduce artificial intelligence (AI) in banking.

New digitally savvy companies have found success attracting consumers with user-friendly offerings, while legacy banks are finding it difficult to invest in and adopt innovative products. To remain competitive, these large banks will have to adapt their traditional services by incorporating more robotics in banking that will attract more tech-savvy customers. Deutsche Bank has launched it‘s own BOT colleague IRIS which is based on software that can do things like open emails and attachments, log into applications, fill in forms, read and write to databases, perform calculations, follow if/then decisions and collect data. In future she will provide dynamic, predictive analytics e.g. using database logic to support strategic decision-making.

Chatbots in Banking: Chatbots in banking are a digital solution that is relatively inexpensive to develop and maintain. For starters, chatbots require less coding than standalone banking apps. And the current growth in popularity of messaging platforms saves banks the cost of developing their own channels, as well as saving on data storage thanks to chatbots' cloud-based systems.

Companies such as Cleo, Stripe, and Wealth front are giving traditional banks a run for their money. However, for these players it is more difficult to meet the demand of key bank products (such as loans) due to less restricted regulations that force their customers to spend heavily on compliance and maintain large capital cushions.

DBS uses Kasisto‘s Kai, the underlying technology of MyKai, to allow customers to conduct transactions such as transfers and bill paying. Furthermore, they can ask about their personal finances using messaging applications such as Facebook Messenger and eventually WhatsApp and WeChat, all of which are the top messaging applications used across the world.

In 2016, Swedbank launched on its website and mobile application Nuance‘s NINA, who helps answer customer inquiries more quickly by sourcing information relevant to their query using intuitive analysis.

Chatbots in Financ:The finance industry is built on processing information, which makes it an ideal industry for automation and reduction of salary expenditure, according to a new report from PwC. However, two-thirds of US financial services respondents said that they‘re limited by operations, regulations, budgets, or resources to make the investment in such innovative development.

Fintech companies such as Plum, Digit, and Cleo use chatbots that drive microsaving by putting small amounts into savings each day for their users. These companies‘ chatbot is their core product, unlike legacy banks that use it to supplement a core product.

These companies are improving various financial services that provide their customers more than just automated savings. Chatbots can provide wealth management for the masses, underwrite loans and insurance, provide data analyses and advanced analytics, and detect and notify of fraudulent behavior, all through an automated virtual assistant.

Bank of America uses ERICA to give customers key and real-time updates on their finances using a channel of their preference. Her predictive analytics and cognitive messaging helps customers make payments, pay down debts, and check their balances.

Chatbots Set to Growrobot:Exclusive Data from BI Intelligence - Although chatbots have been around for a long time, recently the underlying AI technology has made waves in the market.

BI Intelligence, Business Insider's premium research service, has found that the technological advancements in AI has made leaps and bounds in recent years in financial services.

The growing popularity of messaging apps have made them reliable hosts for chatbots, and the increasing public acceptance of chatbots have created more trustworthy relationships with users, particularly for millennials, whom banks are trying to target.

3.4 IVR (Interactive Voice Response) :

IVR is a telephony technology in which someone uses a touch-tone telephone to interact with a database to acquire information from or enter data into the database. Interactive voice response (IVR) is a technology that allows a computer to interact with humans through the use of voice and DTMF tones input via a keypad. In telecommunications, IVR allows customers to interact with a company‘s host system via a telephone keypad or by speech recognition, after which services can be inquired about through the IVR dialogue. IVR systems can respond with pre-recorded or dynamically generated audio to further direct users on how to proceed. IVR systems deployed in the network are sized to handle large call volumes and also used for outbound calling, as IVR systems are more intelligent than many predictive dialer systems.[1

DTMF decoding and speech recognition are used to interpret the caller's response to voice prompts. DTMF tones are entered via the telephone keypad.

Other technologies include using text-to-speech (TTS) to speak complex and dynamic information, such as e-mails, news reports or weather information. IVR technology is also being introduced into automobile systems for hands-free operation. TTS is computer generated synthesized speech that is no longer the robotic voice traditionally

associated with computers. Real voices create the speech in fragments that are spliced together (concatenated) and smoothed before being played to the caller.
An IVR can be deployed in several ways:
1. Equipment installed on the customer premises
2. Equipment installed in the PSTN (public switched telephone network)
3.Application service provider (ASP) / hosted IVR
An automatic call distributor (ACD) is often the first point of contact when calling many larger businesses. An ACD uses digital storage devices to play greetings or announcements, but typically routes a caller without prompting for input. An IVR can play announcements and request an input from the caller. This information can be used to profile the caller and route the call to an agent with a particular skill set. (A skill set is a function applied to a group of call-center agents with a particular skill.)
Interactive voice response can be used to front-end a call center operation by identifying the needs of the caller. Information can be obtained from the caller such as an account number. Answers to simple questions such as account balances or pre-recorded information can be provided without operator intervention. Account numbers from the IVR are often compared to caller ID data for security reasons and additional IVR responses are required if the caller ID does not match the account record.
IVR call flows are created in a variety of ways. A traditional IVR depended upon proprietary programming or scripting languages, whereas modern IVR applications are generated in a similar way to Web pages, using standards such as VoiceXML, CCXML, SRGS and SSML. The ability to use XML-driven applications allows a web server to act as the application server, freeing the IVR developer to focus on the call flow.
IVR speech recognition interactions (call flows) are designed using 3 approaches to prompt for and recognize user input: directed, open-ended, and mixed dialogue.
A directed dialogue prompt communicates a set of valid responses to the user (e.g. "How can I help you? ... Say something like, account balance, order status, or more options"). An open-ended prompt does not communicate a set of valid responses (e.g. "How can I help you?"). In both cases, the goal is to glean a valid spoken response from the user. The key difference is that with directed dialogue, the user is more likely to speak an option exactly as was communicated by the prompt (e.g. "account balance"). With an open-ended prompt, however, the user is likely to include extraneous words or phrases (e.g. "I was just looking at my bill and saw that my balance was wrong."). The open-ended prompt requires a greater degree of natural language processing to extract the relevant information from the phrase (i.e. "balance"). Open-ended recognition also requires a larger grammar set, which accounts for a wider array of permutations of a given response (e.g. "balance was wrong", "wrong balance", "balance is high", "high balance"). Despite the greater amount of data and processing required for open-ended prompts, they are more interactively efficient, as the prompts themselves are typically much shorter.
A mixed dialogue approach involves shifting from open-ended to direct dialogue or vice-versa within the same interaction, as one type of prompt may be more effective in a given situation. Mixed dialog prompts must also be able to recognize responses that are not relevant to the immediate prompt, for instance in the case of a user deciding to shift to a function different from the current one.
Higher level IVR development tools are available to further simplify the application development process. A call flow diagram can be drawn with a GUI tool and the presentation layer (typically VoiceXML) can be automatically generated. In addition, these tools normally provide extension mechanisms for software integration, such as an HTTP interface to a website and a Java interface for connecting to a database.
In telecommunications, an audio response unit (ARU) is a device that provides synthesized voice responses to DTMF keypresses by processing calls based on (a) the call-originator input, (b) information received from a database, and (c) information in the incoming call, such as the time of day. ARUs increase the number of information calls handled and provide consistent quality in information retrieval.
Used to servise high call vlomues - A common misconception refers to an automated attendant as an IVR. The terms are distinct and mean different things to traditional telecommunications professionals—the purpose of an IVR is to take input, process it, and return a result, whereas that of an automated attendant is to route calls.

3.5 OCR (Optical Character Recognition):
OCR or Optical Character Recognition is an operation with the help of which one can convert scanned document files into machine readable format files. The scanned documents after entering the computer‘s hard drive in the form of an image format lacks the ability of being searched. OCR provides this ability to the file with the support of a set of software and hardware devices. This technology is not new and has been applied in various fields today. OCR for the banking industry, legal industry and educational establishments are just some of its many uses. Each of these fields have benefited tremendously as OCR continues to make life easier for all.

OCR for the banking industry has not just simplified all banking processes but also made it much faster. It should not be surprising to know that OCR for the banking industry was the first to harness the technology way back in the late 50s. Early versions of OCR were helpful in the processing of checks due to their capability to read the check numbers printed in the bottom of the check. This is the reason why most check numbers were printed in a unique font. Bank of America was the first bank to make use of OCR tools.

As the OCR technology improved, the applications of OCR for the banking industry flourished consequently. Bank pass books began to be scanned using a scanner and with the help of OCR, the last entry update can now be recognized. Accordingly, the pass book printer will print entries for the account after the last entry. This minimized human intervention and the possibility of any errors. All the bank employee has to do is place the pass book under the scanner and let OCR do the rest.

The more OCR advances, the lesser is the need for any manual work. OCR can now even recognize hand written text which is working wonders for the banking industry. Besides being able to read the account number, check number and figure, OCR for the banking industry is now capable of scanning signatures on checks too.

Applications of OCR for the banking industry have made it so much more convenient than before, helping not just banks but also customers because of the increase in the pace of getting things done.

3.6 Cryptocurrency:

A cryptocurrency (or crypto currency) is a digital asset designed to work as a medium of exchange that uses cryptography to secure its transactions, to control the creation of additional units, and to verify the transfer of assets. Cryptocurrencies are classified as a subset of digital currencies and are also classified as a subset of alternative currencies and virtual currencies.

Bitcoin, created in 2009, was the first decentralized cryptocurrency. Since then, numerous other cryptocurrencies have been created. These are frequently called altcoins, as a blend of alternative coin. Bitcoin and its derivatives use decentralized controlas opposed to centralized electronic money and central banking systems. The decentralized control is related to the use of bitcoin's blockchain transaction database in the role of a distributed ledger.

3.7 Blockchain:

At present, middle and back-office functions remain mostly antiquated, slow and not very efficient. IB firms are still dealing with overly complex procedures involving multiple counterparties, manual processes and third-party service providers.

Blockchain is a disruptive technology platform that uses cryptography and a distributed messaging protocol to create shared ledgers among counterparties. Originally, blockchain technology was used by cryptocurrencies whose popularity gave rise to the idea of blockchains as a means of building consensus. Since then, banks have begun exploring ways to apply blockchain-distributed technology to payments. In the context of capital markets, blockchain distributed ledgers enable open-source, decentralized, replicated, shared and cryptographically secure operations that are validated by mass collaboration and can be applied to many financial instruments.

Unlike traditional ledgers in banks, which use central authorities to manage transactions (see Figure 1), distributed ledgers built on blockchains validate transactions through a protocol managed by the user community via a consensus mechanism (see Figure 2). This decentralized approach changes the power dynamic within the financial system, shifting power from institutions to users.

Asset transfers can be facilitated without third-party intermediaries through the use of ―smart contracts‖ – programmed code that replicates conventional commercial agreements by digitizing business transactions between parties and validating them through a blockchain. Practically speaking, this means blockchain-enabled networks have the potential to increase trading efficiency, improve regulatory control and eliminate unnecessary intermediaries.

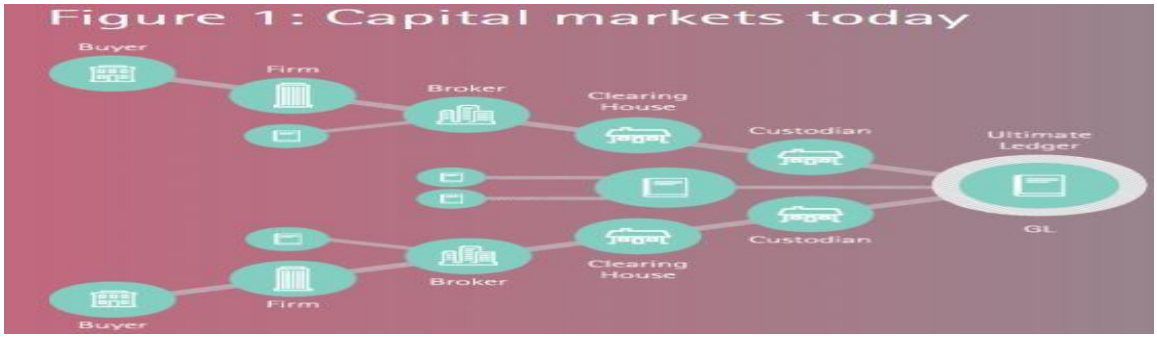


Figure 3 Capital Market Today

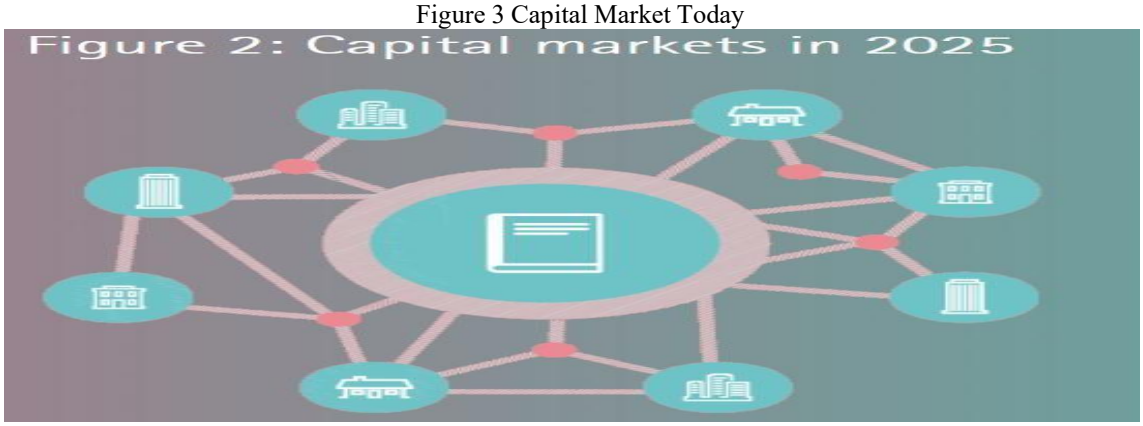


Figure 4 Capital Market in 2025

3.7.1 Blockchains are most valuable when:

- They are used to keep track of complex things,
- There is no well-established authority in place.
- Transactions involve finite or countable resources.
- A cryptographic audit trail is required.

3.7.2 How Can Block chain Help?

Reduce total cost of ownership by offering a robust and verifiable alternative to traditional proprietary stacks at a fraction of the cost.

Clear and settle transactions faster by transitioning from overnight batch processing to intra day clearing.

Manage system-of-record sharing: Blockchain technology makes it possible to give various parties (e.g., clients, custodians and regulators) access to their own live copies of a shared system of record.

Create self-describing electronic transactions: Smart contracts can use blockchain‘s programming language to create context-aware transactions for complex arbitration. For example, a credit default swap could pay out automatically according to pre-agreed logic that watches market data feeds.

Many firms are in an exploratory phase, testing out the technology in their own technology labs and innovation centers. Despite numerous technical and regulatory uncertainties, blockchain technology has many possible applications in capital markets. For example, suggested use cases in testing mode today may include Know Your Customer/Anti-Money Laundering (KYC/AML) data-sharing, trade surveillance, regulatory reporting, collateral management, trading, settlement and clearing.

Firms that want to assess the viability of blockchain technology for specific financial instruments, such as syndicated loans, should consider a number of factors, such as anticipated reduction in settlement days, current clearing and settlement costs, digitization potential, product volume, cost of capital avoided and implementation costs. The next step is to clearly identify risks and challenges. Only then should a firm begin developing a detailed blockchain roadmap, determining product and asset class adoption and creating an implementation schedule.

3.8. Inference

Now that we have collected all the data on where and how It is impacting the banking industry. The bottomline remains the fact that IT has been the talk of the town since it‘s inception i.e the early 19th century when internet, telecommunication and technology in it‘s very form took a new flight making the business world more efficient and more robust. Yes, the complexity of business world has increased with the globalization that has been a gift from technology. Globalization and ease of cross border business is directly credited to the technological advances that have made communication and transactions easy, quick and reliable, even across opposite ends of our planet. Hence, IT has not only impacted but has made it‘s place in the very existence or survival of business world. By the numerous examples given in this paper, it is quite evident that all those who had to thrive in the fight of survival had to adapt to changing market demands of IT. Those who joined hands with technology survived and those who have put in extra efforts to excel by embracing this new trend have come out as clear winners.

As no business can survive without customers. Though, Banking has been there since ages, it has taken new shape and structure by stretching itself in various domains providing variant and better services to clients. These new bodies are commonly known as investment banks.

ATM, website portal, e-banking, mobile banking are few advancements which are now old, thanks to the forever innovating world of IT. Extending from these, Banking firms are now looking for engraving digitalization in their very core. With the current era of de-regulation and changing political forces thus chaning rules and demands, banks are investing a good part in IT.

Every IB firm has it's own IT department, who is not only responsible for the maintenance of their server, data and systems but is now working on developing new apps and softwares to help them improvise on repetitive processes, adding on to the efficiency and mitigating human errors at the same time. These apps and software are based on programming languages which are discussed in the paper in depth.

Moving forward, the upcoming or we can say the sizzling area which is driving the maximum attention is Artificial Intelligence (AI) . Leave mere scripts, apps or softwares AI has introduced a live Robot Sophia (not to mention she was looking for investors in her last interview with the media). AI is all set to drive the industry to all new ventures and is expected to completely change the shape of the industry for better.

With it's few forms as BOTS, IVR, OCR,Crypto and Blockchain, AI is expected to remove all the worries of those long waiting queues, waiting for settlement of your trade or payment. Customer is going to be the most happy king who will be able to get banking done in the blink of an eye and without any ugly surprises.

Yet, there are always two sides of the coin or as they say, everything comes for a price. Here is an analysis of the pros and cons of the impact of IT on the industry.

IV. ADVANTAGES

Automation will lead to zero human errors along with much quicker work ways.

Fewer workforces required, cutting costs for firms.

Mobile banking, internet banking, OCR and IVR IT are few freinds who have provided Ease of access. Thanks to them, long queues and an age long waiting time are the things of past.

New jobs created for innovative and creative skills.No more reluctance to change can make you survive, technological up gradation is a must to add on the skill sets.

Crossborder communications as well as transactions are easy with technology.

Cryptocurrency is quite amazing, fancy and catchy when it comes to the secure, easy and multiple platform usability it provides.

V. CONCLUSION

Automation will come to a halt if there is even a slightest change in the usual course, hence it is a challenge to be developed for dynamic processes.

Automation can come out to be a threat if there ever comes a down time where the system get's stuck or breaks down.

Due to automation people will not be trained on manual workarounds causing a big time threat for an entire process to come to a hault till the system does not retriev.

Job loss for the skills that are no more required.

OCR might get you stuck in case of a new challenge and you are in need of specific human help.

A hike in crossborder activities has increased the complexity of business.

Increasing security costs - With technological advances come the increasing threat of hacking, online theft and online robbery - eg. .Hence, better protection against malicious activities is needed.

Cryptocurrency - the base of Bitcoin has made a decentralized system, which is a virtual market. Bitcoin is expected to be the next bubble burst which is going to bring the next doom's day after the sub-prime crisis.

Hence, as always said Science is a good servant but a bad master. Those who are able to fight the Cons and cash upon the Pros are expected to be our next generation Stars. IT has always had an irreplaceable impact on business, more for good. If cashed upon, IT can make the fate of any firm to go places and grow leaps and bounces.

VI. REFERENCES

[1] www.accenture.com/us-en/insight-investment-bank-challenges-blockchain-technology
[2] www.mergersandinquisitions.com/future-of-investment-banking-2015/
[3] economics.emory.edu/home/documents/workingpapers/fohlin_14_16_paper.pdf
[4] www.capgemini.com/2016/04/the-growing-impact-of-technology-on-the-insurance-and-banking
[5] www.efinancialcareers.com

Dr.Chandrani Singh ,Director –MCA,SIOM

The Board of
International Journal of New Innovations
in
Engineering & Technology

is hereby awarding this certificate to

Shobha Sachendra Mishra

in recognition of the publication of the paper entitled

Impact of Information Technology in Investment Banking

published in IJNIET Journal,
Volume 11 Issue 2 - July 2019

Lucy Garg
Chief - Editor

IJNIET Board
International Journal of New Innovations in Engineering & Technology
www.ijniet.org
ISSN : 2319 - 6319

Preeti Dhiman
Editor

Dr. Chandrani Singh ,Director –MCA,SIOM

A study of medicinal store software component features being utilizing in-retailer and wholesaler to perform and organize Medicinal Store Business in Pune_PMC region.

[1]Mr. Ramesh D Jadhav [2]Dr.Manik S Kadam

[1]rameshdjadhav@gmail.com [2]msk16121612@gmail.com

[1]Research Scholar, AIMS, Pune-01.

[2]Research Guide, AIMS, Pune-01.

Abstract: Business of medicinal stores is an respectable Business as it is in a roundabout way mending the people to get well with the assistance of medicinal experts and other co-experts. Government has confined the act of Pharmacy to just Profession Pharmacists for example enrolled Pharmacist under the Pharmacy Act 1948. Medicinal Stores generally called as Drugstores in western nations is a significant exchange comparable to the next retail locations. At the worldwide level the sorted out retail assumes a predominant job, however on account of medicinal Stores in the majority of the nations the Drug Stores are working as an independent stores. Explicitly the medicinal exchange India is generally ruled.

Purpose: This research paper understanding the components of software application used in medicinal stores stockiest relate business activity. That activity handled by various components software applications of retailers and wholesalers business to make the business valuable and professional.

Methodology: The study is based on primary and secondary research wherein different aspects of software application were being used in medicinal store retailer and wholesaler in support of business insight.

Results: In this study, it is observed that medicinal store software application that determines all component features related business strategies in and around stockiest. This study eventually leads to medicinal store business.

Originality: the retail business and literature have focused on software application components. This present study fills this gap with an outline of being adequately use or inadequate use of software in the medicinal store business.

Keyword: Pharmacy /medicinal store, software application, components, drugstore.

1. INTRODUCTION OF MEDICAL SHOP SOFTWARE:

Today the world's most forward-looking medical organization are attempting to give increasingly solid and exact administrations in their recorded, offering administrations to client and representatives with all the accessible decisions to their greatest advantage. It might be a main various medicinal stores. Each shop these days is attempting to automate its exercises to give better administrations to its clients. The point is to robotize its current manual framework by the assistance of electronic types of gear and undeniable computer software, satisfying their necessities, so their important information, data can be put away for a more drawn out period with simple getting to and control of the equivalent. This venture "medicinal shop the board framework" additionally a stage towards offering pretty much the comparative highlights. This framework empowers to oversee and record the exercises of entire medicinal stores of multi-office aptitude as it were. It empowers the other staff to give their administrations in an increasingly orderly and proficient way subsequently improving the altruism of concerned establishment. This causes the executive to dissect upon the presentation of foundation. This framework compose their day by day exercises like charging, tablets data, stock subtleties and progressively present pattern this application is utilized in each therapeutic shops. This framework will spare time and increment work proficiency.

Medicinal stores administrations framework is an application venture created for medicinal stores. This framework is a documented worried about obtaining and selling prescriptions, keeping up their stock, producing deals receipt and creating tokens of expiry date about medications. It required additional time and exertion when all techniques are performed physically. Hence so as to lessen time utilization and human exertion the medicinal stores the board framework application can be connected in medicinal where manual technique can be connected in medicinal where manual method exists, the motivation behind this venture is to diminish time utilization and human exertion. This application gives easy to understand interface too. Components and portrayal of medicinal stores. Michael E. Porter(Oct, 2013)

Justification:

To help the medicinal business person and wholesalers in catching the exertion spent on their separate working area.

To use human asset of the establishment in an effective way by expanding their efficiency through robotization.

The frameworks create various kinds of reports that can be utilized for different administrative and regulatory purposes.

Aides in like monitoring every one of the exercises of the restorative office like login/logout time, security related exercises, and so on. Ashok Kumar (March 2015)

2. SIGNIFICANCE OF MEDICAL SHOP MANAGEMENT SYSTEM:

The process of automation is measured paced due to various natural factors and is being challenged by the increasing inventory loads and escalating asset has the potential to affect a small-business drugstore as much as product inventory. Inventory most often represents your single largest investment, and most of your products are perishable. These factors make an effective inventory management system critical for adequate short-term cash flow and long-term profitability. Most successful drugstore inventory systems share four general objectives cost management, purchase management, inventory management, and stock management, vendor management. Jackie lohrey (since 2009).

3. PROBLEM STATEMENT: To study about the component of software application being use in medicinal/ pharmacy stockiest on the business execution of these stores to the extent that output, effectiveness and Communication"

4. SIGNIFICANCE OF STUDY: To achieve the issue explanation, the endeavored research concentrate grasps an authoritative perspective to get encounters on back and forth movement circumstance medicinal stores business. It jumps into the noteworthy challenges that the highlights of Software application being used in the medicinal store. The need of the assessment here is to find the ways by which highlights leading group of retailer can "fill" the "Want opening concerning sedate quantifiable examination." that has been made after the improvement of retail business. This assessment is anticipated obtaining bits of learning highlights of compoinet the organization in medicinal stores retailing. It in like manner serves to Business change in the matter of digitization.

5. RESEARCH METHODOLOGY: In this investigation that relies upon discretionary features where detached latest development example sees Researchers consider the encounters got from appropriate examinations endeavored and review driven by various investigators and relationship in the part of learning.

This assessment is made arrangements for thinking about various components that are expecting a basic activity for highlights of features of software application with remarkable reference to medicinal stores business. Pros have moreover considered the points of view/ends imparted and experiences shared by the pioneers and authorities in the retail business practice.

Type of research design: The research conducted is of the explanatory and experimental research as well as analytical

Sample design: Random Sampling Method would be used.

Sources of Information: Primary and secondary data.

6. LITERATURE REVIEW & GAP ANALYSIS:

1. Literature Review:

Daniel Castro (Oct, 2009): According to this study examined modernizes our medicinal services framework will prompt upgrades in therapeutic research. Wellbeing informatics will enable therapeutic analysts to decide the adequacy of a specific management for a given public. Sarbjeet Khurana, (Jan,2013) has research proposed that Inventory control strategies with stock investigation

in drug stores. The ABC and VED investigation of the pharmacy store for the management control. According to M.A, Hamish.(Aug, 2008): This study concluded a shot at computer in the creating scene to track prescription stock, administer medications to patients, and record and break down patient restorative records, including their drug regimens. Utilizing drug store administering store the executives programming, an assortment of electronic medicinal record of clients and stock control of scientific expert. To expand the exactness and simplicity of the making of medicinal requests and stock administration. Salve A M (June, 2012): this research study more examined on medicinal stores administrations and guarantee satisfactory load of all the expected things to keep up continuous supply and Continuous quality administration in restorative store can give the worth added administrations to the patients of all stock control frameworks accessible, the in every case better control (ABC) and imperative, fundamental therapeutic stores. ABC investigation is "In every case Better Control" examination to conquer the confinement of ABC examination, VED is connected. VED investigation depends on the need of the more important control. According to R. Nishanthi, (2016): this research study concluded the deal with the deterministic for online medication buying framework in android applications is made to help the experts of the therapeutic shop. The main medicinal store ace applications in market that can full fill all needs in the field of therapeutic showcasing field like tracking deal and buy for various organizations, stock administration, and Shop the board framework.

2. Gap Analysis:

Sr. no.	Author/ research paper / Article title of the study	Publication year	Area of study	Research Gap found
1.	Daniel Castro :The Role of Information Technology in Medical Research	Oct. 2009	Here the researcher has focused on Role of IT in health care	The researcher has not specified on related software application and its feature.
2.	Sarbjeet Khurana: "Inventory control techniques in medical stores of a tertiary care neuropsychiatry hospital in Delhi"	Jan. 2013	This study deals with inventory control associate the hospital drug.	This study more discussed only inventory techniques component other components are not measured.
3.	M.A, Hamish: Requirements for an Open-Source Pharmacy	Aug. 2008	This research studies on open source software	This researcher has focused on open source software but not

	Dispensing and Stores Management Software Application for Developing Countries"Making: the e-health		used for e-health.	mentioned any components features and its benefit.
4.	Salve AM: Medical Store Management: An Integrated Economic Analysis of a Tertiary Care Hospital in Central India	June, 2012	This study examines on medical store management in hospital	The researcher has mentioned Inventory control classification and but not specified any other important component of association.
5.	R. Nishanthi: Deterministic Online Medicine Purchasing for Geo Located Shops.	Dec. 2016	Here the researcher has discussed on online buying	This study more illustrate online drug buying concept but not specified on its components facility.

Table 1: Gap Analysis.

7. IDENTIFICATION AND SELECTION OF VARIABLES: This literature review identifies a major gap in the research regarding the software application of medicinal store system related components Buy component, Sales component, inventory component, Barcode, Account components etc. to investigate, the importance of this approach components features related retailers business, in the context of increase the use of components for to achieve business strategic objective.

8. THEORETICAL FRAMEWORK: There is important of components of medicinal stores business system.[Components of software application: supply, barcode, supplier, expiry, account etc. "Owner, /employee engagement".

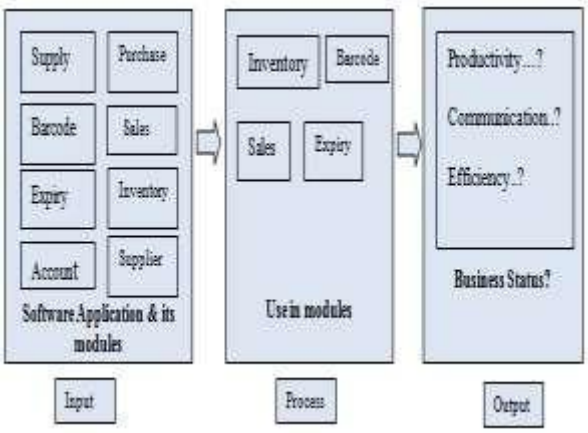


Fig.1: Theoretical framework of Software Application and its components.

9. OBJECTIVE: To study the component of software applications used by medicinal wholesalers and retailers.

10. HYPOTHESIS:

Hypothesis: Component related a feature of medicinal stores management system is under use in medicinal stores in pune_PMC .

Statistical test: Component related -sign binomial test.

Variables and measurement:

Medicinal stores owner retailer and wholesalers were asked to comment on the following statement related to above hypothesis using a five point scale (1=least use, 2=less use, 3= moderate use, 4= measured use, 5= highly use)

a. Buy requests and supervise their status.
b. Level wise buy request.
c. Trade wise buy request.
d. Supplier wise buy request
e. Procure invoice for goods in, buy statements.
f. Upload, download buy requests.
g. Accept buy requests.

Cut Point: the original 5 – point scale was converted to 2-point scale using CUT POINT option as "3" in IBM SPSS 24. Hence the newly created categories were:

< = 3: Inadequately use.

> 3: Adequately use.

Test Proportion: Test proportion was taken as 0.5. Since more than 50% of favorable responses to a particular category suggest greater approval for this category

Hence P= 0.5

H0: P ≤ 0.5 (proportion of responses indicating "Component related a feature of medicinal store management system is under use in medicinal stores in pune-PMC" is less than or equal to 50%)

H1: P > 0.5 (proportion of responses indicating "Component related a feature of medicinal store management system is under use in medicinal stores in pune-PMC" is more than 50%)

Level of Significance: α =0.05.

Binomial Test					
Features	**Groups**	Category	N	Observed Prop.	Test Prop.
Buy requests and supervise their status	Group 1	<= 3	11	0.39	0.50
	Group 2	> 3	19	0.61	
	Total		30	1.00	
Level wise buy request	Group 1	<= 3	11	0.39	0.50
	Group 2	> 3	19	0.61	
	Total		30	1.00	
Trade wise buy request	Group 1	<= 3	28	0.92	0.50
	Group 2	> 3	2	0.08	
	Total		30	1.00	
Supplier wise buy request	Group 1	<= 3	28	0.92	0.50
	Group 2	> 3	2	0.08	
	Total		30	1.00	
Procure invoice for goods in, buy statements	Group 1	<= 3	15	0.50	0.50
	Group 2	> 3	15	0.50	
	Total		30	1.00	
Upload, download buy requests	Group 1	<= 3	30	1.00	0.50
	Total		30	1.00	
Accept buy requests.	Group 1	<= 3	30	1.00	0.50
	Total		30	1.00	

Table 2: Component related feature -Level of Significance

11. DATA ANALYSIS: Interpretation:

a. Buy requests and supervise their status observed proportion: 0.61, Test proportion: 0.5, P=0.000.Hence more than 50% of retailer and wholesalers use software buy requests and supervise their status hence this usage is adequate.

b. Level wise buy request observed proportion: 0.61, Test proportion: 0.5, P=0.000.Hence more than 50% of retailer and wholesalers use software level wise buy request hence this usage is adequate.

c. Trade wise buy request observed proportion: 0.08, Test proportion: 0.5, P=0.000. Hence more than 50% of retailer and wholesalers use software Trade wise buy request hence this usage is inadequate

d. Supplier wise buy request observed proportion: 0.08, Test proportion: 0.5, P=0.000.Hence more than 50% of retailer and wholesalers use software- Supplier wise buy request hence this usage is inadequate

e. Procure invoice for goods in, buy statements observed proportion: 0.50, Test proportion: 0.5, P=0.978. Hence more than 50% of retailer and

wholesalers use software Procure invoice for goods in, buy statements hence this usage is inadequate.

f. Upload, download buy requests observed proportion: 1.0, Test proportion: 0.5, P=0.000. Hence more than 50% of retailer and wholesalers use software- Upload, download buy requests hence this usage is inadequate.

g. Accept buy requests observed proportion: 1.0, Test proportion: 0.5, P=0.000. Hence more than 50% of retailer and wholesalers use software- Accept buy requests hence this usage is inadequate.

From above discussion seen that out of 7 Components related features only 2 features adequately use and five features are inadequately use.

Hence hypotheses: Component related a feature of medicinal stores management system is under use in medicinal stores in pune_PMC**. "Accepted"**

Hence above alternative hypotheses is rejected.

12. FINDING:

It is to be observed in the theoretical framework of software application used in medicinal store business owner used this software with very few modules in business.

It is also observed that in-retailer business is using medicinal store business software but they are not using all modules in business activity.

It was also found that in medicinal store business system used in medicinal store they are not doing statistical analysis of inventory status, inventory valuation, business current fact and situation and what is customer expectation, market demand that are not considered in each medicinal store. etc.

It is also found in medicinal store business they use only trade component, expiry, barcode but frequency of that component is very less use

13. CONCLUSION: Hence the study improving software systems within the medicinal store business with various components and reaching out to clinicians is important. Computerization of account management requires being simple and more easy to use, utilizing existing hardware. Drug stores monitoring is essential, in particular due to the spread nature of store drug.

14. Contribution to body of knowledge: This study contribute to the existing body of knowledge of medicinal store management system is handling all activity of business with including all component of business is important part of business activity but it is very essential that this frame work will give more focus on to apply to all retailer business to use all component and enhance small enterprise capability in term of announcement & output the researchers suggest the business integration, component, technology can help for the medicinal store business

15. Limitations: This study is found on the survey of existing writing that is accessible regarding the matter under thought. The writing consolidated research primary data of 30 respondents of medicinal owner and secondary data like articles/book sections/paper articles and meetings with the business chiefs/specialists. In brightness of

time and different necessities, the necessary research around there isn't completed by professional.

16. Scope of future research:

This lessons takes the circumstance of the medicinal store business and integrate components to prove the significance of business incorporation and hypothetical framework build bring in in this research article provides a natural guide to future research. It is typically, a new domain for researchers wherein they can carry out practical research to propose, achievement, and conclusion of this study. Later than this, further research in the domain will progressively travel to deeper height. Research also remains to be done on topics like component integration use, software application frame work, software standardization impact on other retail business.

17. Bibliography:

1. Jackie lohrey (since 2009) : Article- Web Retrieved Aug-2019: https://smallbusiness.chron.com / general-objectives-total-drugstore-inventory-system-80761.html
2. Ashok Kumar (March 2015) : Improving medical stores management through automation and effective communication Published online 2015 Mar 29. doi: 10.1016/j.mjafi.2015.01.011
3. A. HAMIL & S. SAM SANTHOSH (2014):"SWOT ANALYSIS ON RETAIL MEDICAL TRADE" IMPACT: International Journal of Research in Applied,Natural and Social Sciences (IMPACT: IJRANSS) ISSN(E): 2321-8851; ISSN(P): 2347-4580 Vol. 2, Issue 7, Jul 2014, 77-94 © Impact Journals.
4. Daniel Castro (2009): The Role of Information Technology in Medical Research- Atlanta Conference on Science, Technology and Innovation Policy (IEEE).
5. Libby Levison, M.A.,Hamish S F Fraser, M.A.(Aug,2008):"Requirements for an Open-Source Pharmacy Dispensing and Stores Management Software Application for Developing Countries"Making: the ehealth>connection Bellagio, Italy July 13- 8 Aug 2008.
6. Mahatme MS, Dakhale GN, Hiware SK, Shinde AT, Salve AM (2012): Medical Store Management: An Integrated Economic Analysis of a Tertiary Care Hospital in Central India, General Pharmacy Journal of Young Pharmacists Vol 4 / No 2
7. R. Nishanthi, A. Thirugnanasambandhamurthy(2016)"Deterministic Online Medicine Purchasing for Geo Located Shops" international Journal of latest Trend in Engineering and Technology (IJLTET) Special issue NCTRCC-2016,ISSN-2278-621X.
8. Michael E. Porter(Oct, 2013): The Strategy That Will Fix Health Care: https://hbr.org/2013/10/the-strategy-that-will-fix-health-care
9. Ouwens M, Wollersheim H, Hermens R, Hulscher M, Grol R.(2005) Integrated care programmes for chronically ill patients: A review of systematic reviews. Int J Qual Health Care; 17:141-6.
10. Petri RP Jr.(2015): Integrative health and healing as the new health care paradigm for the military. Med Acupunct ;27:301-8.

11. Thomsen C.(2013), Pharmacy Automation In Retail Pharmacies: Assessing the right reasons, the right time, and the right extent to automate, Efficiency Through Technology White Paper, The Thomsen Group Inc , http://www.kirbylester. Com /assets/ white-paper -assessing-the-right-pharmacy-automation.pdf.
12. Goundrey-Smith S.(Dec, 2016), Examining the role of new technology in pharmacy: now and in the future, Pharmaceutical Journal, Royal Pharmaceutical Society,11 https://www.pharmaceutical-journal.com /examining-the-role-of-new-technology-in-pharmacy-now-and in-the-future / 1113417.

Dr. Chandrani Singh ,Director –MCA,SIOM

Certificate of Publication

INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS (IJRAR) | E-ISSN 2348-1269, P- ISSN 2349-5138

An International Open Access Journal

The Board of

International Journal of Research and Analytical Reviews (IJRAR)

Is hereby awarding this certificate to

Mr. Ramesh D Jadhav

In recognition of the publication of the paper entitled

A STUDY OF MEDICINAL STORE SOFTWARE COMPONENT FEATURES BEING UTILIZING IN-RETAILER AND WHOLESALER TO PERFORM AND ORGANIZE MEDICINAL STORE BUSINESS IN PUNE_PMC REGION.

Published In IJRAR (www.ijrar.org) UGC Approved (Journal No : 43602) & 5.75 Impact Factor

Volume 6 Issue 2 , Date of Publication:June 2019 2019-06-05 01:34:

PAPER ID : IJRAR19K6062

Registration ID : 210415

R.B.Joshi

EDITOR IN CHIEF

IJRAR | E-ISSN 2348-1269, P- ISSN 2349-5138

INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS (IJRAR) | E-ISSN 2348-1269, P- ISSN 2349-5138

An International Open Access Journal

Certificate of Publication

The Board of

International Journal of Research and Analytical Reviews (IJRAR)

Is hereby awarding this certificate to

Dr.Manik S Kadam

In recognition of the publication of the paper entitled

A STUDY OF MEDICINAL STORE SOFTWARE COMPONENT FEATURES BEING UTILIZING IN-RETAILER AND WHOLESALER TO PERFORM AND ORGANIZE MEDICINAL STORE BUSINESS IN PUNE_PMC REGION.

Published In IJRAR (www.ijrar.org) UGC Approved (Journal No : 43602) & 5.75 Impact Factor

Volume 6 Issue 2 , Date of Publication: June 2019 2019-06-05 01:34:

PAPER ID : IJRAR19K6062

Registration ID : 210415

INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS | IJRAR

An International Open Access Journal | Approved by ISSN and UGC

Website: www.ijrar.org | Email id: editor@ijrar.org | ESTD: 2014

UGC and ISSN Approved - International Peer Reviewed Journal, Refereed Journal, Indexed Journal, Impact Factor: 5.75 Google Scholar

R.B.Joshi

EDITOR IN CHIEF

IJRAR | E-ISSN 2348-1269, P- ISSN 2349-5138

Dr. Chandrani Singh ,Director –MCA,SIOM

THINK INDIA (Quarterly Journal)

certify to all that

Dr. Sunil Khilari

has been awarded Certificate of Publication for research paper titled

Published in Vol-22-Issue-4-October-December-2019 of THINK INDIA (Quarterly Journal) with ISSN:: 0971-1260

The Study of Appropriate Potential Information Security Policies for Defending from Dark Cloud and Ensuring IT Security Assurance

UGC Care Approved International Indexed and Referred Journal

Impact Factor 6.2

Indexed with Crossref and DOI https://doi.org/10.26643/think-india

SVSharma

Editor, Think India Journal

Dr. Chandrani Singh ,Director –MCA,SIOM

Alard Charitable Trust's

Alard Institute of Management Sciences, Pune

(Affiliated to Savitribai Phule Pune University, Recognized by Govt of Maharashtra & Approved by AICTE)

Presents

NAVONMESH 2.0

National Seminar

(Sponsored by Savitribai Phule Pune University)

On

"ENTREPRENEURSHIP DEVELOPMENT: THE INSIGHT OF REAL BUSINESS MANAGEMENT"

Certificate

This is to certify that Dr./Mr./Ms. Sunil Khilari

of Director at Sinhgad Institute of Management, Pune has Participated/ Submitted / Presented a Paper titled Career Journey in Today's Information Economy Shortage of Digital Skills & Shortage of Experts in Industry.

in the National Seminar held by Alard Institute of Management Sciences, Pune on 15th & 16th February 2019

Dr. D. K. Tripathi	Prof. Sanjay Chavan	Asst. Prof. Kiran Patil
Chief Convener	Convener	Co-Convener

Sinhgad Institute of Management PUNE 411 041

Dr. Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Securities to Big Data Analytics

Ms.Swati Jadhav[1],Dr.Manisha Kumbhar[2]

Assistant Professor,Institute of Business Management & Research ,Chinchwad.

Professor,Sinhgad Institute of Management,Pune

Abstract:

Big Data analysis and Big Data analytics are very useful concepts in current computing trends or environments. As the increasing volume of massive data of various social sites or web sites it is very difficult to maintain analyse data as well as to collect knowledge from data. Securities and privacy to maintain the Big Data is very essential. Basically Big Data generally available on clouds. It is necessary to take care while uploading data on clouds.

Keywords: *Security, Approaches, Engineering, Cloud environment, NoSQLDatabase.*

Introduction

Big data is a word used for detailed information of massive amounts of data that are structured, semi-structured or unstructured. Big Data generally is not handled by traditional database software technologies.Users of Big Data can keep away to intruders by applying or providing Firewall services as well as Intrusion Detection and Prevention systems.All the enterprises handled Big Data by their web sites and are not structured since it contains figures, numerical data, Images comments, Email attachment etc. and are in unstructured data.Five**V**'s are plays very important role in Big Data Analytics.

Volume: It includes storage of data, blogs, emails, You tube audio video streaming etc. .
Variety: It consist of types of data which is supported.
Velocity:In how much time the files are created and running processes are carried out.
Veracity: Reliability of data testing is done
Value : Big Data is not in fix quantity is fast moving and fast growing.

Security Technology in Big Data Environment

It is essential to protect Big Data from intruders. A single ransomware attack may destroy a Big Data. To protect the privacy of massive data though the info with privacy leaks, the attacker can't obtain the effective value of knowledge. We will use encoding and Data anonymity technology

(1) Encoding Technology Data encryption technology is a crucial means to guard data confidentiality, it safeguards the confidentiality of the info, but it hampers the performance of the system at an equivalent time. the info processing ability of a enormous information system is fast and efficient, which may satisfy the wants of the hardware and software required for encryption. Therefore the homomorphic encryption has become a search hotspot in data privacy protection.

The homomorphic encryption may be a model for the calculation of the ciphertext, avoiding the encryption and decryption within the unreliable environment, and directly operate on the ciphertext. . Homomorphic encryption remains within the exploratory stage, the algorithm is immature, low efficiency, and there's a particular distance faraway from practical application.

(2) Data Anonymity Technology Data anonymity is another important technology for privacy protection, though the attacker gets the info that contains the privacy, he can't get the first exact data, because the worth of the key field is hidden. However, within the background of massive data, the attacker can obtain data from multiple sources, then associate the info from one source with another source, they're going to find the first meaning of the hidden data.

Approaches to privacy preservation storage on cloud

Mainly have three dimensions, confidentiality, integrity and availability. The first two are directly related to the privacy of the data i.e. if data confidentiality or integrity is related it will have a direct effect on user's privacy. The availability of information refers to ensuring that authorized parties can access the information when needed. Big Data will stored in cloud by providing security like encryption. In this approach a sender can send data using pubic key encryption (PKE) and a authorised user can receive it.The following are approaches to protect user privacy when data is being stored on the cloud.Attribute-based encryption -Access control is based on the identity of a user complete access to overall resources.Storage path -Encryption secure data of cloud.

Big Data Engineering

Big Data Engineering collects all data from horizontal scalable servers.New engineering techniques in the data layer have been driven by the increasing importance of data types that cannot be handled efficiently in traditional relational models.

1. Non-Relational refers to logical data models such as document, graph, key-value and others that are used to provide more efficient storage and access to nontabular data sets.
2. NoSQL (alternately called “no SQL” or “not only SQL”) refers to data stores and interfaces that are not tied to strict relational approaches.
3.Data Modelling is used for sorting and storing data. In big enterprises it need to store data in huge form we may say this is Big Data. If we select appropriate model to maintain Big
Data it offers following benefits.

- **Performance:** Good Data model are useful to extract complex data more easily as well as to maintain their performance more accurately.
- **Cost:** Such models reduce speed, storage and computing cost and reuse results for Big Data system.
- **Efficiency:** Good data models increase the efficiency
- **Quality:** Good data models maintain the consistency and reduce the possibility of any errors.

Many enterprises are gathering their data through different sources and also work in parallel. Due to models availability it results in parallel across distributed data from one or more data sources.

Precaution of Analysis and Analytics of Big Data:

This looks like any network security strategy. Yet, big data environments add another level of security because security tools must operate during three data stages that aren't all present within the network. These are 1) data ingress (what’s coming in), 2) stored data (what’s stored), and 3) data output (what’s going bent applications and reports).

Stage 1: Data Sources. There are various sources of Big Data. User generated data can include email messages, transactions of user, CRM data all this data is unstructured data. Security is essential while transit to source to platform.

Stage 2: Stored Data. Secure stored data by various security toolset like encryption, user authentication, Intrusion Detection etc.

Stage 3:Output Data. The whole reason for the complexity and cost of big data platforms is to drive massive data volumes and semantic analytics across different types of data. This analysis gives results on applications, reports, and dashboards. This very valuable intelligence makes it a rich target for intrusion, and the output is difficult to integrate as well. Also, secure compliance at this point: Make sure that the results to end-users do not contain regulated data.

Big Data and Cloud environment

Different services are run under different clouds in clustered form. There are three models of cloud services Software as a Service (SaaS), Infrastructure as a Service (IaaS), Platform as a Service (PaaS),

Figure 1: Cloud Services

NoSQL Database Encryption and Security

Rapid NoSQL Database Adoption

Business industry and Enterprises rapidly adopting NoSQL databases due to growing amount of data (Big Data). It is very beneficial to organization to extract important as well as intelligent data.

Cybercriminals Target NoSQL Databases

As many popular enterprises like Amazon, Google ,eBay, Facebook, , LinkedIn, Mozilla, Netflix and Twitter are maintaining Big Data in their Databases therefore criminals are targeting these databases .

Security provision for Organizations

Organization which is maintained or stored their data using NoSQL must provide any other geographical security.

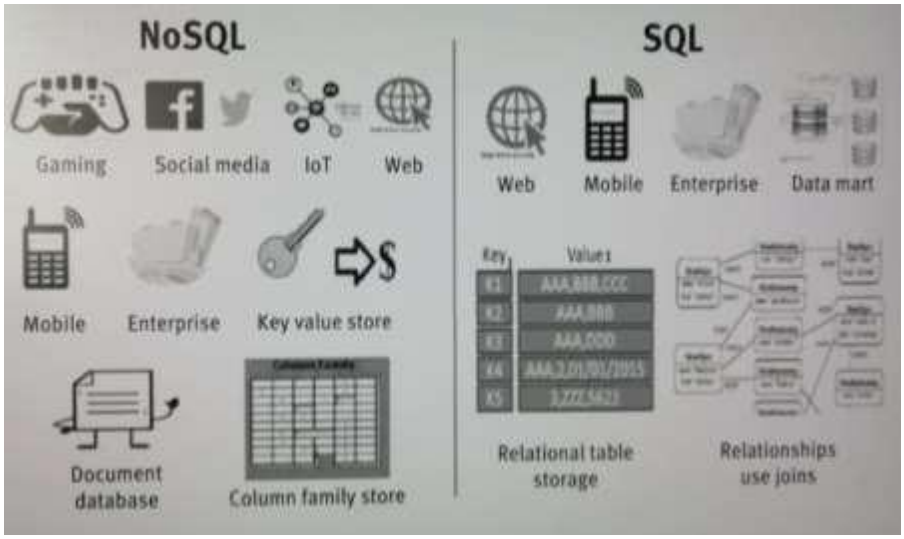


Figure 2: Difference between SQL and NoSQL

Following is the difference between SQL and NoSQL which works with structured and non-structured data simultaneously.

Characteristic	SQL	NoSQL
Data Storage	Information is stored in Table format. Each row contains data items.	Data is not stored in Table format. It is stored in different formats of databases as Text documents, graphs, etc.

Schemas	To alter Schema definition is very complex once table is created	Information can be changed easily as compared with relational databases
Scalability	Due to vertical scaling it is possible to scale A RDBMS across multiple servers and is time consuming.	Due to horizontal scaling More servers can be added to increase the performance.
Integrity Compliance	Existence of ACID properties	Nonexistence of ACID properties

Table 1. Differences between SQL and NoSQL

NoSQL query language:This query language is inspired by MongoDB.A query consists of these parts:
fields to be extractedtable to extract the records fromexpression for filtering the table rows
group by - fields to group the data underaggregate functions to be applied to columns in fields
order by - fields to order the return data bylimit - an integer number of records to return.

Document oriented Databases:
A document-oriented database or a NoSQL document store is a new way to store data in JSON format rather than simple rows and columns. It allows you to express data in its original form the way it's meant to be.With such problems faced by data-intensive and fast-moving organizations, new technology solutions were demanded and the answer is NoSQL Document Databases. In contrast to rows and columns, NoSQL databases keep data in documents. These documents follow a minimum of standard format rules. The format used could be JSON, XML, YAML, etc. The JSON format is the format of choice for NoSQL databases and good reason. A JSON document is simply more compressed, simple and readable

Conclusion:
Big Data processing can be done using NoSQL , massive amount of data available in the form of paragraph or in text documents . It is very difficult to sort and search useful data for accurate and concrete information. To store data is in encryption form is very essential.

References:
[1] SanehLata, Yadav , Asha Sohal," Big Data Analytics in Cloud Computing ",International Journal of Computer Trends and Technology (IJCTT) – Volume 49 Number 3 July 2017 ISSN: 2231-2803 http://www.ijcttjournal.org Page 156 .
[2] Samir A. El-Seoud, Hosam F. El-Sofany, Mohamed Abdelfattah, RehamMohamed,"Big Data and Cloud Computing: Trends and Challenges", https://doi.org/10.3991/ijim.v11i2.6561, iJIM – Vol. 11, No. 2, 2017.
[3] Hossain Shahriar1 ,Hisham M. Haddad2," Security Vulnerabilities of NoSQL and SQL Databases for MOOC Applications, International Journal of Digital Society (IJDS), Volume 8, Issue 1, March 2017.
[4] Gang Zeng," Big Data and Information Security",ISSN (e): 2250 – 3005 , Volume, 05 , Issue, 06 , June – 2015 ,International Journal of Computational Engineering Research (IJCER).
[5] Priyank Jain, Manasi Gyanchandani & NilayKhare," Big data privacy: a technological perspective and review",25 (2016) doi:10.1186/s40537-016-0059-y

[6] Christine Taylor, " Big Data Security", June 2017,https://www.datamation.com/big-data/big-data-security.html

Web-sites

1. https://www.thalesesecurity.com/solutions/use-case/data-security-and-encryption/database-security/nosql-encryption
2. https://wikibon.com/wikibons-2018-big-data-analytics-trends-forecast/

Dr. Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Internet of Things (IoT) in Hospitals of India: A Literature Review and Research Direction

Prof. Vaibhav Thakare #1, Dr. Manisha Kumbhar*2

[1]*Assistant Professor at Modern College of Arts, Science and Commerce, Pune-05,*

[2]*Professor at Sinhgad Insitute of Management,Pune,*

Abstract:

Internet of Things (IoT) gives us ability to convert real world objects into smart virtual objects. With these smart objects we get ability to collect continuous data, analyze it and respond according to situation and requirement. With emerging Cloud Services and Artificial Intelligence (AI) we get ability to create such object which can understand context and respond accordingly. IoT in healthcare sector can be a game changer. Hospitals in India are always under pressure to provide accurate, cost effective and efficient way to provide better diagnosis and services to vast array of patients. IoT assisted Resource Management can lead to cost effective and efficient Hospital Management System. IoT enabled Health Monitoring System can help to collect better data for diagnosis as well as timely treatment of diseases.This paper aims to study various aspects of Hospital Management System where use of IoT is applicable through extensive literature review. It also focus on aspects of IoT like architecture, environmental factors, efficiency and effectiveness. Further this study extended to includes use of Sensors, Network Technology, Artificial Intelligence and Cloud Computing along with IoT for efficient usage in hospitals in India.

Keywords- *Internet of Things (IoT), Resource Management, Health Monitoring System, Hospital Management System, Cloud Computing, Network Technology, Artificial Intelligence (AI).*

I. INTRODUCTION

Internet of Things (IoT) is network of object which extend the utility of existing objects, making it smarter and context aware. With help of IoT existing object gets ability to sense (collect data), process and response according to context and requirement. As name suggest, IoT technology uses internet to connect devices. As objects are connected to internet we get plenty of data to understand exact user requirement along with operating environment. With these details we can apply Artificial Intelligence (AI) and Cloud Computing to make smart object. We also get special capability to fine tune operation of device according to each user. That means same device can adapt to user behavior and requirement so that expected result can be generated. Most important thing is that all these operations will be done without human interference. For example an Air Conditioner (AC) manufacturer can design such IoT enabled AC that will be capable of adjusting setting automatically according to local weather. It will be also capable of understanding user requirement considering various factors like time of usage, temperature settings, etc.IoT can be very useful in hospitals. Hospital is stressful place especially in India. All staff is under continuous pressure to provide good service to vast array of patients. Cost of diagnosis and treatment is also high compared to average income of Indian family. IoT has capability to extend scope of diagnosis and treatment. There are various types of hospitals in India. They are categories according to specialization, size and management (Private, public and trust). There is need of understanding exact requirement of these hospitals and users of system.This paper aims to understand current IoT technology in depth, existing hospital management system and applicability of IoT to Indian context through extensive literature survey.

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

II. STUDY DESIGN

A. Context

Internet of Things (IoT) is one of the most important key technology of future.It is gaining huge attention from various Industries. GlobalData has forecast that Marketplace for IoT related will go behind dollar 96 billion (£ 74.2 billion bracket) in sales by 2023 in Asia specific(APAC) region, growing at CAGR of 22.4 percent between 2018 and 2023 [2].Along with manufacturer, various service industries are in process of adopting the IoT to increase profit through better service. It is also help them to become better market leader in their domain. The Tesla automobile is a big example of IoT and potential problems and benefit of this idea [3]. Healthcare industry is not also away from these advances. IoT has plenty of applications in Healthcare industry. The Accenture 2017 internet services says that almost 75% of Health Care executive says it will be disruptive within the next three years. First of all in these three areas: remote patient monitoring, Wellness and prevention, where health sensors and variables come into play. IoT will also play important role in managing health operation such as managing inventory is of medical supplies [4].

Indian Healthcare sector has experience Limited growth in recent years. The Healthcare space in India is positive towards accepting IoT along with factor that helps and facilitate IoT implementation in Healthcare. Along with favorable advances, there are also challenges in adopting IoT like a storing handling and safeguard of huge data.

B. Goal and Research Objectives

This paper AIMS at to understand IoT in general, architectural approach from implementation perspective, requirements, adoption challenges and application in Indian context. Considering various aspect following research questions has been formulated to have better understanding about use of IoT in Healthcare in India.

OB1. To study of IoT architecture.

OB2. To study where IoT is currently being used and how IoT does affects existing system.

OB3. To analyze various technologies used in IoT in healthcare sector.

OB4. To understand challenges in implementing IoT in hospitals especially in India.

OB5. To explore current scenario of hospital management system and IoT in India.

Research objective OB1 is an attempt to understand working of IoT. The aim involves to know literature available for various architectures of IoT used in various applications.

OB2 focused towards knowing application areas of IoT. It is important to know how IoT benefits according to applications. This question is also targeted to explore literature available to depict impact IoT has made over existing system.

OB3 refers to explore various sensor and network technologies involved in setting up IoT in healthcare. This question also tries to explore use of various technologies like cloud services and artificial intelligence (AI) for effective data storage and processing.

OB4 is concern about challenges in use of IoT in hospitals especially in Indian context. Speed of Internet, cost involve, maintenance, huge number of patients are the few factors which need to be studied for Indian environment.As goal of this research paper is to understand use of IoT hospitals.OB5 tries to take review of existing hospital management system in India. To know functional requirement of hospitals this question emphasizes on knowing current scenario of IoT in hospitals of India.

III. RESULTS AND DISCUSSION

In this section results extracted from the analyzed papers is shown in tabular format. For each research objective separate table is made to show key findings.

TABLE I. KEY ARCHITECTURAL FACTORS (OB1)

Key architectural factors
Five-layer architecture [6].
Generic architecture [7].
Ubiquitous IOT architecture: social organization framework [8].

Novel architecture model for IoT with the help of Semantic Fusion Model (SFM) [9].
Investigate, highlight, and report premier research advances made in IoT architecture recently [10].
Framework includes three layers: the sense layer, the gateway layer, and the control layer [11].

As one may notice from table I there are various architecture used for IoT. As IoT uses existing network of Internet basic working principle of communication remains same. Changes in architecture is depend upon what type of sensors are being used to collect data and what result need to produce. Few architecture suggests use of Fog and Cloud computing for data storage. Artificial intelligence is emerging as recent trend in data processing.

TABLE II. APPLICATIONS OF IOT (OB2)

Application
Smart City [12].
Automotive Industry [13].
Telecommunications Industry [14].
Medical and Healthcare Industry [15].
Ambient Assisted Living [16].
Pharmaceutical Industry [17].
Retail, Logistics and Supply Chain Management [18].
Manufacturing Industry [19].
Environment Monitoring [20].
Transportation Industry [21].

Table II for OB2 states various areas where IOT is being used. With this survey we came to know that there are various applications where IoT is been used. We can easily conclude from this survey that level of automation has been has been increased considerably with use of IoT.

TABLE III. **TECHNOLOGIES USED (OB3)**

Technologies used
FOG COMPUTING [22].
Wearable Sensors, Person Centered Healthcare, Mobile Health, Pervasive Healthcare [23].
RFID-enabled asset management [24].
Big Data [25].
Cloud Computing [26].
Fog computing [27].
Ambient intelligence, activity recognition, wearable sensors [28].
Body Sensor Network (BSN) [29].

Table III for OB3 analyzes key technologies used in setting up IoT enabled application. RFID, various sensors are used to collect data continuously. This data is being send continuously using internet. Technologies like cloud computing, fog computing is used for data storage. With Data analytics and Artificial intelligence smart application oriented result is generated in real time.

TABLE IV. **CHALLENGES WITH IOT (OB4)**

Challenges
Security, Loss of privacy, Trust [30].
Data management, scalability, regulations, interoperability, device–network–human interfaces, security and privacy [31].
To build cost-effective Health-IoT [32].
Change over phase from the legacy systems to IoT enabled systems, Scalability, Fault tolerance

and Power supply [33].

Despite of many advantages there are few challenges in adopting IoT. Table IV for OB4 depicts various challenges like security, trust and privacy. IoT generates huge data. Data management is quite challenging with continuous data getting streamed. When we discussed implementation of IoT in Indian context it has to be cost effective. Especially while designing IoT infrastructure for hospitals cost of sensors due to standardization is quite high. In case hospitals reliability is also important issue.

TABLE V. **SCENARIO OF HOSPITALS AND IOT IN INDIA (OB5)**

Indian Perspective
Smart Disease Surveillance [34].
BioMedical Sensors [35].
Mobile E-care Health Services [36].
Real Time U-Healthcare Monitoring [37].

An Indian perspective of IoT and hospital is targeted with question OB5. Currently various research paper are published discussing various applications of IoT in hospitals of India. Most of published work talks about proposed work. There is very less or no research paper discussing about full scale implementation of IoT in Hospitals.

IV. CONCLUSION AND FUTURE WORK

IoT is being used in various applications. With emerging technology like 5G, real time communication between devices without human interference is practical thing today. IoT enhances usability of existing objects. Upcoming technologies like artificial intelligence plays vital role in IoT. With plenty of advantages, issues like security, privacy and cost effectiveness need to be addressed for successful adoption. Although IoT is being used in few applications of Hospitals in developed countries, India is in infant stage for adoption of IoT in India.

To address inadequate use of IoT in hospitals of India. our future work will be to study reasons behind it. This study will involve various factors like availability of sensors, usability, reliability, internet bandwidth, cost, maintenance, etc. Expectations of various stakeholders like Doctors, patients and other hospitals staff also need to be considered.

REFERENCES

[1] Xia, F., Yang, L. T., Wang, L., &Vinel, A. (2012). Internet of things. International Journal of Communication Systems, 25(9), 1101.

[2] "IoT-related services revenue in APAC to hit $96bn by 2023, says GlobalData" .https://www.iottechnews.com/news/2019/dec/04/iot-related-services-revenue-apac-hit-96bn-2023-says-globaldata/

[3] "The Tesla IoTCar : Case Study". https://blogmitcnc.org/2014/08/21/the-tesla-iot-car-case-study/

[4] "Accenture 2017 Internet of Health Things Survey" https://www.accenture.com/t20170215T191150__w__/us-en/_acnmedia/PDF-42/Accenture-Health-2017-Internet-of-Health-Things-Survey.pdf

[5] "Internet of Healthcare Things' in India: Changing the landscape" http://www.optum.in/thought-leadership/library/internet-healthcare-things.html

[6] Wu, M., Lu, T. J., Ling, F. Y., Sun, J., & Du, H. Y. (2010, August). Research on the architecture of Internet of Things. In 2010 3rd International Conference on Advanced Computer Theory and Engineering (ICACTE) (Vol. 5, pp. V5-484). IEEE.

[7] Khan, R., Khan, S. U., Zaheer, R., & Khan, S. (2012, December). Future internet: the internet of things architecture, possible applications and key challenges. In 2012 10th international conference on frontiers of information technology (pp. 257-260). IEEE.

[8] Ning, H., & Wang, Z. (2011). Future internet of things architecture: like mankind neural system or social organization framework?. IEEE Communications Letters, 15(4), 461-463.

[9] Singh, D., Tripathi, G., &Jara, A. J. (2014, March). A survey of Internet-of-Things: Future vision, architecture, challenges and services. In 2014 IEEE world forum on Internet of Things (WF-IoT) (pp. 287-292). IEEE.

[10] Yaqoob, I., Ahmed, E., Hashem, I. A. T., Ahmed, A. I. A., Gani, A., Imran, M., &Guizani, M. (2017). Internet of things architecture: Recent advances, taxonomy, requirements, and open challenges. IEEE wireless communications, 24(3), 10-16.

[11] Wang, K., Wang, Y., Sun, Y., Guo, S., & Wu, J. (2016). Green industrial Internet of Things architecture: An energy-efficient perspective. IEEE Communications Magazine, 54(12), 48-54.

[12] Zanella, A., Bui, N., Castellani, A., Vangelista, L., &Zorzi, M. (2014). Internet of things for smart cities. IEEE Internet of Things journal, 1(1), 22-32.

[13] Kirk, R. (2015). Cars of the future: the Internet of Things in the automotive industry. Network Security, 2015(9), 16-18.

[14] Wollschlaeger, M., Sauter, T., &Jasperneite, J. (2017). The future of industrial communication: Automation networks in the era of the internet of things and industry 4.0. IEEE industrial electronics magazine, 11(1), 17-27.

[15] Turcu, C. E., &Turcu, C. O. (2013). Internet of things as key enabler for sustainable healthcare delivery. Procedia-Social and Behavioral Sciences, 73, 251-256.

[16] Dohr, A., Modre-Opsrian, R., Drobics, M., Hayn, D., &Schreier, G. (2010, April). The internet of things for ambient assisted living. In 2010 seventh international conference on information technology: new generations (pp. 804-809). Ieee.

[17] Liu, L., &Jia, W. (2010, September). Business model for drug supply chain based on the internet of things. In 2010 2nd IEEE InternationalConference on Network Infrastructure and Digital Content (pp. 982-986). IEEE.

[18] Tu, M. (2018). An exploratory study of Internet of Things (IoT) adoption intention in logistics and supply chain management: A mixed research approach. The International Journal of Logistics Management, 29(1), 131-151.

[19] Yang, C., Shen, W., & Wang, X. (2016, May). Applications of Internet of Things in manufacturing. In 2016 IEEE 20th International Conference on Computer Supported Cooperative Work in Design (CSCWD) (pp. 670-675). IEEE.

[20] Berlian, M. H., Sahputra, T. E. R., Ardi, B. J. W., Dzatmika, L. W., Besari, A. R. A., Sudibyo, R. W., &Sukaridhoto, S. (2016, September). Design and implementation of smart environment monitoring and analytics in real-time system framework based on internet of underwater things and big data. In 2016 International Electronics Symposium (IES) (pp. 403-408). IEEE.

[21] Chunli, L. (2012, April). Intelligent transportation based on the Internet of Things. In 2012 2nd International Conference on Consumer Electronics, Communications and Networks (CECNet) (pp. 360-362). IEEE.

[22] Maksimović, M. (2018). Implementation of Fog computing in IoT-based healthcare system. Jita-Journal Of Information Technology And Aplications, 14(2).

[23] Hiremath, S., Yang, G., &Mankodiya, K. (2014, November). Wearable Internet of Things: Concept, architectural components and promises for person-centered healthcare. In 2014 4th International Conference on Wireless Mobile Communication and Healthcare-

Transforming Healthcare Through Innovations in Mobile and Wireless Technologies (MOBIHEALTH) (pp. 304-307). IEEE.

[24] Wamba, S. F., & Ngai, E. W. (2013). Internet of Things in healthcare: the case of RFID-enabled asset management. International Journal of Biomedical Engineering and Technology 45, 11(3), 318-335.

[25] Dimitrov, D. V. (2016). Medical internet of things and big data in healthcare. Healthcare informatics research, 22(3), 156-163.

[26] Tyagi, S., Agarwal, A., &Maheshwari, P. (2016, January). A conceptual framework for IoT-based healthcare system using cloud computing. In 2016 6th International Conference-Cloud System and Big Data Engineering (Confluence) (pp. 503-507). IEEE.

[27] Rahmani, A. M., Gia, T. N., Negash, B., Anzanpour, A., Azimi, I., Jiang, M., &Liljeberg, P. (2018). Exploiting smart e-Health gateways at the edge of healthcare Internet-of-Things: A fog computing approach. Future Generation Computer Systems, 78, 641-658.

[28] Aouedi, O., Tobji, M. A. B., & Abraham, A. (2018). Internet of Things and Ambient Intelligence for Mobile Health Monitoring: A Review of a Decade of Research. Int J ComputInfSystIndManagAppl, 10, 261-270.

[29] Gope, P., & Hwang, T. (2015). BSN-Care: A secure IoT-based modern healthcare system using body sensor network. IEEE Sensors Journal, 16(5), 1368-1376.

[30] Laplante, P. A., &Laplante, N. (2016). The internet of things in healthcare: Potential applications and challenges. It Professional, 18(3), 2-4.

[31] Farahani, B., Firouzi, F., Chang, V., Badaroglu, M., Constant, N., &Mankodiya, K. (2018). Towards fog-driven IoTeHealth: Promises and challenges of IoT in medicine and healthcare. Future Generation Computer Systems, 78, 659-676.

[32] Fernandez, F., &Pallis, G. C. (2014, November). Opportunities and challenges of the Internet of Things for healthcare: Systems engineering perspective. In 2014 4th International Conference on Wireless Mobile Communication and Healthcare-Transforming Healthcare Through Innovations in Mobile and Wireless Technologies (MOBIHEALTH) (pp. 263-266). IEEE.

[33] Yadav, E. P., Mittal, E. A., &Yadav, H. (2018, February). IoT: Challenges and issues in Indian perspective. In 2018 3rd International Conference On Internet of Things: Smart Innovation and Usages (IoT-SIU) (pp. 1-5). IEEE.

[34] Mathew, A., SA, F. A., Pooja, H. R., & Verma, A. (2015). Smart disease surveillance based on Internet of Things (IoT). International Journal of Advanced Research in Computer and Communication Engineering, 4(5), 180-183.

[35] Salunke, P., & Nerkar, R. (2017). IoT driven healthcare system for remote monitoring of patients. International journal for modern trends in science and technology, 3(6), 100-3.

[36] Singh, R. (2016). A proposal for mobile e-care health service system using IoT for Indian scenario. Journal of Network Communications and Emerging Technologies (JNCET), 6(1).

[37] Nandyala, C. S., & Kim, H. K. (2016). From cloud to fog and IoT-based real-time U-healthcare monitoring for smart homes and hospitals. International Journal of Smart Home, 10(2), 187-196.

Dr. Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

A Comparative Study of IT Applications in Maharashtra, Gujarat and Andhra Pradesh State Road Transport Corporations

Pandurang S. Raut #1, Dr. Manisha Kumbhar*2

[1]*Manager IT at Maharashtra State Road Transport Corporation, Mumbai-08,*

[2]*Professor at Sinhgad Insitute of Management,Pune,*

Abstract:

State Road Transport corporations in India are adopting Information and Communications Technology in its administrative and operational processes. Various IT applications like Electronic Ticket Issue Machines (ETIM), Online Reservation systems (ORS), GPS/GSM based vehicle tracking Systems (VTS), Passenger information System (PIS), Digital Payment Systems, Enterprise Resource Planning (ERP), etc. are available to improve the efficiency and reliability of state road transport corporations. The objective of this paper is to do comparative study of IT applications implemented in Maharashtra, Gujarat and Andhra Pradesh State Road Transport corporations. This paper covers the IT initiative taken by the MSRTC, GSRTC and APSRTC in last two decades in its administrative and operational processes. The major outcome of this research is helpful to find out the gap of IT application used in SRTC and to improve the services of other SRTC by using IT application.

Keywords-*Information and Communications Technology, State Road Transport Corporation, Electronic Ticket Issue Machines (ETIM), Online Reservation systems, vehicle tracking Systems(VTS), Digital Payment Systems*.

1. INTRODUCTION

Public Road transport is the backbone of passenger transport in India. To provide the efficient transport services to the passengers, State Road Transport Corporations (SRTCs) are formed under the state Road Transport Act, 1950. The main aim of State Road transport corporations are to provide safe, reliable, courteous, economic and environment friendly services to the commuters. "Association of State Road Transport Undertakings (ASRTU)" came into existence on 13th August, 1965 to bring together all the state road transport on a common platform with the aim of pooling their resources and knowhow for dealing with various problems faced by them and help them to improve their performance. The Indian Ministry of Road Transport and Highway (MoRTH) controls the ASRTU functions with help of Central Institute of Road Transport (CIRT). In India 24 State Road Transport Corporations (SRTC) are working to provide bus transport services state wise. In the non-urban sector alone, the SRTC's performed about 12.6 billion bus kilometers carrying a total of 477.50 billion passenger kilometers of service. The Ministry of Road Transport and Highway (MORTH) provides the funding from 15.03.2010 for State Road Transport Corporations (SRTC) to strengthen the public transports through implementation of IT projects such as Electronics Ticket Issue Machines (ETIM), Computerized Reservation System and Automatic fare collection system, GPS / GPRS / GSM based Vehicle Tracking Systems and Passenger Information Systems (VTS & PIS), Inter-modal fare integration, Digital payments in transportation etc. To provide faster, more efficient, and passenger friendly public transport services to the passengers use of Information Technology applications is become essential.

2. Literature Review

Literature review is a comprehensive summary of previous research on a topic selected for current research. In this study literature review includes previous research papers published in the various journals, conferences, annual statutory reports of public transport bodies, census data collected by various government organizations such as ASRTU, CIRT, MORTH, websites of public transport departments, etc.

The empirical study of Manoj Kumar, Vikas Anand and Anup Srivastava in (2015) reported that the passengers are not satisfied with service quality provided by UPSRTC. The research pointed out various fifteen attributes of services and measures the satisfaction level of passengers of UPSRTC. Authors also suggested that as a public transport facility provider UPSRTC needs to take strategic decision for use of ITS applications to improve the quality of service.

Sarah J. Siwek & Associates prepared a report in 2016 for Federal Highway Administration U.S. Department of Transportation Washington, D.C. 20590 which describes the importance of implementation of ITS technologies which provides opportunities to improve the operation and management of the transportation system.IT application helps to handles new challenges for transportation decision makers.

In similar kind of study Todd Litman of Victoria Transport Policy Institute (Oct 2019) describes best practices to increase system efficiency to optimize transit benefits. Through analysis of various transit related costs he discussed the advantages and disadvantages of transit options.

Rusul Abduljabbar , Hussein Dia, Sohani Liyanage and Saeed Asadi Bagloee (Jan 2019) in their study discussed that the development in Artificial Intelligence and its applications in public Transport. They describes opportunity to increases the performance of various industries and businesses using AI and how to deal with various transport related problems.

Grant Thorton report on Smart Transportation - transforming Indian cities (2016) describes reforms in transport sector and its development in India. Indian Public road transport facing challenges of Inadequate and inefficient public transport infrastructure, inadequately implemented Intelligent Transport Systems (ITS).Growing economy and Rapid urbanization needs to strengthen the public transportation.

Delhi Integrated Multi-Modal Transit Systems – DIMTS report (July 2016) on Roadmap for improving City Bus Systems in India identifies the gap in use of Information and Communication Technology (ICT). They define area of technology intervention and suggest action plan to implementation of CCTV, GPS, PIS, ETMs, etc.

In the review of the performance of State Road Transport Undertaking (SRTU) for April 2015- March 2016, done by the Ministry of Road Transport and Highway (MORTH) stated that many of the State Road Transport Undertaking adopted Information Technology to enhance the overall performance and for efficient management.

3. Objectives of the study

The aim of this study is to determine the level of IT applications used in Maharashtra, Gujarat and Andhra Pradesh State Road Transport Corporations. The following are the main objective of the study:

- To study the present status of IT application used in SRTC.
- To analyze the functioning of IT application used in SRTC.

4. Research Methodology

In order to analyze the research objective, data was collected from primary as well as secondary sources. Primary sources are the questionnaire based survey method; personnel interview, etc. are considered. For the secondary data major sources of study are State Road Transport Corporations websites, performance reports of ASRTU, Statutory report of MORTH and CIRT etc. are considered.

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Besides this various journals, related websites, newspaper articles, books, working papers, thesis reports etc. are used as supplement for the study.

5. Sample Selection and data collection

Purposive sampling techniques are used for selection of samples from State Road Transport Corporations. Samples were selected as representative of all operational units as well as monitoring and controlling unit of selected State Road Transport Corporations.
Field survey was conducted at various operational units of selected state road transport corporations through questionnaires for collection of data. Also personnel interviews of Chief Technical Officers (CTO) and IT application users such as computer operators, commuters, administrative users, decision makers (Top level Management), etc. was conducted.

6. Analysis of the Data

Selected State Road Transport Corporations with their characteristics are given below.

Sr. No.	Parameter	Maharashtra State Road Transport Corporation (MSRTC)	Andhra Pradesh State Road Transport Corporation (APSRTC)	Gujarat State Road Transport Corporation (GSRTC)
1	Establishment	29th November 1973	11th January 1958	01st May 1960
2	Head Office	Mumbai	Vijayawada	Ahmadabad
3	No. of Buses	18449	11763	8086
4	No. of Depots	250	128	125
5	No. of Employees	1,02,000	56592	39795
6	No. of Passengers per Year (2017-18)	2412 Million	2390 Million	719 Million

(Source: https://www.asrtu.org/ accessed on 06.01.2020)

IT Applications used in above SRTC are broadly categorize in following two parts:

A. Public service applications:-Public service applications are developed for general purpose to provide regular passenger services for the commuters. It helps organization to provide user friendly, reliable, economical services like online ticket reservation, cancelation, bus route information, bus time table, bus live tracking, marketing offers, bus passes, various types of concessions for passenger by using advances technology such as Information technology (IT), Intelligent transport System (ITS), Vehicle tracking system (VTS & PIS), etc.
The analysis of data collected from various resources is given below.

a) Websites for public information with online ticket reservation

As in the digital age website for any organization is very prime need. Especially in service industry the quality of website and information availability is major concern. State Road Transport Corporations take initiatives to develop a commercial website which provides information's as well as basic services such as ticket booking, Ticket cancellation, etc.

Website	MSRTC	APSRTC	GSRTC
URL	https://msrtc.maharashtra.gov.in/	https://www.apsrtconline.in/oprs-web/	https://gsrtc.in/site/
Managed By	MSRTC and Trimax	Abhibus	GSRTC

Last updated on	13.01.2020	N/A	06.11.2019
Type of Website	Dynamic	Dynamic	Dynamic
Visitors Count	3135	N/A	89,678,956
Social Media Links	Face book, Twitter	N/A	Face book, Twitter
Features included	Online Ticket Booking, Ticket Cancelation, Bus Time Table	Online Ticket Booking, Ticket Cancelation, Bus Live tracking, Bus Time Table	Online Ticket Booking, Ticket Cancelation, Bus Time Table, Bus Live tracking, Bus Hire(CC), Bus Pass
Remark/Observation		Ticket Booking Agent, Helpdesk, e-Wallet,	Helpdesk, Phone booking, Ticket Booking Agent, Wallet Services

b) Android based Mobile Applications for passengers service:-

For promotion of passenger services and to reach upto the every passenger, mobile application is esiest and economical option avilable for SRTC. Through Android based Mobile Applications various services such as ticket reservation, ticket cancelation, bus live tracking, Bus time table and route information are avilable for passengers.

Mobile App	MSRTC	APSRTC	GSRTC
Technology	Android	Android	Android
Released on	16.06.2016	02.06.2016	01.03.2017
Last Updated on	26.12.2019	17.11.2019	02.01.2020
Current Version	1.29	1.9.2	4.6
App download Size	13.70 MB	4.84 MB	5.37 MB
No. of Downloads	1Million +	1Million +	1 million +
No. of reviews	6027	9615	6515
Star Rating	2.9	3.6	3.8
Features included	Online Ticket Booking, Ticket Cancelation, Bus Time Table	Online Ticket Booking, Ticket Cancelation, e-Wallet, Bus Live tracking, Bus Time Table	Online Ticket Booking, Ticket Cancelation, Bus Time Table, Bus Live tracking, Bus Hire(CC), Bus Passes, vehicles on route
Remark/Observation			

(Sources: - Google play store accessed on 12.01.2020)

c) Real Time Bus Monitoring and Passenger Information Systems,

To track the buses on route and to provide passenger information system through LCD/LED screen and on mobile GPS/GPRS based real time bus monitoring system are in use.

Real Time Bus Monitoring System by using GPS/GPRS	MSRTC	APSRTC	GSRTC
No. of buses with Vehicle tracking device	3500	11763	7467
Percentage of total buses	15%	100%	100%
Bus tracking App for passenger	No	Yes	Yes
Track Bus	No	Yes	Yes
Vehicle on route	No	Yes	Yes
Emergency call option	No	Yes	No
SMS service	No	Yes	Yes

B. Administrative service applications: - Administrative service applications are used to standardize the internal processes of State Road Transport Corporation such as Inventory Management, Human Resource Management, Workshop Management, Finance Management, Duty Allocation, Scheduling, Planning and Marketing, etc. Using these applications the efficiency, accuracy, utilization of resources increases in SRTC. These type of IT application helps to improve profitability of organization. The analysis of basic IT applications is given bellow:

IT Application	MSRTC	APSRTC	GSRTC
Electronics Ticket Issue Machines (ETIM)	YES	YES	YES
Integrated Depot Management System	NO	YES	YES
E-office with scanning and Digitization	YES	NO	NO
Online Human resource Management system (Recruitment, Payroll, Leave Management etc.)	NO	YES	NO
Crew duty scheduling system (For duty allocation)	YES	YES	NO
Automated Driver Testing Track System	YES	NO	YES
Enterprise Resource Planning (ERP)	NO	NO	NO

7. Result and Discussion

Inline to the objectives of the study, it is find out that the IT applications implemented and used in Maharashtra, Gujarat and Andhra Pradesh State Road Transport Corporations are working on various technologies and provides services to the passengers with different capabilities. MSRTC and GSRTC may take attention toward the implementation and use of IT applications for administrative functionalities.

8. Scope of the study

The information generated from these results of the study is useful for improvement of IT infrastructure and take advantages emerging technology in state road transport corporations to achieve the organizational goals such as economic passenger services and passenger satisfaction. The result can be used by SRTC to make improvement in the quality of services being offered to the passengers in the state.

9. Limitation of the Study

The study is limited by scope of IT applications used in Maharashtra, Gujarat and Andhra Pradesh state road transports corporations in India. This study further can be extended to security threats occurred in IT applications and secure the all IT assets from cyber security threats. The study can be also extended to other members of ASRTU such as City transport, private transport operators, etc.

10. Conclusion and Suggestion

State Road Transport Corporations are striving to use IT applications to support business processes: such as ticketing and payments become cashless, planning and maintenance are supported by electronic tools, passenger information is provided online, ready to be accessed wherever and whenever. In order to be more efficient and customer friendly, MSRTC, GSRTC and APSRTC needs to take initiatives in research and development of IT applications which helps to provide economical and efficient road transport services to the commuters of that specific region.

11. REFERENCES

[1] Lelitha Vanajakshi, Gitakrushnan Ramadurai, Asha Anand, “Intelligent Transportaion Systems Synthesis Report on ITS including Issues and Challenges in India ,”, Centre of Excelence in Urban Transport, IIT Madras, pp. 43–53, December 2010. (references)

[2] Sarah J. Siwek & Associates," Transportation Planning and ITS: Putting the Pieces Together" Prepared for Federal Highway Administration U.S. Department of Transportation Washington, D.C. 20590M., 2016.

[3] M. Absar Alam and Faisal Ahmed," URBAN TRANSPORT SYSTEMS AND CONGESTION: A CASE STUDY OF INDIAN CITIES" Transport and Communications Bulletin for Asia and the Pacific Vol.No. 82, 2013.

[4] Manoj Kumar, Vikas Anand, Anup Srivastav, "Public Transport Service Quality and Passenger Satisfaction: A Case of UPSRTC, Agra, India" Pacific Business Review International, Volume 8, Issue 11, May 2016.

[5] Todd Litman, Victoria Transport Policy Institute " Evaluating Public Transit Benefits and Costs Best Practices Guidebook" 27 October 2019.

[6] Grant Thorton report on Smart Transportation - transforming Indian cities, Transportation sector reforms and developments in India" (May 2016).

[7] Delhi Integrated Multi-Modal Transit Systems – DIMTS report (July 2016).

[8] Review report of the performance of State Road Transport Undertaking (SRTU) for April 2015- March 2016.

[9] Annual Administrative Report- 2015-16 of Maharashtra State Road Transport Corporation. 2016.

[10] Best Practices Manual of State Road Transport Undertakings by ASRTU 2017.

[11] IT Act 2000 andInformation Technology (Amendment) Act, 2008” of Government of India.

[12] Sanjay Kumar Singh, "Urban Transport in India: Issues, Challenges, and the Way Forward" European Transport \ Trasporti Europei (2012) Issue 52, Paper n° 5, ISSN 1825-3997.

Websites

1. Official websites of ASRTU http://www.asrtu.org/ accessed on December, 02, 2019
2. APSRTC http://apsrtc.ap.gov.in, accessed on December, 13, 2019
3. UPSRTChttp://www.upsrtc.com/. accessed on January, 02, 2020
4. MSRTC https://msrtc.maharashtra.gov.in/. accessed on January, 02, 2020
5. http://morth.nic.in/ Government of India.
6. http://www.uitp.org/cyber-security-public-transport/
7. http://planningcommission.nic.in/reports/genrep/NTDPC_Vol_01.pdf/

Dr.Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Journey of Serverless Computing

Mr. Amrendra Kumar Ajay[#1], Dr. Manisha Anil Kumbhar[*2]

[#1] MCA Department [#2] MCA Department
Sinhgad Institute of Management, Pune, India

Abstract:
Serverless computing is modal of cloud computing in which developer writes the code and deploy them on fully managed infrastructure, without worrying about the underlying layers of cloud. The journey of serverless computing began within the journey to cloud computing. Rapid growth in demand of cloud computing services and complexity in managing cloud server had triggered the continuous innovation and invention in the cloud infrastructure & cloud platform management system. After the cloud computing got its popularity around the year 2006-2008, companies and enterprises started switching for their on premises hardware to cloud based pay per use hardware and/or moving their server into datacenter called colocation. It was a time, when the journey towards today's modern serverless computing began, and has reached the stage, where cloud service providers are able to provide serverless computing in the form of Function as a Service(FaaS) by integrating the Infrastructure as a Service(IaaS) and Platform as a Service (PaaS) through highly efficient software like virtualization, docker, Kubernetes, Knative etc. Serverless computing is the latest development in the area of cloud computing, which allow the application developer to use FaaS. During my initial study I found that, It was an amazing journey of serverless computing since the evolution of cloud computing, and it has deeply affected the software development & deployment trends by allowing the application developer to focus more on implementaion of business logic.

Keywords*: Serverless computing, Cloud Computing, FaaS, Virtualization, Docker, Kubernets*

I. INTRODUCTION

Serverless computing is the recent development in the world of cloud computing. It allows the develops to write and deploy their code without worrying about underlying infrastructure. The term 'serverless' is somewhat misleading, as there are still servers providing these backend services, but all of the server space and infrastructure concerns are handled by the vendor. Serverless computing allows developers to purchase backend services on a flexible 'pay-as-you-go' basis, meaning that developers only have to pay for the services they consume. Backend is the part that the end user doesn't see; this includes the server or servers where the application's files & databases, user data and business logics are stored. A modern cloud based application may be composed of tons of *aaS like Authentication as a Service(Auth aaS), Storage as a Service (Storage aaS), Database as a Service (DB aaS), Backup as a Service (Backup aaS) and so on. Todays modern cloud computing service providers like google, amazon, IBM, Digital Ocean etc are providing fully automated resource allocation based on clients requirement without any human intervention. They are providing the solution that ensures automatically scale up of resources when server receives the high volume of traffic in peak hours, and scales it down upto zero instance, when there is no traffic received on server, and bills the client only for those exact resource usage, ie the actual amount of time and duration the resources were utilized by the client's VM was running and consumed resources. Today, the modern cloud based application are almost independent from the server hardware on which it is running, as it runs in VMs or containers, which can be copied or replicated easily on other server hardware without needing a total reinstall. IaaS and PaaS are getting combined by cloud service providers in a single bundle, and being made available as a ready to deploy environment for developers and software development companies. It allows them to focus more on their software development activities rather than managing PaaS. Modern cloud computing is providing a true sense of replica of human society, where

work is divided among communities. Each community produces the things in which they are specialised in, and consumes the things produced by others. A true modern cloud based application usage lots of cloud based services like Storage as a Service, Database as a Service, Authentication as a Service, Backup as a Service and so on. It allows the developer to develop the application faster by integrating the readily available cloud services using their API, and pay as per their utilization. Hence the developer can focus only on implementation of business logic rather than wasting their precious time on development of common software components like authentication, storage, backups, security etc. It has become possible only due to the availability of cloud computing ecosystem and its continuous improvements

This study is focused on the changing roles and responsibility of cloud based application developers during the journey of serverless computing. From the purpose of my study, I have divided this entire journey into three phases - 1)Era of Pre-Cloud Computing 2)Era of Cloud computing and 3) Modern era of cloud computing with serverless computing.

II. ERA OF PRE-CLOUD COMPUTING

A. Standalone Computing

In the era of Standalone Computing, developers develops the software and creates installable package which contains all the necessary dependencies to run the software and end user's machine.

1) Advantages :Automation of manual work reduced operational error and fast processing. Storage of data become compact compare to same in paper form, and make them easy to carry from one place to another place, duplicate them to backup easily.

2) Limitations : Upgrade and Maintenance of the software requires almost reinstallation of entire system.Data storage and execution environment is on the same system and strongly coupled.Continuous backup and reliable data protection mechanism is very very difficult to apply and achieve. So transactional data that the user creates during the usage of software are always at risk. Over-provisioning and Under-provisioning of hardware resources for the system. It is practically impossible to allocate the exact amount of hardware resources for the system as per changing demand of application over time

3) Developer's Responsibility : Write the source code of entire application, Installation and configuration of operating system, Installation and configuration of (deployment environment) necessary softwares like - libraries, interpreter etc to run the application

B. Client-Server Computing (2-tier, 3-tier, n-tier computing):

During the era of centralized Computing, entire software application is coded in two parts - server software and client server. Client software is installed on each users computer and provides the interface to user to interact with software. To fulfill the users request, client software communicates with server software to fulfill the users request. User data can be now stored on same server or on another server to store data only. Although it gives many advantages over standalone Computing but there are many limitations too. Below are the major points

1) Advantages : Upgrade and maintenance of software becomes easier for server software. Data security and backups becomes easier and all the transactional data is stored on centralized server. Majority of computer excluding to run server software may be of low powered resources

2) Limitations : Upgrade and maintenance requires almost reinstallation of system. In case of upgradation of client software, it requires reinstallation on each client system. Problem of Over-provisioning and under-provisioning of hardware resources are still their for server computer

3) Developer's Responsibilities : Write the source code of entire application. Installation and configuration of operating system. Installation and configuration of (deployment environment) necessary softwares like - libraries, interpreter etc to run the application.

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

C. Centralised Computing:

It was the era of 1950s when IBM introduced mainframe computer. The mainframe computing allows multiple users to access a central server using dump terminals, it is the true foundation concept of today's modern cloud computing. Due to the high cost of Mainframe computer server, it was not practical for many business organizations even today, and hence it never got generalized for public access. Around the year 1970 telecommunication companies started Virtual Private Network(VPN) that can be considered as first intercommunication network formed for resource sharing over network. The Advanced Research Projects Agency Network (ARPANET) was the first network to implement the TCP/IP protocol suite. These two technologies later became the technical foundation of modern Internet. Internet is the foundation of cloud computing.

1) Advantages : Upgrade and maintenance of software becomes easier, upgradation and maintenance activity is required to be performed only on server. Data security and backups becomes easier and all the transactional data is stored on a centralized server. Dump terminals consumes very low power and has very low configuration as it is not doing any kind of processing.

2) Limitations : High operational and purchase of cost of mainframe server and terminals. Requires dedicated engineer to maintain the system and network infrastructure. Backups are stored at physically same location, which is a major risk in case of disasters.

3) Developer's Responsibilites : Write the source code of entire application. Installation and configuration of operating system. Installation and configuration of (deployment environment) necessary softwares like - libraries, interpreter etc to run the application

D. Web based Computing or foundation to cloud computing:

Web based Computing is computing model in which client doesn't require special installation, it just needs a web browser. Entire code resides in server and application is accessed through a special software called webserver. Now software application is accessed through web browser at client computer. This Computing architecture has overcome many of the limitations of standalone computing, client-server Computing, and centralised computing.

1) Advantages : Upgradation and maintenance of software becomes more easier. All the upgrade and maintenance is done on a single system or on web server. Data security and backups becomes easier and all the transactional data is stored on a centralized server. Server can be controlled using web based admin panel from any client computer.

2) Limitations : Web Browsers has their major role in using web based software. Due to differences in web browsers, the software execution environment may differ from computer to computer and browser to browser. Backups of data resides in same physical machine or geolocation. It is still not safe against theft and physical damage to human or natural disasters. Poor resource allocation and utilization : Problem of Over-provisioning and under-provisioning of hardware resources are still their for server computer.

3) Developer's Responsibilities:

Write the source code of entire application. Installation and configuration of operating system. Installation and configuration of (deployment environment) necessary softwares like - libraries, interpreter etc to run the application

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

III. CLOUD COMPUTING (THE SEPARATION OF RESPONSIBILITIES THROUGH IAAS, PAAS, SAAS) :

Fig-1 : Journey of Mainframe to Cloud computing
(Image Source : computer.org)

A. Cloud Computing (With Virtualization)

Conceptualization of cloud computing is said to have its origin in the year 1950-60 with the invention of mainframe computing allows multiple users to access a central server using dump terminals. But, the real journey of modern cloud computing began only after the virtualization software came in existence in the year 1999. VMware introduced the first x86 virtualization product, VMware Virtual Platform. Virtualization software made it possible to consolidate and manage cloud infrastructure & computing resources dynamically. Virtualization allows a single physical server to run multiple Virtual Machines(VMs) in almost isolated execution environment like they are running on independent hardware machines. Resources like RAM, CPU, HDD, IP etc can be allocated and deallocated dynamically through hypervisor software upto the capacity of physical server. Hypervisors are software that sits in between server hardware and Virtual Machines and provides an execution environment to the VMs to run virtual OS. During the year 2006-2008 big companies like Amazon, Google, IBM etc looked it as an emerging future market, started offering public cloud services.

Cloud Computing is a web based Computing in which the servers are managed through special server management software called hypervisor. There is a server management layer that resides between the hardware and operating system. Major differences of cloud computing with respect to the above computing modal is about the provisioning and utilization of resources and it's cost. Resources required to run the software can be now rented instead of buying them for. It provides flexibility for the developers community to outsource the server management related activities. Such resources can be scaled up or down based on their changing needs quickly, just on click through cloud servers management softwares. Developers have choice to choose managed as well as self-managed servers as per their project needs and team expertise. To make optimum utilization of hardware resources at Data center, virtualization was like a gift to the cloud computing community. By using virtualization, a single physical server can run fully or partly isolated servers known as virtual machine (VM). Resources like RAM, CPU, HDD etc of the VMs can be controlled through software. A VM can be allotted the resources up to the maximum capacity of the physical server on which the VM is running.

Cloud computing provided the choice to user about what to manage and what to outsource to vendor. Depending upon the users requirement they have choice to select from 3 broad cloud layers - Infrastructure as a Service(IaaS), Platform as a Service (PaaS) or Software as a Service (SaaS). From the developers point of view they have choice between IaaS and PaaS to choose from. They are now free from the headache of hardware and network provisioning, configuration and maintenance.

1) Advantages : Upgradation and maintenance of software becomes easy. Developer can upgrade system from remote location using internet. Backups and data security becomes easier. Off-site backups can be configured. Downtime during the upgradation and maintenance of the software was reduced further. Utilization of hardware resources of the data center increase. Backups and data security becomes easier. Off-site backups can be configured. Entire VM can be now backups and restored on new physical server directly, without the need of reinstallation and configuration of software environment. It can be directly restored and run.

2) Limitations : Need of very reliable internet connection at both ends, ie at client computer as well as at Data center. Virtualization is an Operating System (OS) running on top of an Operating System (OS). Hence although it's better utilization of resources compared to earlier one, but it is very resource hungry System. In case of crashing of VM, new VM can be spined up from the backup along with all the user or business data that was there till the time of last VM backups but still it was not 100% reliable from data loss. So, along with the periodic backups, separate data backup policy and transactional log needed to be maintained. In-case of VM crash, VM can be restored quickly, but to restore the transactional data upto the last transaction, it's time consuming process.

3) Developer Responsibilities: Write the source code of the entire application or use some third party APIs. Installation and configuration of operating system or choose vendor managed. Installation and configuration of (deployment environment) necessary softwares like - libraries, interpreter etc to run the application

B. Cloud Computing (Virtualization + * aaS + APIs):

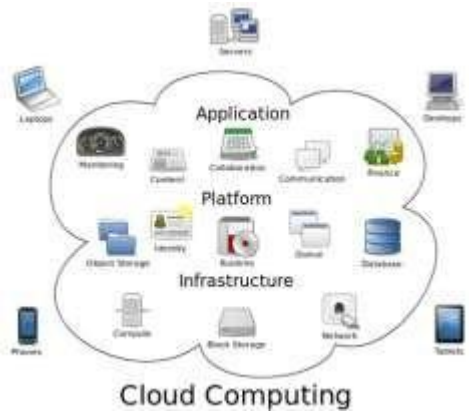


Fig- 2 : Cloud computing using multiple cloud services
(Image soruce : wikipedia.org)

During this phase of cloud computing, lots of cloud services became available for application developer. Many companies came with the dedicated cloud services, that can be readily integrated by application developer by using APIs. Some popular examples of *aaS are Storage as a Service (Storage aaS), Database as a Service(DBaaS), Authentication as a Service(Auth aaS), Backup as a Service(Backup aaS) and so on. Such cloud service providers formed a replica of modern human society, where work is divided among communities. Each community produces the things in which they are specialised in, and consumes the things produced by others. A true modern cloud based application usage lots of cloud based services like Storage as a Service, Database as a Service, Authentication as a Service, Backup as a Service and achieves faster and robust application development. Computing was decoupled from data storage. Now data is processed on one system and

stored on other systems, that are designed for highly durable and reliable (99.99999%) data storage. Now VMs are only responsible for http request-response and data processing. A good good cloud application today may be using multiple numbers of other reliable * aaS to achieve the highest level of reliably and features that are user and Enterprise expected

1) Advantages : Amount of code to be written by application developer reduced due to availability of 3rd party cloud services and APIs. Application Data files are stored on highly durable storage like - Amazon S3, Google Cloud Storage which requires no backup. Relational Data are stored on highly durable storage like - Amazon RDS, Google Cloud SQL which has option of auto backup and auto replica. Downtime during the upgradation and maintenance of the software was reduced further due to reduced size of code. Utilization of hardware resources of the data center increase. Entire VM can be now backups and restored on new physical server directly, without the need of reinstallation and configuration of software environment. It can be directly restored and run as no transactional data exists on VMs.

2) Limitations : Need of very reliable internet connection at all ends, ie at client computer, Data center where application is hosted as well as at all other data centers on which other required cloud services are hosted. Virtualization is an Operating System (OS) running on top of an Operating System (OS). Hence although it's better utilization of resources compared to earlier one, but it is very resource hungry System.

3) Developer's Responsibilities : Write the source code of the entire application or use some third party APIs. Installation and configuration of operating system or choose vendor managed. Installation and configuration of (deployment environment) necessary softwares like - libraries, interpreter etc to run the application

IV. SERVERLESS COMPUTING (VIRTUALIZATION + * AAS + CONTAINER & MICROSERVICES + ORCHESTRATION + CONTINUOUS INTEGRATION) :

In year 2013 docker container was launched, which gain popularity around year 2015. Instead of virtualizations of entire OS only, the part OS was used in container for virtualization, that is necessary to create an isolated environment, rest of the files are shared from base OS. It consumes very less resources compared to VM and starts and stops very quickly (in < second).

Orchestration System like Kubernetes and docker Swarm was introduced to manage and automate these containers. These Orchestration System makes sure that your required amount of system instance is always running. In case of any container instance crashes, Orchestration System starts new instance in place of the to ensure that the required number of instance is always available to serve.

Such automation is today available as a ready to use services in cloud, in the form of 'Google Cloud Run' as an integrated platform where you can just define the maximum and minimum number of instance that you want to be running. GCR will automatically start and stop the container instances according to the incoming traffic and load on the system.

Hence, today we have achieved a true elastic computing that allocated and deallocations the resources intelligently without human interference and bill the user for only the resources that they have consumed.

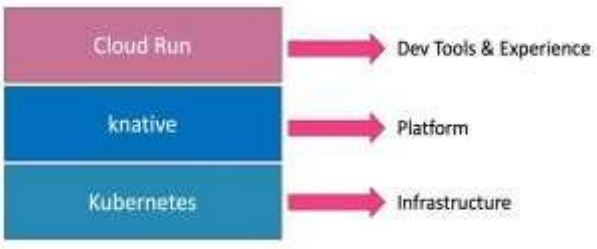


Fig – 3 : Google Cloud Run Layer
(Image Src : Kubernetes.io)

Serverless computing runs on the top of cloud computing service. IaaS and PaaS layers of cloud is integrated by vendor and offered to the user in the form of Function as a Service (FaaS). Application is run by multiple containers in the form of microservices, which can be automatically started or shutdown based on the incoming traffic on server. It is fully elastic and bills for the duration for which specific instance and computing resources was used by application. Fig-3 shows the modern cloud management software to manage the layers of cloud - Infrastructure, Platform and Development/Deployment.

1) Advantages : Amount of code to be written by application developer reduced due to availability of 3rd party cloud services and APIs. Application Data files are stored on highly durable storage like - Amazon S3, Google Cloud Storage which requires no backup. Relational Data are stored on highly durable storage like - Amazon RDS, Google Cloud SQL which has option of auto backup and auto replica. Downtime during the upgradation and maintenance of the software was reduced further due to container based development and deployment. Utilization of hardware resources of the data center increase due to usage of microservices. Development and deployment environment can be made exactly the same by using container based virtualization, hence reduces DevOps challenges.

2) Limitations : Need of very reliable internet connection at all ends, ie at client computer, Data center where application is hosted as well as at all other data centers on which other required cloud services are hosted.

3) Developer's Responsibilities :Write the source code of the entire application or use some third party APIs

V. CONCLUSIONS :

Serverless computing is the latest development in the field of cloud computing. It addresses many DevOps issues in order to speedup the development and deployment process. FaaS allows the developers to integrated readily available cloud services as a function instead of re-inventing the wheel and develop the application faster. Next revolution in the field of data center and cloud infrastructure will be the application Artificial Intelligence(AI) and Machine Learning(ML) to achieve more smarter resource management.

ACKNOWLEDGMENT

This work has been carried out under the guidance of my PhD guide Dr. Manisha A Kumbhar. I sciencerly thank her for her valuable guidance to complete this paper. Google search engine has helped me a lot in finding the related resources on web, and conducting my study related to this paper. I thank all the other authors, researchers and content creator for publisher their knowledge, which helped in completing this paper.

REFERENCES

[1] https://www.seasiainfotech.com/blog/history-and-evolution-cloud-computing/
[2] https://leftronic.com/cloud-computing-statistics/
[3] https://en.m.wikipedia.org/wiki/Cloud_computing
[4] https://www.ibm.com/blogs/cloud-computing/2014/03/18/a-brief-history-of-cloud-computing-3/
[5] https://www.computerweekly.com/feature/A-history-of-cloud-computing?amp=1
[6] https://dzone.com/articles/a-short-introduction-to-serverless-architecture

[7] https://medium.com/@tanmayct/serverless-architecture-function-as-a-service-19e127b8c990 (Function as a Service FaaS in ref 6 and 7)
[8] https://subscription.packtpub.com/book/application_development/9781787126992/1

[9] of computing architecture image)
[10] https://the2112group.com/2016/12/show-dont-tell-cloud-future/ (Year wise application trend in cloud)
[11] https://kubernetes.io/docs/concepts/overview/what-is-kubernetes/ (kebernet contaner evolution image)
[12] https://thenewstack.io/how-google-cloud-run-combines-serverless-with-containers/(google cloud run layers)
[13] https://fullstackgcp.com/journey-to-serverless-on-google-cloud-platform-ck101zpb2005ek7s1rcsgqnug (GCFaaS image and data)
[14] https://blogs.oracle.com/developers/functions-as-a-service:-evolution,-use-cases,-and-getting-started (oracle FaaS)
[15] https://algorithmia.com/blog/what-is-serverless-computing
https://www.cloudflare.com/learning/serverless/what-is-serverless/

Dr. Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Vol-78-Issue-15

January-2020

Our Heritage

UGC Care Listed Journal

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Incubated insights: Data Integration, Reliability for Effective and Efficient Pharmacy shops Business

Mr. Ramesh D Jadhav[1] ,Dr. Manik S Kadam[2]
[1]*Research Scholar,Research Guide,*
AIMS, Pune-01.

Abstract:
pharmacy shops are a retailer or wholesaler of the medicinal shop they are using the IT empowered administrations in an accumulation of little retailer businesses or distributors. They are doing each day business and value-predicated data is safeguarded in own business system. information unwavering quality administrations for data investigation cognate responsiveness and find the businesscircumstances, business accuracy, business manageability, business coherence prerequisite and business-cognate another concerning issue like which product is more opportune for sale and other drug salesproduct is not peregrinating to find advance their the business profitability and proficiency program. ThePharmacy shop business, in particular, the retail drug category business. The consumer utilizes thesedrug for the sustain the physical condition. This real-time transaction takes place in the Pharmacy shopsystem that data management and integration consequential aspects affecting on business improvement. ***Purpose:*** *This paper understanding of data management in medicinal shop stockiest relate drugs andactual sale out drug data. That data reliability of retailers and wholesalers industry to make the businessinvestigation and incubate business step by step an effective and efficient manner.*
Methodology: *The study is based on secondary research data and latest technology trend views on the retailer business insights.*
Results: *In this study, it is observed that Pharmacy shop drug sales data that data will discover all facts and drug-related strategies in and around stockiest.*
Originality: *Incubate retail business and literature have focused on sales data management and technology platforms This present study fills this gap with an outline of the data management platform transform for the Pharmacy shop business.*
Keyword: *Incubate: Idea Generation, IT-Information Technology, DR: Data reliability, Drug, Data management.*

1. INTRODUCTION OF DATA AND SIGNIFICANCE:

The organization of data recently transformed into an issue during the 1950s, when PCs were moderate, ungainly, and required gigantic proportions of troublesome work to work. Data organization the executives is the relationship of Information, the methods used to achieve viability, and aggregate information from that data. Data The board, as a thought, began during the 1960s, with ADAPSO (the Relationship of Information Handling Administration Associations) sending Information The board direction, with a complement on master planning and quality affirmation estimations. Database the board, on the other hand, is the centre point on the gadgets and advancement used to make and change the foundation of information, rather than the general system used to create the information. Database The board is in like manner a subdivision of Information the executives.

Data organization the executives the administrator is a legitimate strategy that consolidates getting, endorsing, taking care of, verifying, and taking care of anticipated that information should ensure the transparency, reliability, and common sense of the Data for its clients [4], [2],[12].

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

2. DATA MANAGEMENT AND SIGNIFICANCE:

Data management the board and hugeness following advances are:

- **Data organization:** is an advancing arrangement of benchmarks and decisions for managing your affiliation's information to ensure that your database framework is agreed with your business system.
- **Data mix:** Data compromise portrays the methods for joining different sorts of information. Information joining contraptions assist you with organizing and automate the implies that do this work.
- **Data association:** is a one of a kind of virtual information coordination that empowers you to look at merged information from various sources without the need to move and store the joined view in another zone.
- **Data get to:** Alludes to your ability to get to and recuperate information wherever it is taken care of. Certain headways can cause this movement as straightforward and compelling as would be reasonable so you also can contribute more vitality using the information not just endeavoring to find it.
- **Data quality:** is the demonstration of guaranteeing information is exact and usable for its future explanation. This starts from the moment information is gotten to and continues through various coordination centers with other data and even joins the point before it is conveyed or nutty gritty.
- **Data alliance:** incorporates separating information as it moves by applying basis to the information, seeing plans in the information and isolating it for different uses as it streams into your affiliation
- **Data Control:** is an advancing arrangement of models and decisions for managing your affiliation's information to ensure that your information plan is agreed with your business technique. [11], [14]

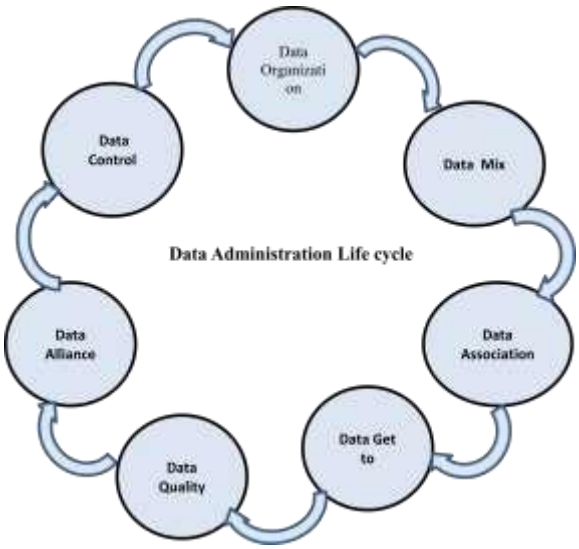


Fig.1: Data Administration Life Cycle

3. PROBLEM STATEMENT:

To study the impact of Data managing being utilize in pharmacy Store on the business significance of these shops in term of communication, output and effectiveness”

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

4. SIGNIFICANCE OF STUDY:

To achieve the issue explanation, the endeavored research study grasps a regulatory perspective to get encounters on the rhythmic movement circumstance Pharmacy shop business. It jumps into the noteworthy troubles that the information the executives of drug store retailers is looking with respect to creating retailers. The need of the assessment here is to find the ways by which information leading group of retailer can "fill" the "Want entire concerning sedate quantifiable examination." that has been made after the advancement of retail business. It similarly serves to Business change in the matter of digitization. This assessment is made arrangements for securing bits of information Data the board in drug store retailing.

5. RESEARCH METHODOLOGY:

In this investigation that relies upon discretionary information where detached latest advancement design sees Researchers consider the encounters got from appropriate examinations endeavored and diagram drove by various investigators and relationship in the part of the information. This assessment is gotten ready for mulling over various components that are accepting a fundamental activity for making information the board with phenomenal reference to Pharmacy shop business. Pros have moreover contemplated the points of view/ends imparted and experiences shared by the pioneers and experts in the retail business practice.

6. LITERATURE REVIEW & GAP ANALYSIS:

1. **Literature Review:**

As indicated by Mikko Hänninen (Dec.2017): this investigation composed on highlights how officeholder retailers can go facing new sorts of business, for instance, propelled stages, and we show a segment of the authoritative capacities expected to remain significant in this new automated test. Jonas Härtfelder (March 2016): An examination has talked about the tremendous conveyance of portable web gadgets in retail environment. Purchasers are utilizing these gadgets day by day for the purchasing procedure. Emel Aktas (Dec 2017): in this examination article on large information is assuming fundamental job retail business through internet shopping, web based life, cell phones after that ordered information used to comprehend client knowledge utilized for get ready business improvement. Dr Sarita Karangutkar (2017): this exploration study increasingly centered around e-holding and dispersions stations, improve shopping abilities over the retail business through web based shopping, cell phones, and PC application. Venky Shankar (2019): this article examined on Big Data in retailing and utilization of information science instruments to break down business certainty.

2. **Gap Analysis:**

Sr. No.	Author/ research paper / Article title of the study	Publication Year	Area of study	Research Gap
1.	Mikko Hänninen: Digitalization in Retailing: Multi-Sided Platforms as Drivers of Industry Transformation	Dec. 2017	Here the scientist has concentrated on digitalization change in the retailing industry.	The scientist has not talked about on which new innovation and stage handle digitalization in retail
2.	Jonas Härtfelder: Opportunities and Challenges for Local Retailing in an Environment Dominated by Mobile	Mar. 2016	This investigation manages advantages and issues, another gadget in the present retail business	This study more on the versatile application and gadget approach. Additionally, there is no particular spotlight on

	Internet Devices			how it very well may be to deal with digital data and data storage
3.	Emel Aktas: An investigation of Big Data Practices in Retail Sector	Dec. 2017	This research examines the most recent Big Data registering in retail Business.	This article not concentrated on Big Data the executives and preparing idea to investigate.
4.	Dr Sarita Karangutkar: Transforming the Brick and Mortar Fashion Retailing the Omni-Channel Way	April 2017	This study looks at and shows the indicate channel study for the appropriation in the retail business.	The scientist has referenced innovative advantage is turning out to be key Component yet not determined any innovation name.
5.	Venky Shankar: Big Data and Analytics in Retailing	May 2019	This examination explores the effect of enormous information on retailers business and bits of knowledge.	This article examined on large information and retailer yet not secured how information the executives will be done of the retail business.

7. DISCOVERY AND SELECTION OF VARIABLES:

Innovation appropriation for information unwavering quality: Innovation challenges: There are furthermore different examples, which associations have been utilizing for a significant long time. These standard approaches to manage data the board fuse methods, for instance,

- Data appropriation focus modernization
- Metadata the officials
- Hadoop gathering
- Cloud use and cloud choice.

There have been more cutting-edge slants in information the board which are helping associations to modernize their structures. More state-of-the-art the board officials' examples include:

- Data lakes
- Enterprise Data Hub
- Internet of Things (IoT) data
- Machine Learning and Robotization
- Data Science [18], [12].

8. EFFECTIVENESS ENHANCEMENT IN RETAIL BUSINESS:

As a little retail business person, we understand you're persistently looking for ways to deal with save time. Fortunately, the present advancement offers retail associations a lot of instruments for the most extraordinary time improvement. Keep your businesses fleeing from salary setback by extending productivity in all pieces of your association with these five effective methods.

ISSN: 0474-9030
Our Heritage
Vol-78-Issue-15
January-2020
UGC Care Listed Journal

Data Defense: Utilizing the cloud makes it more straightforward to extra and access noteworthy business reports. With the cloud, you can without a doubt search for a specific trade and check the total charged. In any case, in the event that you do decide to go from physical to virtual records, guarantee you have an online cloud support organization that can shield noteworthy business information from getting lost and improve benefit.

Staff Scheduling: Deputy empowers you to organize moves on the web and even sends admonitions using text and email so your workers never show up for a dropped move again. This time and investment programming moreover make it simple to screen everyone's hours, so you'll by and large compensation your workers the ideal total. In any case, system is esteem based data is Capturing yet Data is Management for Business Analysis and appreciate business inside for cerate business estimation of Small retail Business like Cloth Shop, Jewelry Shop, General Stores Shop, Pharmacy shop, Doctors Clink, Mobiles shop, Cosmetic shop, Auto additional part shop, Two-wheeler bargains shop, Foods Hotels, Ayurvedic shop.

Easy Payments: Use development to facilitate your latent capacity advantage to make trades snappier and less difficult. Charge card getting ready systems joined into your portion technique and can be used near to the cash register you likely successfully have. Empowers you to see month to month bargain data. In addition, you can even extra time by changing your opening and closing hours to best suit the best events for bargains, information can empower you to understand.
Rapid Marketing: Getting the word out about your little retail business shouldn't be monotonous. Inform your customers regarding one of a kind headways or in-store events with email advancing endeavors. Save time by using on the web email advancing game plans [13], [1], [6].

Fig.2: Output Initiatives in Pharmacy shop business.

9. THEORETICAL FRAMEWORK:
It is significant of "integration of Pharmacy shop system.

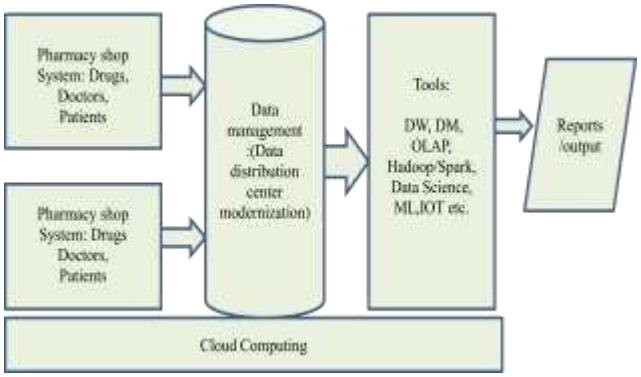


Fig.3: Theoretical framework of integration of Pharmacy shop system.

10. OBJECTIVE:
To study data integration, reliability in Pharmacy shop business for effective and effectiveness in their business output.
11. HYPOTHESIS: This is secondary research essentially based on the literature of review, so the hypothesis has not been formulated.
12. FINDING:
It is to be seen on the hypothetical system of retailer business deals value-based data can be utilized for the business decision. It is additionally seen that in-retailer business can be overseen by utilizing measurable investigation of stock status, stock valuation, business current truth and circumstance and what is client desire and market request and so forth.

13. CONCLUSION:
Henceforth the examination proposes the retailer's business information the board that information is amazingly fundamental to make such data and another understanding motivation behind business conditions. Presently day "information" is changing the essence of every business that is the greatest chance and difficulties in a little retail business. Information is just another discourse for data. Data contains touchy information and business point of view is covered up.

14. CONTRIBUTION TO BODY OF KNOWLEDGE:
This investigation adds to the current assortment of information on Drug store shop sedate deals information happen in an Individual Drug store shop framework that business information never included and use for my business comprehension and business advancement. By virtue of discoveries, the analysts recommend the information incorporation, information unwavering quality model for the Drug store shop business. By this methodology, the retailers can upgrade the "productivity" by giving deals information. This methodology of the advancement will give all shrouded vital of related business.

15. LIMITATIONS:
This examination is established on the study of existing composing that is available in regards to the issue under idea. The composing combined research articles/book segments/paper articles and gatherings with the business boss/authorities. Considering the time and various necessities, the basic research around there isn't done by pros.

16. SCOPE OF FUTURE RESEARCH:
This investigation takes the setting of the Drug store shop business and incorporated data managing the board to demonstrate the significance of business coordination and hypothetical structure develop presented in this exploration article gives a characteristic manual for future research. It is ordinarily, another space for specialists wherein they can attempt exact research to structure, usage, and discoveries of this examination. After this, further research in the space will slowly move to more profound levels. Research likewise stays to be done on themes like Data Lake, data fabric impact on other retail efficient material, drug store industry, general stores, and so forth.

17. BIBLIOGRAPHY:

1. S Lee – Database, (2012). Database Management System as a Cloud Service.
2. R Balasubramaniam (2012). Journal of Computer Science and Security, cscjournals.org Data Security in Relational Database Management System.
3. A Srivastava, U Shankar, SK Tiwari (2012), International Journal, Transaction Management in Homogenous Distributed Real-Time Replicated Database Systems.
4. A Mateen, B Raza, M Sher, MM Awais (2012),
   Database Workload Management Characterization to Idleness Detection Database Design for the Web-Based University Project Management Information System.
5. S F Rodd, UP Kulkarni, AR Yardi (2012), International Journal of, Fuzzy Controlled Architecture for Performance Tuning of Database Management System
6. Khalid Adam, Mohammed Adam (Dec.2014)-Big Data Management and Analysis: International Conference on Computer Engineering & Mathematical Sciences (ICCEMS 2014).
7. Jonas Härtfelder (March 2016); Opportunities and Challenges for Local Retailing in an Environment Dominated by Mobile Internet Devices – Literature Review and Gap Analysis ISBN 978-3-86360-132-4.
8. Mikko Hänninen (Dec. 2017): Digitalization in Retailing: Multi-Sided Platforms as Drivers of Industry Transformation.
9. Emel Aktas (Dec 2017):Article –"An exploration of Big Data Practices in Retail Sector" Cranfield School of Management, Cranfield University, College Road, Cranfield MK43 0AL, UK
10. Dr Sarita Karangutkar (2017) Transforming the Brick and Mortar Fashion Retailing the Omni-Channel Way- ELK ASIA PACIFIC JOURNAL OF MARKETING AND RETAIL MANAGEMENT- ISSN 2349-2317 (Online); DOI: 10.16962/EAPJMRM/ ISSN. 2349-2317/2015; Volume 8 Issue 4 (2017).
11. https://www.statisticsdonewrong.com/data-analysis.html.
12. http://www.dataversity.net/brief-history-data-management/.
13. https://www.reltio.com/about/news/2015/7/reltio-cloud-20152-improves-business-productivity-it-operating-efficiency-and-compliance.
14. https://www.import.io/post/what-is-data-and-why-is-it-important/.
15. https://retailminded.com/increase-productivity/.
16. https://smallbiztrends.com/2017/02/improving-productivity-small-business.html.
17. https://solutionsreview.com/data-management / four- data-management-challenges-and- opportunities -for-2019/oie_f2tzleaxloqg/.
18. https://www.sas.com/en_us/insights/data-management/data-management.html.
19. Venky Shankar(2019): Big Data and Analytics in Retailing.

Dr. Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

MAGNITUDE OF DATA SCIENCE & BIG DATA IN FITNESSCARE

Shobha Sachendra Mishra,Nishant Rathod,Payal Manuja

Sinhgad Institute of Management, Vadgaon Budruk(BK), Pune

Abstract–

One of the best ways to change fitnesscare is to identify risks and plan to prevent health risks before they become a major problem. Historical patterns are considered by wearables and other tracking devices, and it is possible to identify a problem before genetic information is available. Data science is also helping in the emerging field of gene therapy, which involves incorporating genetic material into cells instead of traditional drugs to compensate for unusual genes."Big data" is an immense amount of information that can work on miracles. In the health industry, various source spot records for big data, patients Contains data from medical records, medical examination results and equipment that are part of the Internet of Things Data is stored in large data warehouses built from a variety of sources.The data is smart and processed using an analytical pipeline for affordable fitnesscare options and improved results. To provide science Publication may be combined.

I. INTRODUCTION

Data science is a multi-disciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from structured and unstructured data. Data science is related to data mining and big data.

I.1 Data Science in Fitnesscare

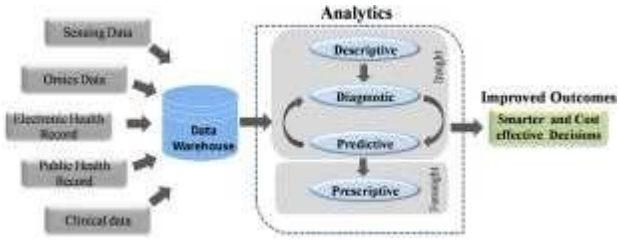
Now is the right time for a data-driven fitnesscare industry and many players are participating in this change. Patients suffering from certain illnesses, can provide ultra-medical advice in rural and remote areas, save lives by stating the profile of different patients and the likelihood of cancer, AIDS, Ebola and other terminal illnesses. From a logical point of view, data often separates states, hospitals, and administrative entities, and integrating them into a harmonized system is challenging.

I.2 Defining big data

Big Data as the name represents large amounts of data that is unmanageable use in traditional software or internet-based platforms.Commonly used definition was given by Douglas Laney. He observed that big data was growing in three different dimensions namely, volume, velocity and variety.The big part of big data is indicates its large volume. Velocity indicates the rate of data collection while, variety remarks on the different types of organized and unstructured data that system can collect, such as video, audio, text or log files. However some people have added another V to this definition 'veracity'. Almost every field of research is producing and analyzing big data for different purposes. Implementation of artificial intelligence (AI) and novel fusion together would be necessary to make sense from the provided data. In fact, it would be a great achievement in automated decision-making by the implementation ofneural networks and other AI techniques such as machine learning (ML) methods. We need to develop better techniques to handle this much of data and smart web applications for efficient examination to gain **practical insights.**

I.3 Big data in fitnesscare

Both public and private, create, store and analyze big data for the purpose of improving the services. In the fitnesscare industry, various sources for big data include every single detail of both patient and hospitals that is part of the Internet of Things. In order to provide relevant measures to improve health, health care providers need to be equipped with the appropriate framework to systematically create and analyze big data. This is the reason fitnesscare, are taking strong steps to convert these capabilities into



better services and financial benefits.

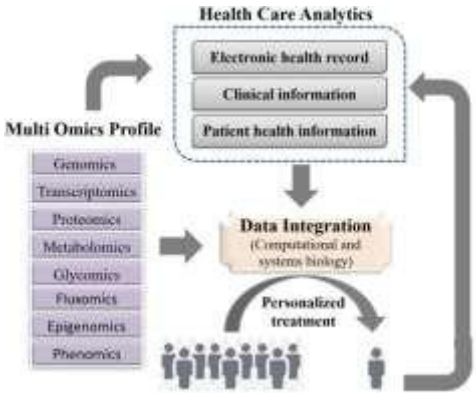
Workflow of Big data Analytics.

I.4 Big data analytics for cutting costs

We must overcome every challenge mentioned above in order to develop big data-based fitnesscare that can exchange big data and provide us with reliable, timely and meaningful information. To overcome these challenges investment in terms of time, money and commitment is required.Implementation of big data by health organizations will save over 25% in annual costs in the upcoming years. Better diagnosis and prediction of disease through big data tics analytics can help reduce costs by reducing hospital admission rates.

I.5 Data sharing

In the former case, it would be necessary to share the data with other health care organizations This may be due to technical and organizational difficulties. This will leave doctors without a great deal of information to follow up with patients and make decisions about treatment strategies. Solutions such as Fast Fitnesscare Interoperability Resource (FHIR) and Public API, Common Well (a non-profit and equity (an Interoperability Trade Association) consensus-created framework) make data interoperability easy and secure. One of the biggest barriers to data sharing is treating data as a common object that can provide a competitive advantage. Therefore, sometimes providers and vendors deliberately disrupt the flow of information, blocking the flow of information between different EHR systems allowing fitnesscare providers to overcome each of the challenges in this list and create a larger data exchange ecology. Continuous caring members will need to develop a reliable, embedded information system.



I.6 Internet of Things (IOT)

Fitnesscare and biomedical Big Data have not yet been integrated to enhance the health data conversion mechanism of action or other aspects of predicted biology. Therefore, biomolecular and clinical datasets need to be togrther to assess a person's health status. One of the sources of clinical data in

fitnesscare is the Internet of Things (IoT).Recently, commonly used items such as health-care devices, US Unix data, and data handling non-extracted data and Internet connectivity, are presented by computer with computer chips and sensors. Chips and Enable Worlds, REIDX (RFID) tags and readers and Near Field Communication / NFC) devices, and they not only interact physically, but can also be used to communicate with information and communication, collected for in-chips or sensor infraction.

Advantages of IoT in fitnesscare

Using a web of IoT devices, a doctor can measure and test various parameters from your client at home or at the office. Some of the IoT devices used in fitnesscare are health-tracking wearable devices, biosensors, diagnostic tools for vital signs monitoring.If we can integrate this data with other health services like EMRS or RRS, then such IoT devices will produce a large amount of health data.

I.7 Mobile computing and mobile health (mHealth)

This is the era of digital world and everyone is eager to track their fitness and health statistics using their portable and wearable device.With almost all aspects of mobile life, health care infrastructure covers mobile devices. The use of mobile devices, known as mHealth, promotes the practice of medicine and public health, especially for chronic diseases.

II.OBJECTIVE:

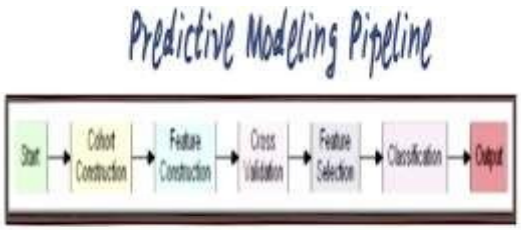
Ways Data Science Is Reshaping Fitnesscare :-

- **To improve diagnostic accuracy and efficiency**
- **Taking care of the patient in precision medicine.**
- **Taking risks from prescription medicine**

II. RESEARCH METHODOLGY:

1) Predictive Modelling

Historical data has been used to visualize the model for predicting future results. It is a sequence of computational tasks.



Each stage of this computational task has many different options. All those options are given several different pipelines to jointly evaluate and compare.

$$\underset{\text{Target}}{y} = \underset{\text{Features}}{f(x)} + \underset{\text{Error}}{e}$$

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

A predictive model maps the input feature of diagnostic, pharmaceutical, laboratory results to an output target. The model can be a classification problem. The final step of this pipeline is to assess how well our model performs through performance evaluation.

1.1) MapReduce Abstraction

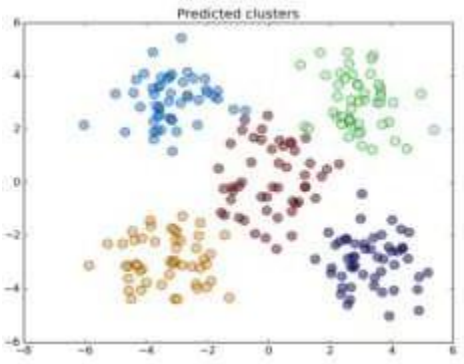
A Map Reduce system has two characteristics' — mappers and reducers. Data is divided and processed by multiple mappers. Reducers process the intermediately result in certain ranges.

1. **Map Function:** Perform a list of diseases related to heart dieseases.
2. **Reduce Function:** Calculate the frequency of each disease.

2) Computational Phenotyping

Computational Phenotyping is the process of transforming **Electronic Health Records (EHRs)** into meaningful clinical concepts. The phenotyping theorem transforms patient data into **medical concepts** or **phenotypes**. The main usage of this data is to conduct diagnostic operations.

2.1) Clustering



The method of phenotyping that can be used are supervised data labels and the algorithm has a **"Function Approval"** like classification, the data is unlabeled and the algorithms has to be a **"clustered"** or **"Short Summarized"** like clustering. Phenotyping mostly uses clustering algorithms for segment, to support Patient Stratification by the patient disease matrix in different group of patients. We can divide the matrix into different disease groups to support the hierarchical application of the disease.

2.2) Medical Oncology

One of the things that makes Fitness care a dynamic domain for Data Analytics is the current structured of medical knowledge. They are represented as ontologies or knowledge graphs. Ontologies give us a great resource for understanding fitness care.

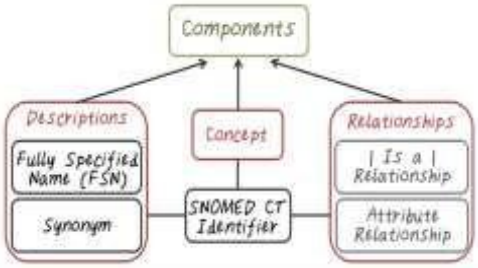
ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal



3) Logical Model of SNOMED-CT

The most popular medical ontology is called **SNOMED (Systemized Nomenclature of Medicine)**. It is a huge graph medical concepts and their relations with each other.

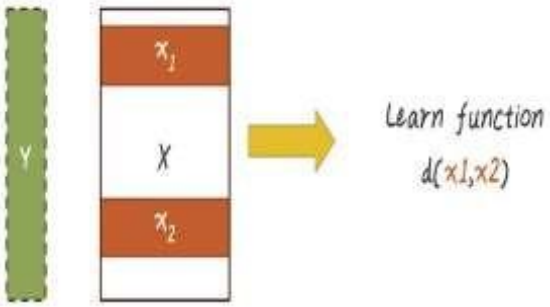
1. When a patients goes to the hospital for his checkup. Then its report is handled using the LOINC code.

2. If the result of report goes to the doctor, then the patients diseases are diagnosed with different ICD codes.

3. After the patient is diagnosed with the diseases, he is treated with the medical procedure indicated by the CPT code.

4. And the patient can also take the medicine indicated by the NDC code.

3.1) Distance Metric Learning



Every Patient is represented as a feature vector in X while Y represents the Ground Truth Value.

If the X1 and X2 of two patients are equal, then their level in X is equal to each other. If X1 and X2 are different, then those patients will have a different label. It becomes a supervised distance metric learning. Given the ground truth Y and the feature vectors X. We can learn a distance metric d (X1, X2). This function will tell us the distance between those two patients.

ISSN: 0474-9030

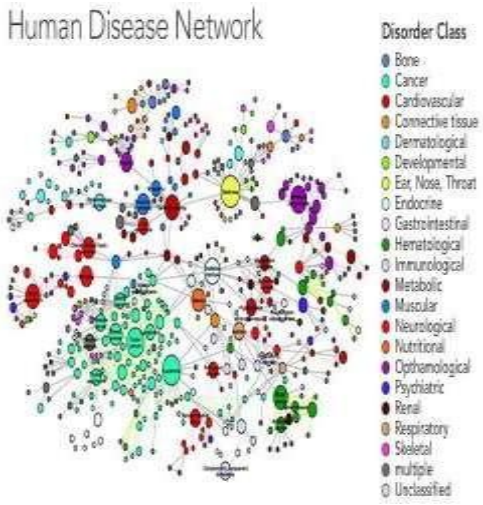
Our Heritage

Vol-78-Issue-15

January-2020

3.2) Graph-based Similarity Learning

In medicine, we have a lot of medical knowledge which is represented in the form of a graph. Every entity demonstrates a disease and every attribute suggest a connection between two diseases. In this way, Human Disease can add to diseases of patients. Graph-based quality is trying to find out that by skewed graph to patient's diseases, we can find out who is similar to whom?



IV. Conclusion:

Data science solutions shape the pharmaceutical industry, reveal new insights, and turn brave ideas into reality. The possibilities for integrating data science and fitness care are expanding as the volume of data is increasing daily, and technology is constantly improving. We cover only a small fraction of potential use cases. Common use cases such as fraud detection and roboticization apply to fitness care.

In conclusion, the potential for data science to revolutionize modern medicine is enormous. The future looks bright and promising.Big Data Analytics uses the gap between structured and unstructured data sources. An easy barrier is to move to an integrated data environment. Various trusted advisory companies and fitnesscare companies have estimated that the Big Data Fitness Care market is expected to grow at an exponential rate.

The next major goal may be to develop detailed models of the human body by combining physiological data and "-omics techniques. This unique idea raises our knowledge of disease conditions. Continuous growth requires more attention in available genomic data, including experiments and analytical methods."

Careful integration of large volumes of medical data poses a challenge to data scientists and suggests that a revolution in fitness care is needed for bioinformatics, fitness informatics and analytical analysis to encourage personalized and more effective treatment. In addition, new strategies and technologies must be developed to understand the nature (structured, semi-structured, obsolete), complexity (dimensions and properties) and dimensions of the data to gain meaningful information.

V. References:

1. Big data in fitnesscare: management, analysis and future prospects
2. Article number: 54 (2019)
3. https://medium.com/activewizards-machine-learning-company/top-7-data-science-use-cases-in-fitnesscare-cddfa82fd9e3
4. https://towardsdatascience.com/an-overview-of-big-data-analytics-in-fitnesscare-5a599f1bb48c
5. Sabyasachi Dash, Sushil Kumar Shakyawar,Mohit Sharma & Sandeep KaushikJournal of Big Data 6,

Dr. Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Market Analysis of Agricultural Products using Data Science tools

Mr. Rahul Borate[1], Mr. Rahul Navale[2], Dr. Milind Godase[3]
[1]Assistant, [2,3]Professor
MCA Dept.,
Sinhgad Institute of Management, Pune

Abstract:
Agriculture is the backbone of Indian economy. Today data science plays an important role in farming domain. In farming sector where farmers and agribusinesses have to make numerous decisions every day and elaborate complexities involves the various factors influencing them. An essential issue for farming planning purpose is the accurate time for the various crops production involved in the planning. Data science tools are essential toward for accomplishing realistic and effective solutions for this difficulty. Unpredictability in market, input levels, combinations and product prices has made it all the more applicable for farmers to use information and get help to make significant farming decisions. This paper focuses on the analysis of the agricultural product market data and finding best possible parameters to take full advantage of the crop production using data science tools such as Linear Regression, density plot and pie-chart. Taking out the large amount of existing crop, market data and analyzing new, non-experimental data optimizes the production and makes farming more flexible according to market trend.

Background

As India is predominately Agriculture County. According to FAO (Food and Agriculture Organization) of the United Nations, India is the world's largest producer of milk, pulses and jute, and ranks as the second largest producer of rice, wheat, sugarcane, groundnut, vegetables, fruit and cotton. It is also one of the leading producers of spices, fish, poultry, plantation crops and livestock. Worth $ 2.1 trillion, India is the world's third largest economy after the US and China [1]. In India, agriculture is unique business of crop production. Crop production is always depends on climate conditions, irrigation availability, rainy conditions. Even if in a particular year due to favorable climatic conditions, sufficient irrigation and satisfactory rainy conditions the crop production is high, but there is always doubt that framer's crop production will get good amount of market price. Hence in this paper we are looking at a solution that finds best period to cultivate a particular crop by the farmer in a year with the help of certain data science tools. This kind of investigation would help farmer to have better planning for his crop production which would results in best market place and price. This paper focuses on the analysis of the pomegranate production and market data to find best possible parameters to take full advantage of the crop production and market trends using data science tools such as Linear Regression, density plot and pie-chart. For this analysis we have considered the 13 districts of Maharashtra which used to cultivate and produce pomegranate in huge amount.

Literature Survey

There are different forecasting methodologies developed and evaluated by the researchers all over the world in the field of agriculture. Some of such studies are:Researchers like Ramesh and Vishnu Vardhan are analysed the agriculture data for the years 1965–2009 in the district East Godavari of Andhra Pradesh, India. Rain fall data is clustered into 4 clusters by adopting the K means clustering method. Multiple linear regressions (MLR) is the method used to model the linear relationship between a dependent variable and one or more independent variables. The dependent variable is rainfall and independent variables are year, area of sowing, production. Purpose of this work is to find suitable data models that

achieve high accuracy and a high generality in terms of yield prediction capabilities [3].Bangladesh offers several varieties of rice which has different cropping season [4]. For this a prior study of climate (effect on temperature and rainfall) in Bangladesh and its effect on agricultural production of rice has been done. Then this study was being taken into regression analysis with temperature and rainfall. Temperature puts an adverse consequence on the crop production. The data has been taken from the "Bangladesh Agricultural Research Council (BARC)" for past 20 years with 7 attributes: "rainfall", "max and min temperature", "sunlight", "speed of wind", "humidity" and "cloud-coverage".In Pre-processing, the whole dataset was divided in 3 month duration phases (March to June, July to October, November to February). For this duration, the average for every attribute has been taken and associated with it. This pre-processing has been done for each kind of rice variety. In clustering, the different pre-processed table has been analyzed to find the sharable group of region based on similar weather attribute. Soil characteristics are studied and analyzed using data mining techniques. As an example, the k-means clustering is used for clustering soils in combination with GPS based technologies [5]. Authors like Alberto Gonzalez-Sanchez, Juan Frausto-Solis and Waldo Ojeda-Bustamante have done extensive study on predictive ability of machine learning techniques such as multiple linear regressions, regression trees, artificial neural network, support vector regression and k-nearest neighbor for crop yield production [6]. Wheat yield prediction using machine learning and advanced sensing techniques has done by Pantazi, DimitriosMoshou, Thomas Alexandridis and Abdul Mounem-Mouazen [7]. The aim of their work is to predict within field variation in wheat yield, based on on-line multi-layer soil data, and satellite imagery crop growth characteristics. Supervised self-organizing maps capable of handling existent information from different soil and crop sensors by utilizing an unsupervised learning algorithm were used.The software tool 'Crop Advisor' has been developed by S. Veenadhari, B. Misra and CD Singh [8] is an user friendly web page for predicting the influence of climatic parameters on the crop yields. C4.5 algorithm is used to find out the most influencing climatic parameter on the crop yields of selected crops in selected districts of Madhya Pradesh.

Methods

The aim of proposed work is to analyze the agriculture production and market data using data science tools. In proposed work, pomegranate production data has been collected from following sources:
[https://numerical.co.in/numerons/collection/58df68014e976264035a1f85] [9],
[http://nrcpomegranate.icar.gov.in/EPublications] [10],
Pomegranate market data of APMC Pune [http://www.puneapmc.org/rates.aspx] [11],
Input dataset consist of 3 year data with following parameters namely: year, State-Maharashtra (13 districts), District, crop (Pomegranate), area (in hectares), production (in tonnes), input (in kg) and price (RS/kg) required.

Pie chart:

R pie chart is created using the **pie()** function [12] which takes positive numbers as a vector input. The additional parameters are used to control appearance of pie charts in R are labels, color, title etc.

Syntax R Pie chart

The basic syntax for creating a pie chart using the R is:
pie (x, labels, radius, main, col, clockwise)
Following is the description of the parameters used:
x is a vector containing the numeric values used in the pie chart.
labels is used to give description to the slices.
radius indicates the radius of the circle of the pie chart.(value between -1 and +1).
main indicates the title of the chart.

col indicates the color palette.
clockwise is a logical value indicating if the slices are drawn clockwise or anti clockwise.
Since most of the data scientist collect is quantitative, data tables and charts are usually used to organize the information. Graphs are created from data tables. They allow the investigator to get a visual image of the observations, which simplifies interpretation and drawing conclusions

Linear Regression:
Linear regression is one of the most commonly used predictive modelling techniques [13]. The aim of linear regression is to find a mathematical equation for a continuous response variable Y as a function of one or more X variable(s). So you can use this regression model to predict the Y when only the X is known.
This mathematical equation can be generalized as follows:
$\mathbf{Y=\beta1+\beta2X+\epsilon}$
Where,
β1 is the intercept **and** **β2X** is the slope.
Collectively, they are called regression coefficients and ϵ is the error term.
Evaluation Methods

Pomegranate cultivation in Maharashtra (area, production)

1.32 lakh hectare under pomegranate plantation, accounting for nearly two-thirds of the total area under pomegranate cultivation in the country, Approximate number of farmers engaged in pomegranate cultivation 2,00,000 [9].
Experimental Analysis of Production District wise:
For this analysis we considering the last three years data for pomegranate cultivation data and we calculate the average area and production based on it we calculate tonnes per hectare production.

District	Production	Area	tonnes/hectare
Beed	12345	2845	4.34
Aurangabad	31800	7300	4.36
Buldana	5479	842	6.51
Jalna	19100	2424	7.88
Solapur	169798	20033	8.48
Pune	108061	12010	9.00
Osmanabad	24790	2550	9.72
Ahmednagar	162096	16113	10.06
Satara	43618	3947	11.05
Dhule	108004	8308	13.00
Latur	7705	571	13.49
Nashik	679378	48527	14.00
Sangli	114841	7656	15.00

Table 1: Average pomegranate production tonnes/hectare

We divide the districts in three main clusters based on tonnes per hectare production capacity like

Cluster 1: Low production(0-5 tonne/hectare)
Cluster 2 : Moderate production (6-10tonnes per hectare)
Cluster 3: High production (11-15 tonnes per hectare)

Low Production Districts (0 to 5 tonnes/hectare)	Moderate Production Districts (6 to 10 tonnes/hectare)	High Production Districts (11to15 tonnes/hectare)
Beed Aurangabad	Buldana Jalna Solapur Pune Osmanabad	Ahmednagar Satara Dhule Latur Nashik Sangli

Table 2: Cluster wise districts

Experimental Results
R codes to visualize the tonnes/ hectare production by using pie chart:

```
> tonnes_per_hectare <- c(4.34,4.36,6.51,7.88,8.48,9.00,
        +  9.72,10.06,11.05,13.00,13.49,14.00,15.00 )
> labels <- c("Beed","Aurangabad","Buldana","Jalna",
        + "solapur","Pune","Osmanabad","Ahmednagar","Satara",
        + "Dhule","Latur","Nashik","Sangli")
> pie(tonnes_per_hectare, labels=tonnes_per_hectare ,
        + main = "Districtwise Tonnes Per Hectare Production Chart",
        + col = rainbow(length(x)),clockwise=TRUE)
> legend("topright", c("Beed","Aurangabad","Buldana",
        + "Jalna","solapur","Pune","Osmanabad","Ahmednagar","Satara",
        + "Dhule","Latur","Nashik","Sangli"), cex = 0.4,
        +    fill = rainbow(length(x)))
```

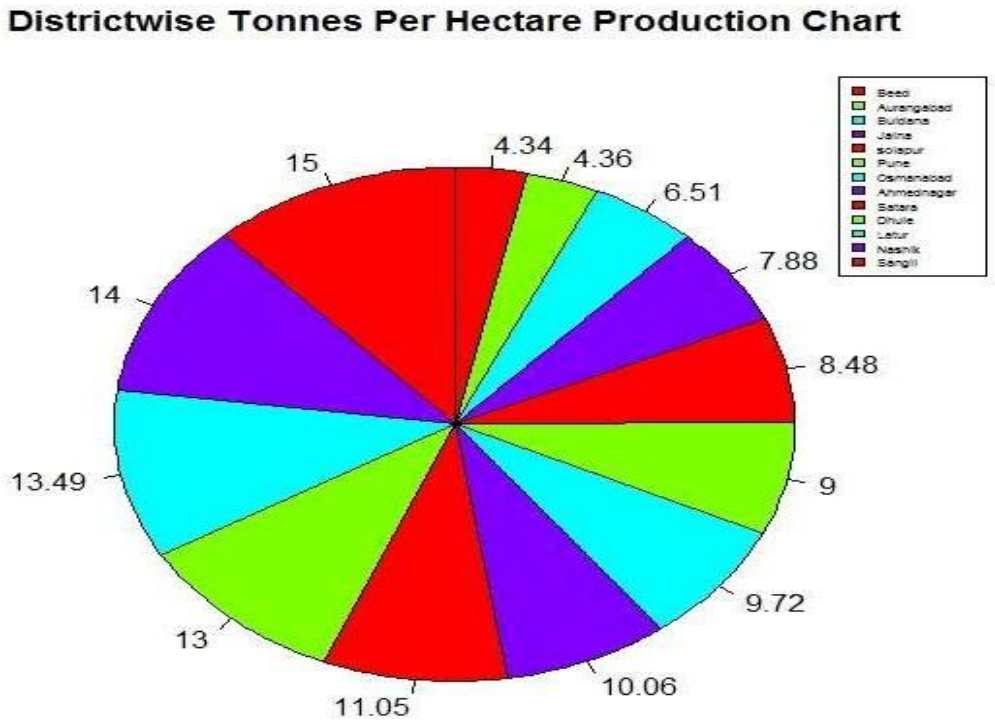
ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal



Experimental Analysis of Input and Price by using linear Regression:

For market analysis purpose we are taking data from apmc pune market data where we observe the input level and modal price on daily basis of pomegranate and draw some conclusion by using linear regression model of R language.

The aim of this eperiment is to build a simple regression model that we can use to predict Price (Mprice) by establishing a statistically significant linear relationship with Input level (Input).

We are building market_data dataset , that makes it convenient to demonstrate linear regression in a simple and easy to understand fashion. You can access this dataset simply by typing in market_data in R console. You will find that it consists of 50 observations(rows) and 2 variables (columns) – Input and Mprice. Lets print out the first six observations here.

Scatter plot: Visualize the linear relationship between the Input and Price

Scatter plots can help visualize any linear relationships between the Price (Mprice) variable and Input (Input) variables.

```
> market_data <- read.csv("apmc.csv", header = TRUE)
> head(market_data)
     Date  Input Mprice
1 1-Nov-19  80010   87.5
2 3-Nov-19  70000   87.5
3 4-Nov-19 140000   82.5
4 5-Nov-19 146000   82.5
5 6-Nov-19 152012   87.5
6 7-Nov-19 164000   60.0
> scatter.smooth(x=market_data$Input, y=market_data$Mprice, main="Input ~ Price")  # scatterplot
```

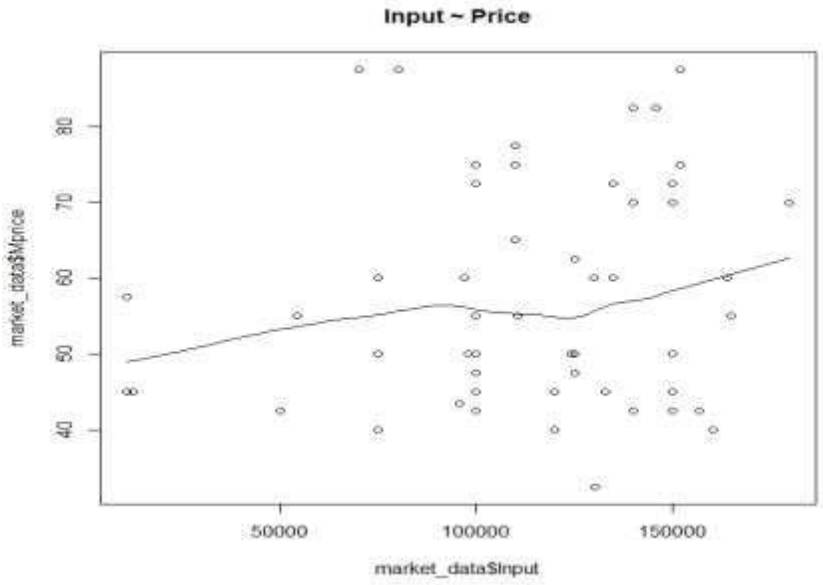
ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal



The scatter plot along with the smoothing line above suggests a linearly increasing relationship between the Input and Mprice variables. This is a good thing, because, one of the underlying assumptions in linear regression is that the relationship between the Price and Input variables is linear and additive.

Density plot:

To see the distribution of the price variable. Ideally, a close to normal distribution (a bell shaped curve), without being skewed to the left or right is preferred.

```
library(e1071)
par(mfrow=c(1, 2))
> plot(density(market_data$Input), main="Density Plot: Input", ylab="Frequency", sub=paste("Skewness:", round(e1071::skewness(market_data$Input), 2)))  # density plot for 'Input'
> polygon(density(market_data$Input), col="red")
> plot(density(market_data$Mprice), main="Density Plot: Price", ylab="Frequency", sub=paste("Skewness:", round(e1071::skewness(market_data$Mprice), 2)))  # density plot for 'Price'
> polygon(density(market_data$Mprice), col="red")
```

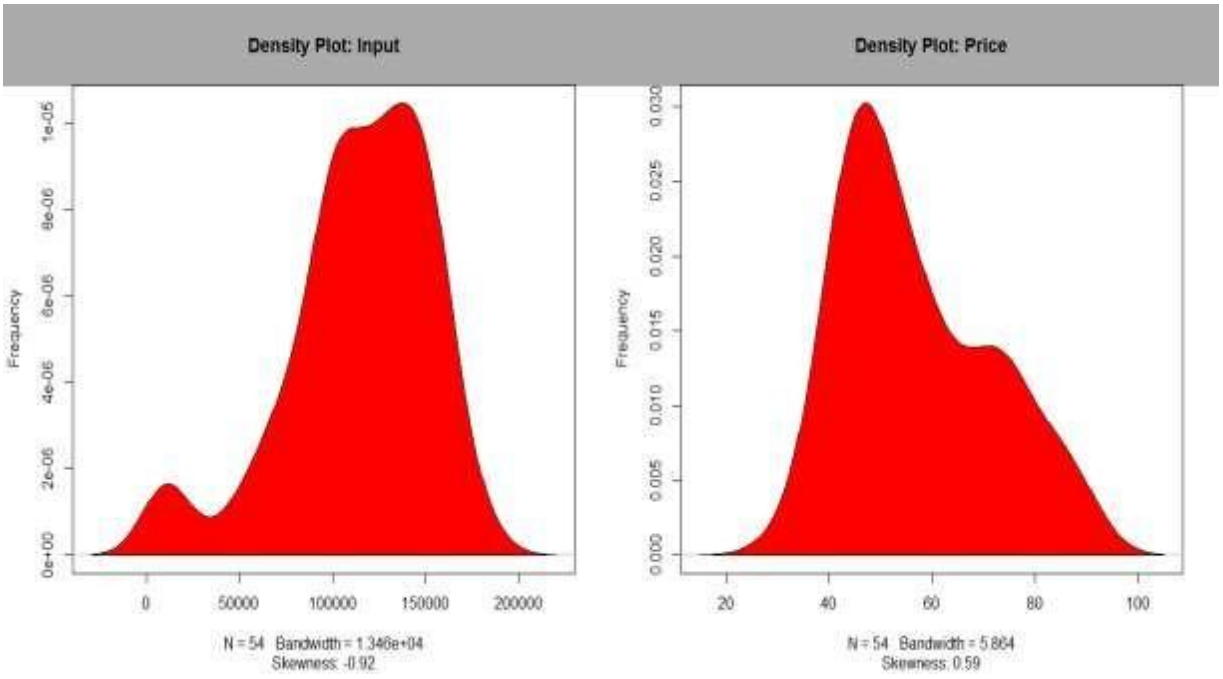
ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal



Conclusion:

From the secondary data collected we formed 3 clusters such as low (0-5 tonnes/hectare), moderate (6-10 tonnes/hectare) and high (11-15 tonnes/hectare) of pomegranate production in 13 districts of Maharashtra. Final distribution of 13 districts across 3 clusters is as follow

1) Beed and Auragangabad had the low pomegranate production
2) Buldana, Jalana, Solapur, Pune, Osmanabad are moderate pomegranate production districts.
3) Ahamadnagr, Satara, Sangli, Nashik, Dhule, Latur are high pomegranate production districts.

We have used Pune APMC Market data for analyzing market trend by using parameters such as input level and price. Result of experiment shows that as input level increases the price also goes on increasing , so it is controversial to market supply demand concept .in our further study we taking more number attribute to find out the input and price relation.

References:

1. "India at a glance", http://www.fao.org/india/fao-in-india/india-at-a-glance/en/
2. Majumdar J, Ankalaki S., "Comparison of clustering algorithms using quality metrics with invariant features extracted from plant leaves", International conference on computational science and engineering, 2016.
3. Ramesh D, Vishnu Vardhan B. Data mining techniques and applications to agricultural yield data. In: International journal of advanced research in computer and communication engineering. 2013; 2(9).
4. Motiur Rahman M, Haq N, Rahman RM. Application of data mining tools for rice yield prediction on clustered regions of Bangladesh. IEEE. 2014;2014:8–13.
5. Verheyen K, Adrianens M, Hermy S Deckers. High resolution continuous soil classification using morphological soil profile descriptions. Geoderma. 2001;101:31–48.

6. Gonzalez-Sanchez Alberto, Frausto-Solis Juan, Ojeda-Bustamante W. Predictive ability of machine learning methods for massive crop yield prediction. Span J Agric Res. 2014;12(2):313–28.
7. Pantazi XE, Moshou D, Alexandridis T, Mouazen AM. Wheat yield prediction using machine learning and advanced sensing techniques. Comput Electron Agric. 2016;121:57 – 65.
8. Veenadhari S, Misra B, Singh D. Machine learning approach for forecasting crop yield based on climatic parameters. In: Paper presented at international conference on computer communication and informatics (ICCCI-2014), Coimbatore, 2014.
9. https://numerical.co.in/numerons/collection/58df68014e976264035a1f85
10. http://nrcpomegranate.icar.gov.in/EPublications
11. http://www.puneapmc.org/rates.aspx
12. https://www.r-bloggers.com/the-ultimate-guide-to-partitioning-clustering/
13. https://www.machinelearningplus.com/machine-learning/complete-introduction-linear-regression-r/

Dr. Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Semi passive investment using LEAPS through machine learning

Kumudini B. Manwar[1], Monalisa Bhinge[2]
Assistant Professor
Sinhgad Institute of Management

Abstract:
Investment is the core entity observed in human beings which is not there in other species. Investment is important as it ensures present and future long term financial security. There are various alternatives of investments, to mention some of them are like stocks, bonds, ETFs which generates passive income in terms of dividend, appreciation in value. Although only investment in stocks is risky as it can generate negative returns, it is better said to invest in different types, mixed with low and high risk such as real estate, commodities, stocks, bonds, ETFs. All such types of investments can be thought as long term investments which may yield some future income. In this paper, Long Term Equity Anticipation Securities (LEAPS) have been observed through machine learning kind of perspective as a source of passive income in Indian scenario.

Introduction:
Amongst all species human nature only thinks for their future and in order to secure it human beings does variety of investments. Investments are having their own advantages needless to mention the reasons. In this paper, various types of investments such as stocks, mutual funds, fixed deposits, recurring deposits, public provident fund, employee provident fund, national pension system, commodities, real estate, etc. have been briefed and amongst them the LEAPS is being modelled so as to judge it as a part of passive income through machine learning perspective.

Investment types: An Indian scenario
Real Estate
Investment in real estate implies buying and selling of plots, apartments, homes, agricultural lands. The real estate investment requires large cash outlay for buying, selling and business mind is required to trap the opportunity. The income source from such kind of investment can be thought as rental income, capital appreciation, recurring crop income however the waiting period may test the patience of the investor. Risk of economic slowdown, threat of illegal documentation is always there.

Fixed and Recurring Income Investment
Fixed or floating interest on a capital can be earned by this sort of investment. Interest components earned may be on regular basis such as monthly, quarterly, half-yearly or annual as long as capital is retained. This type of investment is of very low risk thereby giving very low returns. Returns may be as low as they may not beat the inflation rate. These investments include fixed deposits by banking sector, government bonds, corporate bonds, etc.

Equity Investment
Various stock exchanges in India such as National Stock Exchange, Bombay Stock Exchange, Culcutta Stock Exchange, Madras Stock Exchange offers buying and selling of shares of listed companies. There are around 20 exchanges in India out of which Bombay Stock Exchange and National Stock Exchange is popular and voluminous. As opposed to fixed and recurring income equity investment does not guarantee of capital, however, if investment done wisely in appropriate equities then returns can be enormous. Despite the nature of more risk and more returns of investments in equities, Indian equities have statistics

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

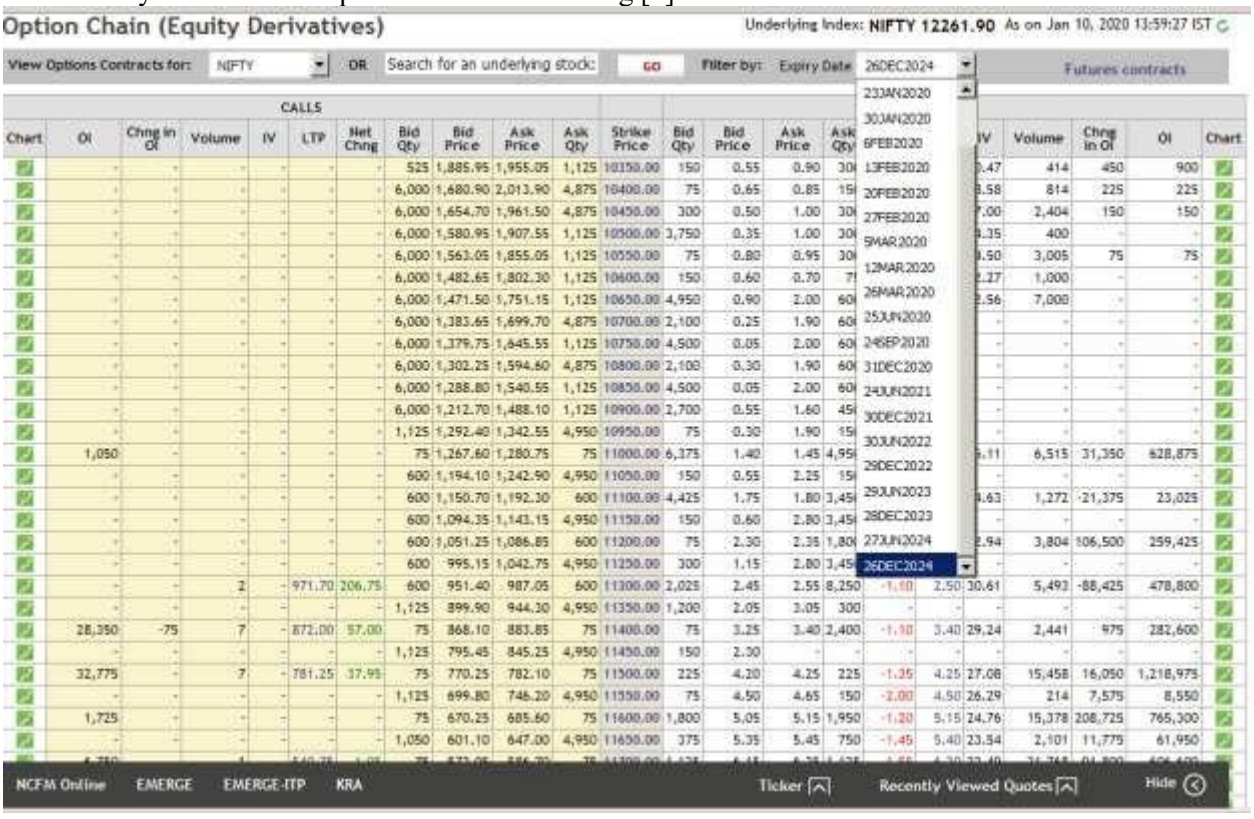
of 14% to 15% compound annual growth rate (CAGR) returns in last 15 years. Moreover, one need not have large cash outlay to invest in equities as compared to investment in real estate.

Commodity Investment

Metals like gold, silver and other similar commodities come under this type of investment. These investments have given better appreciation than fixed or recurring income investments over last 25 years. The habit or by virtue of the Indian tradition, Indian investors in this category is acquiring these commodities with them which altogether creates a threat of loss, theft, decay nature of the metals; however, these type of investments can be done in the form of Exchange Traded Funds (ETF).

Investments in LEAPS

On long term basis, clearly equity investments give best results over other type of investments. However, all these types of investments need human money and human time. A framework can be modeled so as to machine may take over the decisions of investing money in equity segment to yield handsome gains over long term. Long-term equity anticipation securities (LEAPS) are publicly traded options contracts with expiration dates that are longer than one year. As with all options contracts, a LEAPS grant a buyer the advantage, but not the necessity, to purchase or sell—depending on if the option is a call or a put—the underlying asset at the predetermined price on or before its expiration date. [1]Algorithmic trading, or computer-directed trading, cuts down transaction costs, and allows investment managers to take control of their own trading processes. [2]. ChaboudA., B. Chiquoine, E. Hjalmarsson and C. Vega .[3] studied the development of algorithmic trading in the foreign exchange market on the electronic broking system (EBS) in threecurrency pairs euro-dollar, dollar-yen, and euro-yen. In their study Chaboud et. al presented some relation between algorhmic trading and volatility. Algorithmic trading contributes more to thediscovery of the efficient price than human trading.[4]



ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

A typical option chain of Indian National Stock Exchange is shown in the figure.

Long term options of Nifty 50 index are available to trade for next five years, that is up to December 2024, though the liquidity remains very less in later years.

Experiment with Long Term Options

In this paper, straddle of in the money (ITM) option, around ten percent below ITM strike straddle and around ten percent above ITM straddle of last month expiry, that is December monthly expiry has been taken into consideration collectively. Back testing is done for previous three years 2017, 2018 and 2019.
To be specific, in the beginning of 2017 Nifty spot was trading around 8200 thereby picking the strikes 7500, 8000 and 9000 of December 2017 expiry for premiums 998, 1100 and 998 respectively. Total 3096 premiumpaid/collected. In the beginning of 2018 Nifty spot was trading around 10436 thereby picking strikes 9500, 10500 and 11500 of December 2018 expiry for premiums 1618, 1091 and 993 respectively. Total 3702 premium paid/collected. In the beginning of 2019 Nifty spot was trading around 10910 thereby picking strikes 10000, 11000 and 12000 of December 2019 expiry for premiums 1691, 1341 and 1340 respectively. Total 4372 premium paid/collected.

Nifty in 2017, 2018 and 2019

In 2017, Nifty was in clear uptrend whereas in 2018 it was in somewhat consolidation and in 2019 it was again moving for uptrend. Majority of the times the markets remain in some trend which can be gauged by using some broad parameters such as economic growth, market sentiments and some other technical such as long term moving averages and relative strength indexes. There are many technical parameters available for implementation but for taking broad judgement with few parameters is sufficient as it deals with long term options giving more room to handle the losses/gains.

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

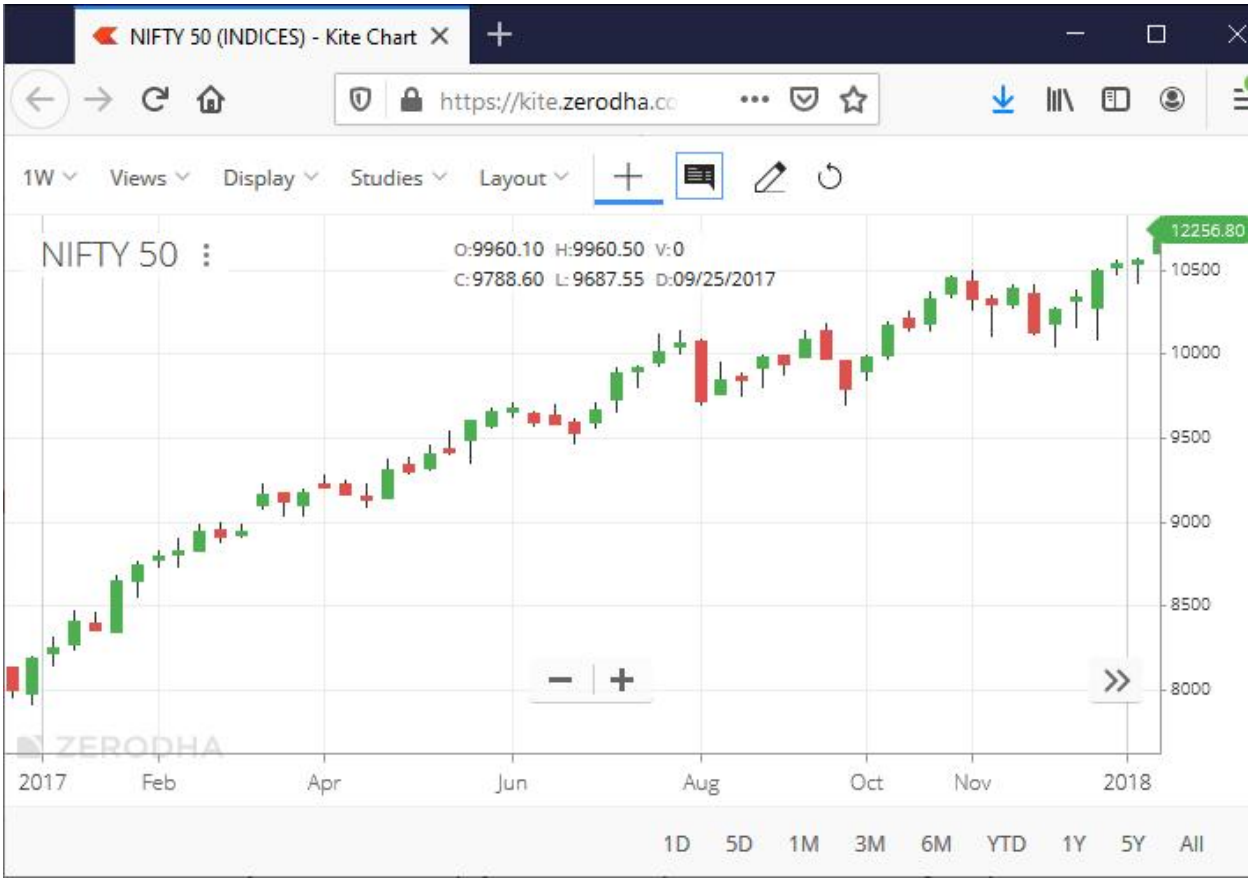


Figure: Nifty index in 2017

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Figure: Nifty index in 2018

Figure: Nifty index in 2019

ISSN: 0474-9030
Our Heritage
Vol-78-Issue-15
January-2020
UGC Care Listed Journal

Experiment

The Historical Contract-wise Price Volume Data is available on National Stock Exchange website in scattered form providing at most 90 days' data at a time. For years 2017, 2018 and 2019, December expiry data of every year is pulled and preprocessed with respect to the strikes picked up for respective years. The rationale behind selecting the strikes is considering uptrend, consolidation and downtrend nature of the market. If market remains in any of these state, the straddles would give decent gains.

As in 2017, it was sharp uptrend in Nifty index, long term option in terms of straddle buyer have generated hefty gains.

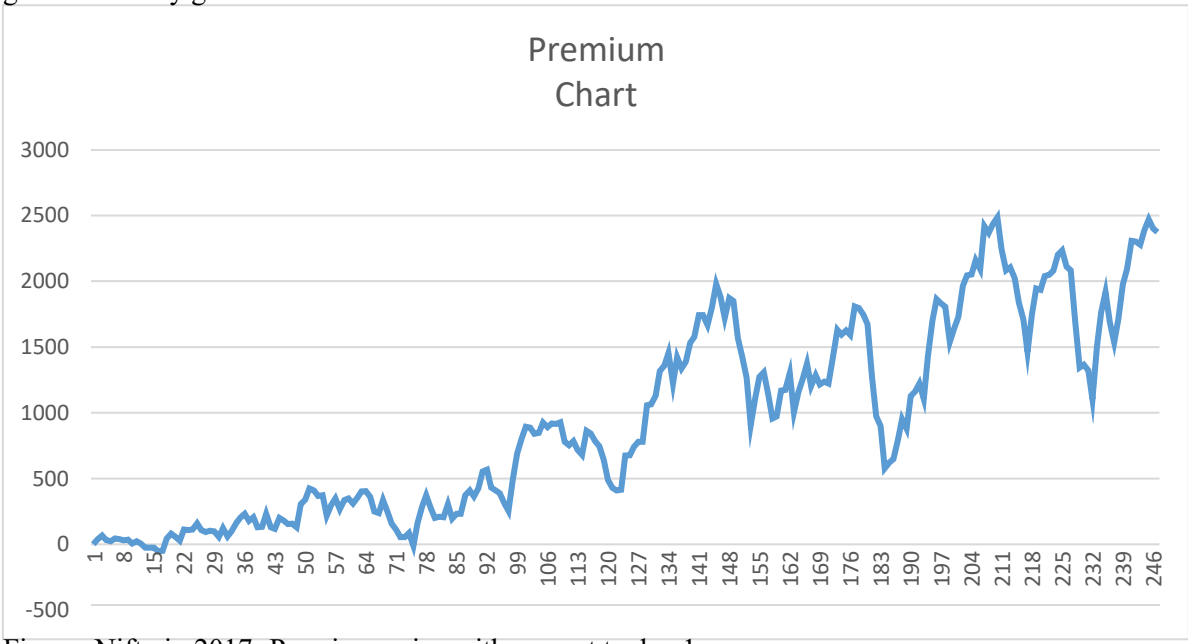


Figure: Nifty in 2017- Premium gains with respect to day 1.

In 2018, Nifty index was somewhat in consolidation, long term option in terms of straddle buyer and sellers have generated decent gains.

ISSN: 0474-9030
Vol-78-Issue-15
January-2020
Our Heritage
UGC Care Listed Journal

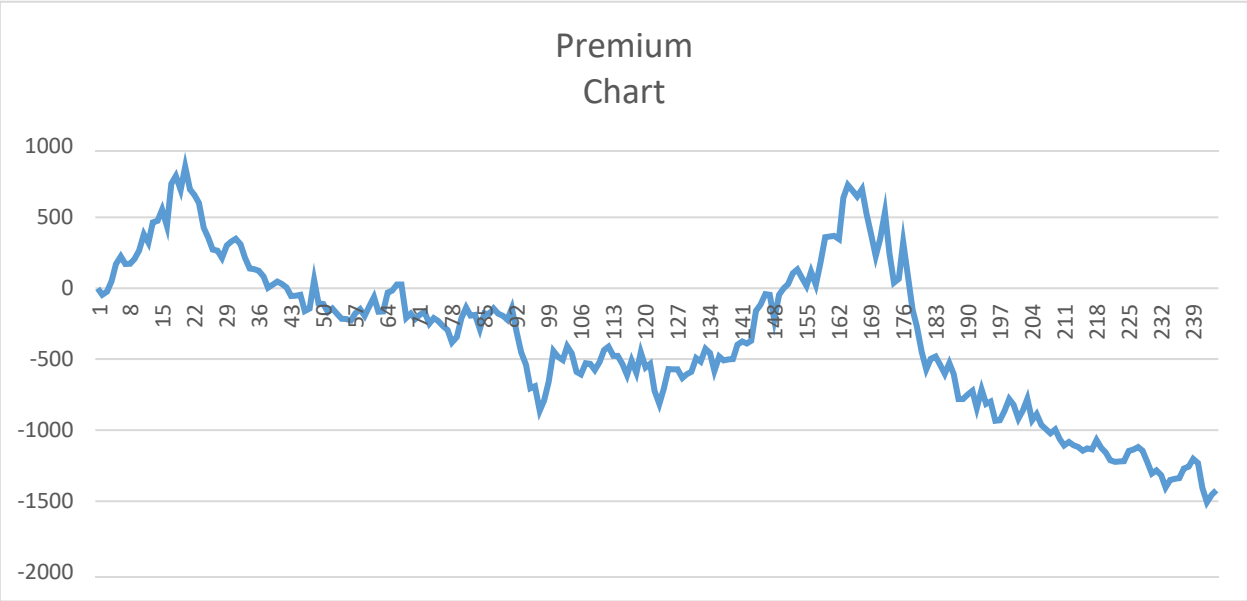


Figure: Nifty in 2018- Premium gains with respect to day 1.

In 2019, Nifty index was again getting its uptrend after consolidation, long term option in terms of straddle buyer and sellers have generated decent gains.

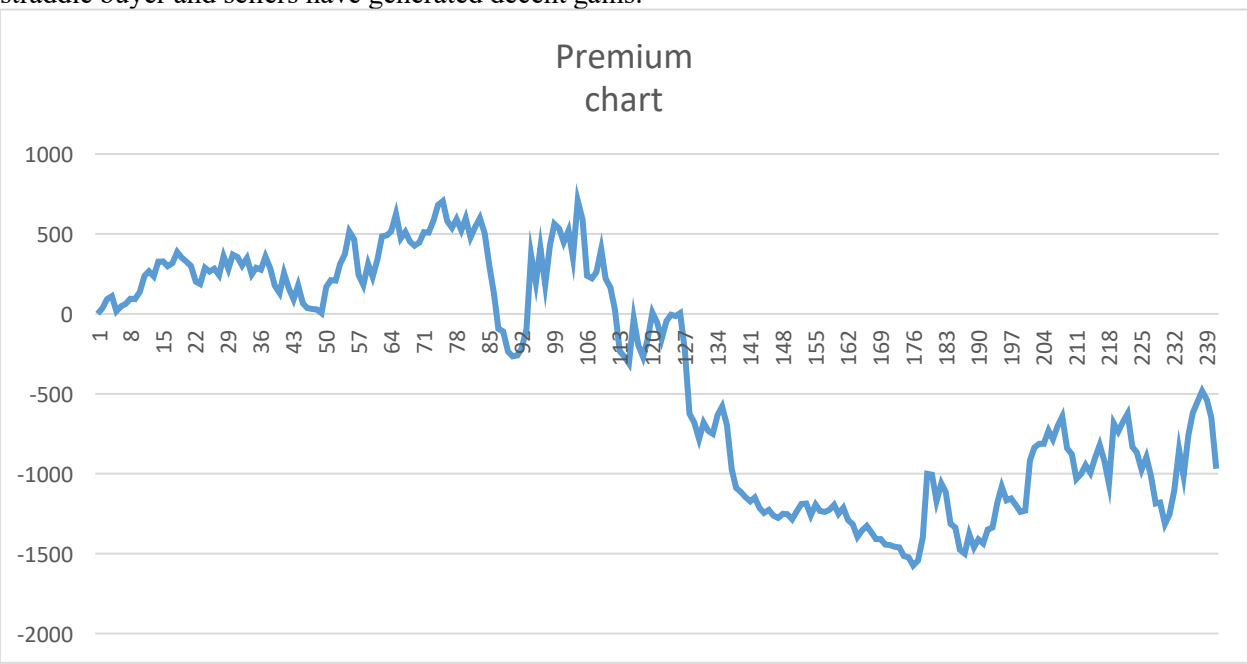


Figure: Nifty in 2019- Premium gains with respect to day 1.

Conclusion

Long term straddles with predefined rationale can yield decent gains provided the machine algorithms should be trained to book gains or exit the trades by booking losses under given parameters. There is always an upper hand if options are shorted in high volatility environment as prices of premiums shot up than their intrinsic value. Moreover, time decay works in favor of seller provided market remains range bound. In 2017, option buyers in the mentioned strikes collectively have hefty gains whereas in 2018 and

2019, both option sellers as well as buyers were having equal opportunity to grab the decent gains. The trained machine algorithm can easily work for an individual in all type of market environments to their benefits. The machine algorithm can be designed and implemented using python. In this paper, study is limited up to back testing data up to three years only. As it is tested with straddles, downtrend market though not considered might give similar result in favor of straddle seller. The booking of profit period comes at the end of market consolidation. Most of the time in a period of long term market somewhere goes into consolidation, which can be identified by machine algorithm. Future study will consider back-testing of data encapsulating all sorts of market conditions and investigating buyers versus sellers perspective towards straddle, also strike price selection and trade timing is in very primary state in this paper which can be enhanced considering parameters like volatility, time decay, run-time management.

References:

1. By James Chen https://www.investopedia.com/terms/l/leaps.asp

2. "Survey of Algorithmic trading strategies in equities and derivatives" by Rajan Lakshmi A., Dr. Vedala Naga Sailaja, International Journal of Mechanical Engineering and Technology (IJMET) Volume 8, Issue 12, December 2017

3. "Rise of the Machines: Algo-rithmic Trading in the Foreign Exchange Market" by Chaboud, A., B. Chiquoine, E. Hjalmarsson, and C. Vega. 2009.

4. "Algorithmic Trading and InformationTerrence" by Hendershott and Ryan Riordanat IDEI-R Conference on Investment Banking and FinancialMarkets 2009.

Dr. Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Efficient Cellular Network in Hybrid Channel Allocation Scheme by using Directional & Omni Directional Antenna

[1]Shobha Sachendra Mishra ,[2]Sachin Sudhakar Subnis
Sinhgad Institute of Management,
Vadgaon Budruk,Pune

Abstract

Today is the world of mobile and we need high speed without any break during call. As the traffic is increasing regularly day-by-day, and the available channels are also limited, the efficient utilization of channels is very much required. We can categories channel allocation schemes into three: fixed channel allocation, dynamic channel allocation and hybrid channel allocation called as FCA, DCA and HCA respectively. The overall channels are divided into two disjoint set, say S1 and S2, in hybrid channel allocation. The set of nominal channels (i.e. S1) is assigned to each cell, and this assignment is done on FCA basis. The set of remaining channels (i.e. S2) are kept in a central pool and these are assigned dynamically.This paper presents a study of hybrid channel allocation in which we suggest to give services to the user by directional and omni directional antennas. At the corner of the cell structure, we suggest giving service by using directional antenna and at the middle of the cell we can use the omni directional antennas. It will provide a better and efficient service to the end user.

Keywords: *BS – Base Station, MS- Mobile Station, MSC –Mobile Switching Center*

INTRODUCTION

Communication has been focus point for exchange of information between parties that are located physically apart. The telephones have replaced the traditional way of communication that is postal letters and the also telegrams. Also the term `mobile' has been A revolution in the communication systems as it has opened-up innovative applications that were limited to one's imagination. Since last two decades, mobile communication has become an integral part of our society. The Mobile communication systems have improved the way of living.There are two phases of channel allocation algorithm: 1) a channel acquisition phase and 2) channel selection phase. In channel acquisition phase the main task to gather information of free on hand channels from nearby cells. Within minimum reuse no same channel must be there. The channel selection phase chooses a channel from the number of available free channels. This phase is concern for better channel utilization in terms of channel reuse. In the first phase (channel acquisition phase) of the distributed dynamic channel algorithm, there are two approaches: 1) search and 2) update. In the search approach, any cell, if it needs a channel then it searches all of its interference neighbors to get the current free available channel set. This set is used to select one channel-by-channel selection schemes.In the update approach, every cell keeps with it, the information about channels which are free available. If a cell requires a channel, the channel selection scheme pickup one available channel and confirms with all of its interference neighboring cells whether it can use the selected channel or not. If any cell acquires or releases a channel, at any time, then it informs to its interference neighbors. Hence, each cell in the system knows the channels that are available from its interference neighboring cell.
By doing The channel allocation schemes can be classified into three categories: 1) Fixed Channel Allocation (FCA), 2) Dynamic Channel Allocation (DCA) and 3) Hybrid Channel Allocation (HCA).

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Fixed Channel Allocation (FCA)

A set of channel is allocated permanently to every cell of the system. When any user requests a channel for communication, it searches the free channel in its own cell and if free channel is available, then it is assigned to the user otherwise the request will be blocked. In FCA strategy, every cell is assigned a fixed number of voice channels. A communication with a cell can only be made if there is an unused channel of that particular cell. Channel of a cell which is used are blocked and subscriber has to wait. The advantage of FCA is that it is simplest channel assignment strategy because it needs very simple circuitry. The downside of FCA is that it provides worst channel utilization. In FCA, a set of channels is enduringly given to each cell, as per the allowed reuse distance.

•Channel belong to the poll can we give service of channels of that particular cell.

• A call arriving in for a cell, and suppose there is no channel available, then it is first blocked and then cleared.

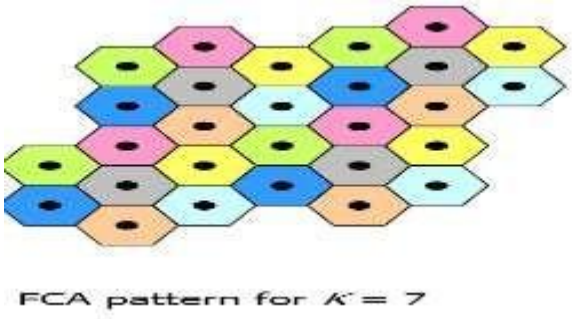


Fig1. Fixed Channel Allocation pattern for k= 7

Dynamic Channel Allocation (DCA)

In the DCA strategy, channels are assigned dynamically, when fresh calls come in the system. This is achieved by keeping all the free channels in a central pool. When a call is completed, the channel which is currently being used is returned back to the central pool. In this strategy channels are for the time being assigned for use in cells for the period of the call.Every time when any cell attempts to make a call, the corresponding Base Station (BS) requests a channel from Mobile Switching Center (MSC). The MSC then give a channel to the asking Base Station. When the call is over the give channel is go back and kept in a central pool.A channel that is being used by a cell can be simultaneously reassigned to another cell in the system, only if the space between the two cells is more than the minimum reuse distance. By doing so, we can avoid co-channel interference. DCA has less change of blocking then FCA. In DCA capacity of trucking increase of the network, because all the channels are available to all cells, hence DCA gives better quality of service. But in heavy traffic condition DCA results in heavy load on switching center.

Hybrid Channel Allocation (HCA)

The hybrid channel allocation (HCA) method is the grouping of fixed channel allocation (FCA) and dynamic channel allocation (DCA). In this, some of the channels are given permanently to all cell where as the other channels are owed dynamically. In HCA schemes, the overall channels that are available for service are divided into two sets:

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

1) fixed channels and 2) dynamic channels.

The dynamic set increase flexibility of the system and is shared by all users in the system.

The fixed set has 'nominal channels' which are permanently given to cells same like in the FCA schemes.

The channels from this set, in all cases, are to be preferred for use by their respective cells

The overall performance of hybrid channel allocation scheme is intermediate between FCA and DCA schemes.

When any call requires service from a cell and if all the nominal channels of that cell are busy, the call is given to dynamic set.

Frequency Reuse

Method which reuses frequencies and channel in communication system to improve capacity and spectral efficiency is called Frequency reuse, or Frequency planning. Frequency reuse is one of the main concepts of wireless system.

In mobile cellular systems, Frequency recycles means frequencies are given to Frequency reuse technique of a cellular system.

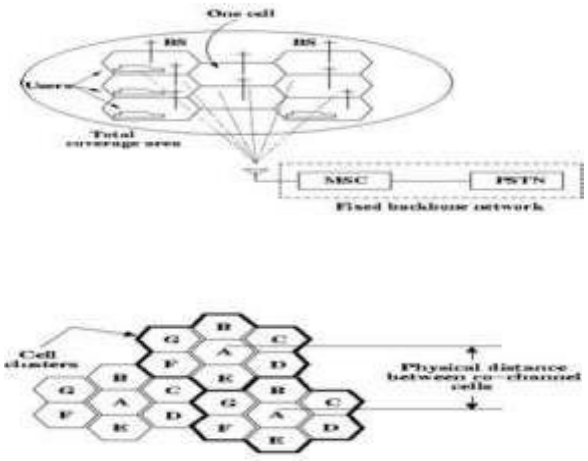


Fig2. - Basic Cellular Structure.

The service is reused in a usual pattern of cells, each enclosed by one base station. The repeating normal pattern of cells is called a 'cluster'. Two cells can reuse the same set of channels are at a suitable distance, called reuse distance, D, that allows tolerable levels of inter-cell interference.In a cellular system two cells can share the one channel given the distance between these cells is at-least the minimum reuse distance D_{min} [2]. If the distance between the two cells is less than the minimum reuse distance D_{min} , they cannot use the same channel because these cells will create interference. Such interference is known as co channel interference. Two cells C_1 and C_2 are called interference neighbors of each other, if geographical distance between them is smaller than the minimum reuse distance Dmin.

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Hando_ Process

In a mobile cellular system, channel shift from one base station to another for have a pair communication during their move from one cell to next with no interruption to the call. In other words, when a mobile station (MS) moves from one cell to another cell, during the conversation in progress, the mobile switching center. Hando_ is a process of auto transfer of call to a new channel without disturbing the chat by MSC. In any cellular system, hando_process is an important task and it must be performed successfully and the users must be unaware of this.

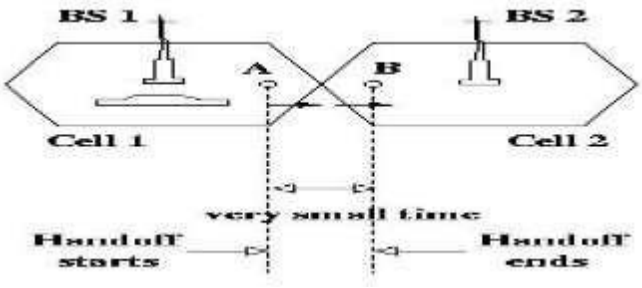


Fig.3 - A schematic diagram of hando_Process

In the mobile systems, the radio spectrum is limited source. It becomes more important to efficiently utilize the spectrum when some of the cells in the network become hot-spot. If the bandwidth available to any cell is not enough so as to sustain the users demand, in that case the cell becomes hot-spot and so the call is be blocked or dropped. The efficient utilization of the channels, improve system capacity. The channel transfer scheme allocates channels to all cells in such way that it reduce chance of call-blocking or call dropping and it also improve the quality of service. We can reduce the probability of call-blocking. For that we design hybrid channel allocation (HCA): a mix of both fixed channel allocation (FCA) and dynamic channel allocation (DCA).The simulation results have shown that the HCA scheme significantly reduces call-blocking probability in case of hotspot scenario i.e. a cell becomes hotspot. The cell which is hot-spot, will request for more than one channels to be allocated to it , and this demand is proportional to the level of hot-spot. A central pool is maintained for each channel which are not assigned to any cell, and on request from the hotspot cell, channels will be assigned. It helps to reduce the probability of call-blocking a cell becomes hot-spot.

The Hybrid Channel Allocation scheme using the Directional Antennas and omni directional antennas

The concept of employing the Dynamic channel allocation scheme with the primary goal of realizing the power consumption beginning at the Base Stations in the respected networks. In this research initiative, we have managed to use the advantages of directional antenna and hence concentrate the transmitted signals towards the intended users and thus reduce the transmission power need to transmit the signals to the users in the particular cellular network. Simulation has been with a system modeled designed and the situation with the Mobile Stations (MS) stationed at different positions and the over throughput and the power efficiency is estimated. This usage of directional antennas also provide for the effective cancellation of the interference resulting from the neighboring Mobile Stations. At any given instant the bandwidth in the available cellular system is the limited resource and this resource has to be effectively distributed and used efficiently and this thereby leads to the better performance of the cellular systems.

The available total bandwidth is divided into the set of available carriers and they are further subdivided into channels which will be effectively used for the communication purposes. There are generally two types of channels which are namely the communication channels and the control channels and they are serving the two important purposes of communication transfer and the control information exchange and it is here that the channel allocation algorithm uses up the channel to transfer the channel control information.In cellular/mobile communication networks two different users can share the same channel if they are well separated by the minimum required distance which is referred to as the minimum reuse distance and otherwise the same channel cannot be used due to the existence of the co-channel interference. Hence the Base Station in the neighboring cells are required to assess the position from the other users and take care that the same channels is not used up for the transmission purposes which will lead to the bad performance of the overall system.
When a mobile station (MS) wants to access the channels in order to place calls then it first sends a request message to the Base Station then it becomes the responsibility of the Base Stations in order to allocate the channels following one of the three different types of channel allocation schemes. The clear difference between the three types is illustrated in the following Figure below

Omni Directional antenna and Directional Antennas in Hybrid channel allocation

In mobile communication system , an omni directional antenna is a class of antenna which radiates equal signal power in all directions perpendicular to an axis, with power varying with angle to the axis (elevation angle), declining to zero on the axis.
A beam or directional antenna is an antenna which receives or radiates with greater power in specific directions and allow increased performance with reduced interference from unwanted sources. Omni directional antennas can receive signals from all the directions equally good, whereas Directional antennas can receive signals from one direction only. Directional antennas can detect a weaker signal than an equivalent Omni directional antenna. Directional antennas do this by decreasing its ability to pull in signals from other directions.

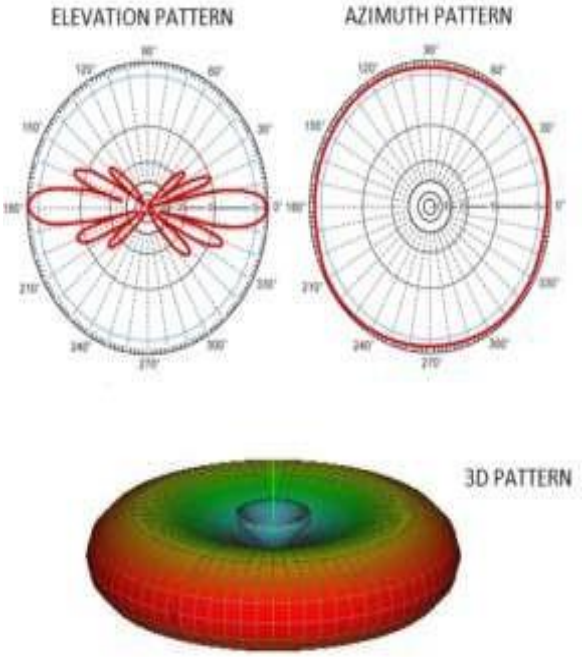


Fig.4- Antenna Radiation Patterns

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

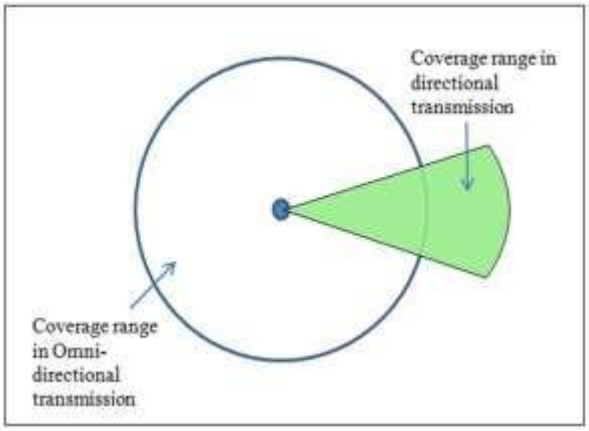


Fig.5- Coverage Range of Antenna

In our study we would like to give service to the user by both the antennas. At the corner of the cell structure we will give service by using directional antenna and at the middle of the cell we can use the omni directional antennas.

Conclusion and Future Work

In this Paper we had first try to define all the special type of channel allocation ie, Fixed channel allocation, Dynamic channel allocation and hybrid channel allocation. Then we had focus on hybrid channel allocation on which we had done descriptive study of hybrid channel allocation using omnidirectional and Directional Antenna. In our study we had found that a frequency within the cell of a network can we utilized relevantly and also we can make efficient cellular network if we use both the antenna. We will use directional antenna at the boundary of each cell so that we can use its features more affectively at the boundary and omnidirectional antenna at the center of our cell so that it provides its better service at the center of our cell.
In Future work we will work on the simulator METLAB to find the calculated value for this hypothesis with will provide us the clear picture of our study. There may be many drawbacks for using this antenna we can work on that.

REFERENCES:

[1] Theodore S. Rappaport. Wireless communications principles and practice, Second edition 2003.
[2] Jiangping Jiang et.al. On distributed dynamic channel allocation in mobile cellular networks. IEEE transactions on parallel and distributed system, 13(10): 1024-1037, 2002.
[3] Scott Jorden. Resourse allocation in wireless networks. Journal of high speed networks, 5(1): 23-34, 1996.
[4] William E.Frazier, “Handbook of Radio wave propagation loss”, NTIA Report 84-165, December 1984
[5] Frederik Petre, Geert Leus, Luc Deneire, Marc Engels , Marc Moonen, “Adaptive Space time chip-level equalization for WCDMA downlink with code multiplexed pilot and soft handover”.
[6] Megha Gupta, A.K Sachan, “Distributed Dynamic Channel Allocation algorithm for cellular mobile networks”, Journal of Theoretical and Applied Information Technology, 2007 JATIT.
[7] S. S. Mahapatra, K. Roy, S. Banerjee, and D. P. Vidyarthi, “Improved genetic algorithm for channel

allocation with channel borrowing in mobile computing," IEEE Trans. Mobile Comput., vol. 5, no. 7, pp. 884–892, Jul. 2006.

[8] K. Y. Lim, M. Kumar, and S. K. Das, "Message ring-based channel reallocation scheme for cellular networks," in Proc. Int. Symp. Parallel Architectures, Algorithms, Netw., 1999, pp. 426–431.

[9] D. Zhao, X. Shen, and J.W. Mark, "Soft handoff and connection reliability in cellular CDMA downlinks," IEEE Trans. Wireless Commun., vol. 5, no. 2, pp. 354–365, Feb. 2006.

[10] W. Liao, C.-A. Ke, and J.-R. Lai, "Reliable multicast with host mobility," in Proc. IEEE Global Telecommun. Conf., Nov. 27–Dec. 1, 2000, vol. 3, pp. 1692–1696.

Dr. Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

BIG DATA ANALYTICS IN TEXTILE INDUSTRY

Prof. Balchandra Narsimalu Doddi
Asst. Prof.: Sinhgad Institute of Management

Abstract
The concept of big data includes analysing capacious data to extract valuable information. In the textile world, big data is increasingly playing a part in trend estimating, analysing consumer performance, preference. The purpose of this paper is to introduce the term textile data and why it can be considered as big data. It also gives a broad classification of the types of textile data and briefly defines them. Also, the methodology and working of a system that will use this data is briefly described. Big data refers to a process that is used when traditional data mining and handling techniques cannot uncover the insights and meaning of the underlying data. Data that is unstructured or time sensitive or simply very large cannot be processed by relational database engines. This type of data requires a different processing approach called big data. This approach can be utilized for analysing the information relating to spinning, weaving and chemical processing in the manufacturing industry of towels or cheddar's sector. This segment will definitely enhance the value addition in technological development and interpretation to solve the problems of the process. Even than very negligent researches are available in this field but it's a lastly growing field and smartly utilized in the textile sector.

Keywords: *Big Data, Textile Data, Textile Industries, Digital Textile, Fashion.*

Introduction

Indian Textile Sector contributes to our economy as follows:

- 5% of GDP (at factor cost)
- 14% Industrial Production
- 9% Excise and Customs revenue collections
- 12% of total manufacturing exports
- Second largest provider of employment after agriculture

Considering the importance of this sector, Government of India has prepared a strategic plan for textiles industries and the vision, mission and objectives as stated in the strategic plan clearly focus on productivity improvement. One of the objectives as stated in strategic plan is

"To improve productivity across the entire textile value chain."

It highlights the need to improve the productivity of entire textile sector.

The textiles can be classified into yarn and power loom, hand loom, woollen, jute, sericulture and silk, handicraft, clothing and apparel, technical textile, etc. Products of power loom are towels (and allied products such as napkins), terry towels, cheddar's, etc.Modern manufacturing facilities are data-rich environments that support the transmission, sharing and analysis of information across ubiquitous networks to produce manufacturing intelligence. The potential benefits of manufacturing intelligence include improvements in operational efficiency, process innovation, and environmental impact. However, similar to other industries and domains, the current information systems that support business and manufacturing intelligence are being tasked with the responsibility of storing increasingly large data sets (i.e. Big Data), as well as associate the real-time processing of this 'Big Data' using advanced analytics. The predicted exponential growth in data production will be a result of an increase in the number of instruments that record measurements from physical environments and processes, as well as an increase in the frequency at which these devices record and persists measurements. The technologies that transmit this raw data will include legacy automation and sensor networks, in addition to new and emerging paradigms, such as the Internet of Things (IoT) and Cyber

Physical Systems (CPS) and Artificial Intelligence (AI). The low-level granular data captured by these technologies can be consumed by analytics and modelling applications to enable manufacturers to develop a better understanding of their activities and processes to derive insights that can improve existing operations. Big data, as the name suggests, is an enormous amount of data. It can be commonly referred to as the four V's:

1. Volume
2. Velocity
3. Variety
4. Veracity

The characteristics of these four V's as described below:

1. Volume of Big Data:
   The volume of data refers to the size of the data sets that need to be analyzed and processed, which are now frequently larger than terabytes and petabytes. The sheer volume of the data requires distinct and different processing technologies than traditional storage and processing capabilities. In other words, this means that the data sets in Big Data are too large to process with a regular laptop or desktop processor.

2. Velocity of Big Data:
   Velocity refers to the speed with which data is generated. High velocity data is generated with such a pace that it requires distinct (distributed) processing techniques.

3. Variety of Big Data:
   Variety makes Big Data really big. Big Data comes from a great variety of sources and generally is one out of three types: structured, semi structured and unstructured data. The variety in data types frequently requires distinct processing capabilities and specialist algorithms.

4. Veracity of Big Data:
   Veracity refers to the quality of the data that is being analysed. High veracity data has many records that are valuable to analyse and that contribute in a meaningful way to the overall results. Low veracity data, on the other hand, contains a high percentage of meaningless data.

Data that is high volume, high velocity and high variety must be processed with advanced tools (analytics and algorithms) for complete

functioning and analysis of data to obtain required output. The ability to analyse this enormous amount of data is known as big data analytics. The analysis of big data makes valuable conclusions by converting the data into statistics.

Production Vs Customization:

There are many technologies that help the industry in creating new ways for satisfying the ever-growing and ever-changing needs of the customer. There are, however, many challenges when it comes to adapting the production process as complexity increases with the level of customization. Another problem with mass customization is that, the customer is unaware of her/his needs and mostly lack professional design knowledge. Due to this, most mass customized products are not as desired, and hence, the customer is rendered dissatisfied. Thus, the requirement of a personal style advisor arises; to help the customer in finding a garment that satisfies her/his needs. Since, everything is going on the web, so there are virtual style advisors available. Most of them are not affordable by every customer. For this, the recommendation systems were introduced. These systems offer the customer recommendations during the process of designing. They can be based on collaborative filtering, wherein the system recommends on the basis of the preferences of a group of users; content based filtering, wherein the system uses user profile to match an item. This requires ratings given to a product directly by the user.

Big Data Analytics

Big data analytics does not revolve around how much data a company has but how a company utilises the collected data. It helps organizations harness their data and use it to identify new opportunities. That, in turn, leads to smarter business moves, more efficient operations, higher profits and happier customers. The company can take data from any source and analyse it to find answers which will enable:

1. **Cost Reduction:**
   Big data technologies such as Hadoop and cloud-based analytics bring significant cost advantages when it comes to storing large amounts of data – plus they can identify more efficient ways of doing business.

2. **Faster, better decision making:**
   With the speed of Hadoop and in-memory analytics, combined with the ability to analyse new sources of data, businesses are able to analyse information immediately – and make decisions based on what they've learned.

3. **New Products and Services:**
   With the ability to gauge customer needs and satisfaction through analytics comes the power to give customers what they want.

Textile Big Data

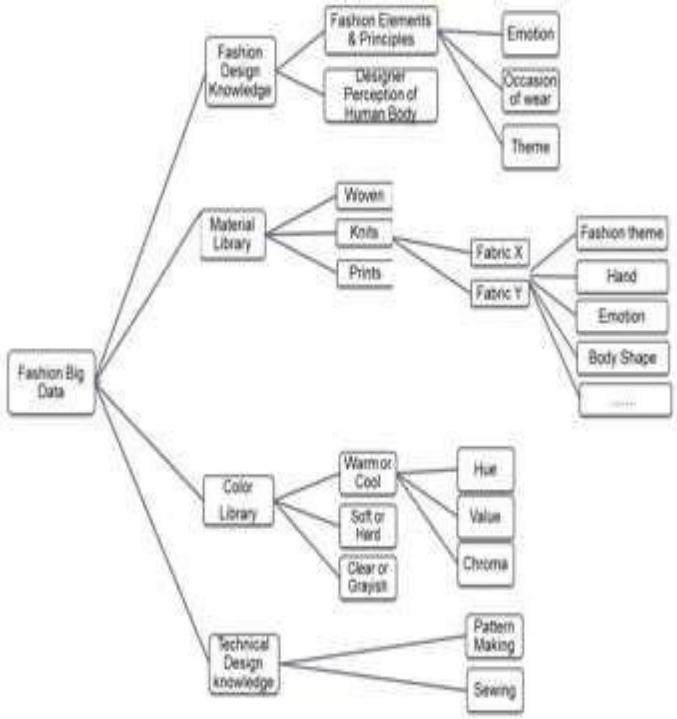
All the data associated with a textile product is hence called as textile data. The textile industry generates and creates several data sources. All these data are in various forms, such as words, images, etc. The era of "Fast Fashion" is making data grow and changing rapidly. Therefore, these data could be called "Fashion Big Data". The textile industry needs to analyse every last detail of market trends and demand. That is why companies in the sector must not only work with designers or sewers, but also need analysis experts. Hence, this data can be termed as "Big Fabric" it portrays all the features of big data. Following is a broad classification of the textile data:

1. Material:
   This includes the fabric that is mainly made from natural or synthetic sources. This material will be converts into the making of textile yarns and fabrics. The fabric has various characteristics like yarn type, yarn count, yarn twist, weft & warp density, weave structure etc. It may be in a form of a pliable hair like strand or as the smallest visible unit of textile production.To achieve different types of fabric, one or more of these are changed. This enormously changes the appearance and had of the fabric, which correlate to emotions, textile themes, colors etc.

2. Textile Design:
   It is the knowledge about the elements & principles of design, which combined together, gives the design of a textile product. The design of a product is mostly influenced by human emotions, textile themes, occasion of wear etc.

3. Color:
   Color preference is an important aspect that influences a gamut of human behaviour. Color image scale states that color can have three attributes – warm or cool, soft or hard, clear or grayish, which associate with hue, chroma & value. These attributes can be linked with the emotion

4. Technical / Production design:
   The technical design allows the producer to understand that how the product will be made. This makes the design of a product production friendly. It includes knowledge of pattern making, sewing etc. To extract knowledge from these data, they have to be linked together. The next section describes the proposed system that will use this data.



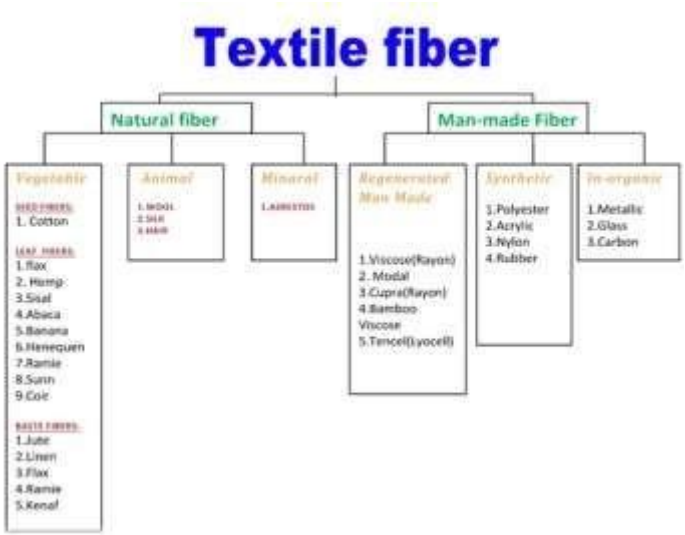


Figure 2. Data in Textile

Proposed System

The proposed system (figure 3) is a combination of the knowledge based recommender system and a search engine. It takes from engine the ability to provide the customer with an option to write her/his query and with the help of the recommender system, offer a product to the customer. The system will have the knowledge bases mentioned in section 3. These bases will help in removing the cold start problem. The working of the system will be such that the customer can select a product type and its size. Now the system will recommend a material, color, design which matches best the material type selected as well as that looks best product type (to be identified using the measurements provided by the customer). If the customer likes the recommendations she/he can choose to order the product, or else the system will improve its suggestions. The methodology to be followed to build the system is also presented in figure 3. Afterwards, a virtual designer on basis on big data applications it will show

other functionalities which are related to product design, design fabric etc. If the conditions are fulfilled the new design will create successfully. In this way methodology will work.

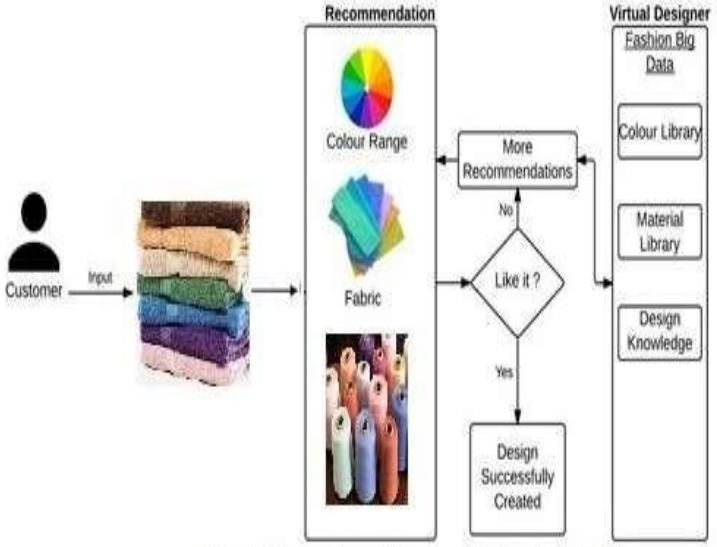


Figure 3. An overview of the proposed system for textile data

Goal of Big Data Tools:

Big Data tools are used for the analysis of the huge and complex data. Many organizations have now taken Big Data not just a buzz-word but a new technique for improving business. Organizations have to analyse mixed structured, semi structured or unstructured data. This is dons in search of useful business and market information and insights. Big data analytics helps organize this data for the organizations. Organizations have to analyse mixed structured, semi structured or unstructured data. This is dons in search of useful business and market information and insights. Big data analytics helps organize this data for the organizations. Big data analytics is the process of examining large data sets containing a variety of data types — i.e., big data to uncover hidden patterns, unknown correlations, market trends, customer preferences and other useful business information. The analytical findings can lead to more effective marketing, new revenue opportunities, better customer service, improved operational efficiency, competitive advantages over rival organizations and other business benefits.

Conclusion

The study introduces the term textile data and why it can be termed as big data. It also presents the classification of the data and briefly defines each one of them. In addition to this, a system is proposed that will use this data to provide the customer with a mass customization service. This methodology and working of the proposed system is briefly described. The future work involves the collection of the textile data, creating knowledge bases, establishing a link between those knowledge bases and connection it to the search engine.

Future Scope

Besides textile industry people, technology vendors are playing significant role in transforming the digital textile industry. Leaving behind popular social media forums, firms like SAP offer high-speed analytical tools which allow you to turn good volume of data into real business value, in just a blink of an eye. Big Data Analytics of textile product suppliers can also be leveraged to have good understanding on trends and ideas, which are persisting among audience, and those which are on the verge of being forgotten. Using such insights, designers make necessary adjustments in their products, change their marketing strategies, and then launch their fine collections in the market. Thus, Big Data influences key decisions related to manufacturing textile products, and helps both the industry leaders

and their targets to know each other, and jointly cooperate in taking the digital textile industry accelerati

References

[1] De Raeve A, De Smedt M, Bossaer H. Mass customization, business model for the future of fashion industry. In 3rd Global Fashion International Conference 2012 Nov (pp. 1-17).

[2] Sharma R, Singh R. Evolution of recommender systems from ancient times to modern era: A survey. Indian Journal of Science and Technology. 2016 May 30;**9(**20).

[3] Park DH, Kim HK, Choi IY, Kim JK. A literature reviews and classification of recommender systems research. Expert Systems with Applications. 2012 Sep 1;**39**(11):10059-72.

[4] Guan C, Guan C, Qin S, Qin S, Ling W, Ling W, Ding G, Ding G. Apparel recommendation system evolution: an empirical review. International Journal of Clothing Science and Technology. 2016 Nov 7;**28**(6):854-79.

[5] Kyu Park C, Hoon Lee D, Jin Kang T. Knowledge-based construction of a garment manufacturing expert system. International Journal of Clothing Science and Technology. 1996 Dec 1;**8**(5):11-28.

[6] Martínez L, Pérez LG, Barranco MJ, Espinilla M. A knowledge based recommender system based on preference relations. In Intelligent Decision and Policy Making Support Systems 2008 (pp. 93-111). Springer Berlin Heidelberg.

[7] C. L. Philip, Q. Chen and C. Y. Zhang, Data-intensive applications, challenges, techniques and technologies: A survey on big data, Information Sciences, 275 (2014), pp.314-347. [7] K. Kambatla, G. Kollias, V. Kumar and A. Gram, Trends in big data analytics, Journal of Parallel and Distributed Computing, 74(7) (2014), pp.2561-2573.

[8] S. Del. Rio, V. Lopez, J. M. Bentez and F. Herrera, On the use of Map Reduce for imbalanced big data using random forest, Information Sciences, 285 (2014), pp.112-137.

Dr. Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Security and Privacy issues of Big Data in Cloud Computing

Dr. Milind Godase[1], Mr. Ankush Kudale[2], Sachin Rana[3], Shrikant Sawarkar[4]

[1]Professor, [2]Assistant Professor, [3,4]MCA

MCA Dept.,

Sinhgad Institute of Management, Pune

Abstract:

Big Data Analytics has shown tremendous growth in recent years. Due to continuous use of social networking sites, the data storing capacity of computer systems, servers and even the data centers have crossed the limit. Cloud computing is one more field in which most of the ICT services like infrastructure, platform, software, etc. are provided online on demand basis. An important benefit of this service is that any size business company need not concern about their physical data storage facility. In such case we have to recognize that the big data in cloud is not only for storing purpose but also for investigation. This paper emphases on overview of Big Data Analytics and Cloud Computing, also point out security and privacy issues of big data in cloud computing.

Key words: *Big Data, Cloud Computing, Infrastructure as a Service (IaaS), Software as a Service (SaaS), Platform as a Service (PaaS), Security, Privacy.*

I. INTRODUCTION

Now a day there has been great demand to store and process huge amount of data in the area like government, science, commerce and finance. Systems which support big data and hosting them by using cloud computing; such systems have been successfully developed and used [1]. Word 'BIG DATA' was first time used by Michael Cox and David Ellsworth [2]. Big data is used for storing and processing the data, whereas cloud provides a reliable, fault-tolerant, scalable and available environment so there big data systems can perform [1]. Big data is the management, analysis, and capturing of different data sets as the size, complexity, and magnitude of each data change. The benefits that can be gained by big data analytics are that products can be effectively improved, reduce maintenance costs, provide more insights from an enterprise perspective, convert websites into real time, generate new revenue streams, and analyze risk effectively [3].Cloud computing is an upcoming area where end-users are provided with different services such as Platform as a Service (PaaS), Infrastructure as a Service (IaaS) and Software as a Service (SaaS) on demand.

PaaS is a platform for software development on the web and provided as on demand service, its main features are the integration of web services and databases through common standards, provides web based user interface (UI) tools that allows to create, modify, test and deploy various UI scenarios, supports multiple concurrent users using the same development application and supports for development team collaboration. In **IAAS** servers, networks, storage, and operating systems are distributed as on-demand services, and its key features include multiple users on a single piece of hardware, resources are distributed as a service, and support dynamic scaling. In **SaaS** software deployed over the Internet is provided by the Demand Service, and its main feature is easy access to business software, software upgrades and non-handling patches, and an API for integration into different pieces of software [4], [5].
Therefore, there is a lot of potential to take advantage of these two technologies, as they can give businesses a competitive advantage.

II. BIG DATA AND CLOUD COMPUTING

With the vast amount of information available worldwide, analysis of Big Data is becoming a major challenge for today's rapidly changing old-fashioned market. Mobile data details, social media, transaction data, insurance forms, financial statements, medical records, RFID tags, weather information, internet of items (IoT), traffic patterns etc. are available in various areas of Big Data. Big data is usually defined by five Vs with variety, velocity, volume, veracity and visibility [3], [4].

- **Variety:** includes different types of data.
- **Velocity:** data generation speed.
- **Volume:** the amount of data.
- **Veracity:** data uncertainty and trustworthiness.
- **Visibility:** insight, hindsight and foresight of the problem and its suitable solutions.

A. Big Data Business Drivers

Big data targets fall into key categories for most organizations [3][6] such as

- **Revenue:** Big data analytics - use cases design and implementation increases revenue, reduce costs, and improve business efficiency.
- **Customer services:** Improves customer understanding, gain behavioral insights into customer transaction and attract different customers.
- **Business development:** Introduces new products and services, gain new competitive insights into the market by deciding what to outsource without affecting the customer experience.
- **Business agility and governance:** Makes great plans, good decisions, and ensure regulatory compliance and low costs.
- **IT and operational optimization:** Develops a strategy that uses existing enterprise areas to optimize applications.

B. Cloud Computing

It refers to providing different types of services on the demand of different categories of users. The following are the different types of clouds for deploying big data in the cloud [5]

- **Public Cloud:** This makes different services accessible to the public on a business basis by the cloud service provider. The main advantages are cost effectiveness, reliability, flexibility, scalability and its disadvantages: low security, low customization.
- **Private Cloud:** This allows access to different services within the organization. Its main advantages are cost efficiency, greater control, higher security and privacy and its main disadvantage is cloud deployment requires unmatched cost, limited scalability and additional skills.
- **Hybrid Cloud:** It's a combination of public and private clouds that allow data and applications to move from one cloud to another. Its main benefits are scalability, flexibility and security and its disadvantages are infrastructural dependency, network issues and security compliance.

As it can be seen in Figure 1, the classification of clouds and each type of capability requires thorough analysis. In comparison, each type has its own pros and cons, but after taking a specific approach, it is up to the consumer to choose which type to rely on. Cloud computing is usually offered by cloud companies for enterprise organizations and can provide more services. Here, the need for the service and the security provided by the firm plays an important role in the user's final decision. Private clouds are used for small or medium-sized business companies, or even for personal use. It was transparent to a customer that he or she might use what was good for his company, depending on the privacy of the project and the level of resources or services provided in the public and private clouds. This way a hybrid cloud comes out where the resources of the public cloud and some of the private

cloud can be used to provide maximum satisfaction to the customer.

Figure 1 shows the services provided by public, private, and hybrid clouds, and provides the necessary information about the classification of cloud computing.

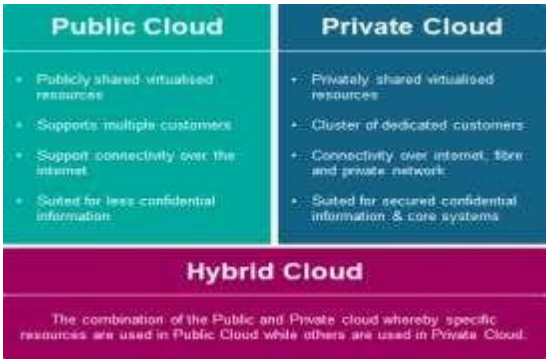


Figure 1: Classification of Cloud [7].

III. BIG DATA ANALYTICS IN CLOUD – FRAMEWORKS

There are several frameworks available for storing and processing data such as Hadoop, Spark, Twister etc. Many databases such as HadoopDB, Hebei, etc. have been used to store data and Apache Pigs, Apache Hive, etc. process the data. Figure 2 illustrates the use of cloud computing in Big Data analytics [8].

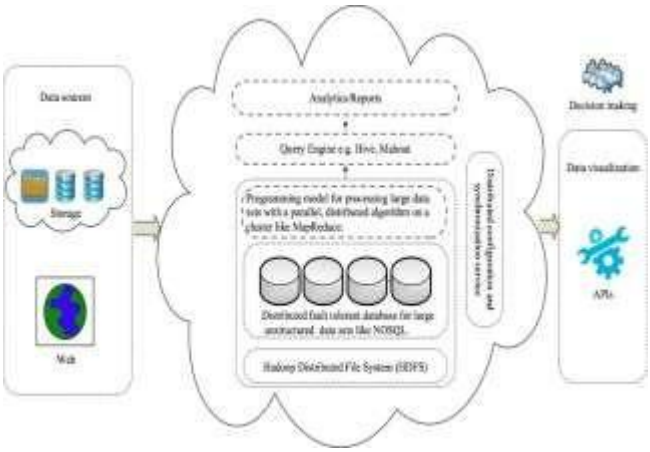


Figure 2: Use of Cloud Computing in Big Data Analytics [8].

Big Data Analytics requires high performance processors to deliver effective results for computing data mining algorithms. There are many data mining techniques and tools available to extract useful knowledge from big data sets, but effective response in a short time is the key. The combination of Big Data analytics and knowledge discovery with cloud computing systems offers effective solutions that generate useful insights in less time. Several models used for implementing Big Data analytics services are as follows [9].

- **Data Analytics Software as a Service:** here for end users it provides well defined data mining algorithms as service.
- **Data Analytics Platform as a Service:** to build their own applications without concern about underlying infrastructure it provides suitable platform for developers.
- **Data Analytics Infrastructure as a Service:** to run data mining applications it provides set of

resources.

A. Hadoop

For processing large data sets across different clusters of nodes, Hadoop is a framework and implements HDFS (Hadoop Distributed File System), open source software written in Java [10], [11]. Main components of Hadoop are as follows:

- **HDFS:** It holds large amount of data which provides efficient access where redundant data is stored across multiple machines which is highly fault tolerant and it is designed using low cost hardware [12]. It's main features are
  a) Most suitable for processing large amounts of distributed data.
  b) Command line interface for interaction with HDFS.
  c) For different nodes authentication, provides an efficient approach [13].
- **Map Reduce:** an efficient processing programming model for distributed computing using Java. Map Reduce Algorithm consists of two major tasks
  a) Map
  b) Reduce

The Map takes a set of data and converts it into key / value pairs (tuples), and Reduce takes Map's output as input and combines those data tuples into smaller sizes until the desired data is received [11],[13].

Advantages of Hadoop

- Software licensing is not required.
- Used to design for cheap commodity hardware.
- Simple programming model.
- Provides Scalability.
- It is Robust and Fault-tolerant

Disadvantages of Hadoop

- It is Restrictive programming model.
- It makes Difficult to manage clusters.
- Provides Limited security.
- It is not suitable to handle small sets of data [11], [12].

B. Spark

It is a fast cluster computing technology that reduces the Hadoop map model so that more types of computations can be performed efficiently, which involves the process of interactive queries and flows. Its main feature is memory cluster computing which speeds up the application [14], [15]. Its main features are speed, support for multiple languages and provision of advanced framework analytics [14]. Main components of Spark are as follows:

- **Spark Core:** an execution engine where various applications are built on spark platform and provide in-memory computing.
- **Spark SQL:** it is built on top of Spark core and provides support for structured and semi-structured data.
- **Spark Streaming:** provides efficient streaming of data sets by performing RDD (Resilient distributed datasets) transformations on these data sets.
- **Machine Learning Library:** distributed machine learning framework that runs as fast as Hadoop disk based version of Apache Mahout.
- **GraphX:** distributed graph processing framework that provides an API for modeling user defined graphs and also provides an efficient optimized results.

Advantages of Spark

- Supports in-memory cluster computing platform by executing batch jobs faster than Map reduce.
- Provides sophisticated analytics.
- It is flexible and powerful.
- Multiple languages support.
- Provides machine learning algorithms for future predictions

Disadvantages of Spark

- A lot of memory consumption.
- It would eat larger resources [14], [15].

IV. BIG DATA ANALYTICS IN CLOUD – SECURITY AND PRIVACY ISSUES

A. Security issues

Security is a major issue for data storage in cloud based networks. Generally Cloud computing has security issues with network, database, operating system, virtualization, resource scheduling and allocation, transaction management, load balancing and memory management [16]. Security issues of cloud computing environment can be categorized into several levels such as [17], [18]:

- **Network level:** issues and challenges in this level are network protocols and security in networks such as distributed nodes, distributed data, etc.
- **User Authentication level:** issues and challenges in this level are encryption / decryption techniques, authentication methods which includes authentication of distributed applications, access rights for nodes, logging, etc.
- **Data level:** issues and challenges at data level are integrity of data and availability issues with data such as protection of data and distributed data.
- **Generic level:** this level issues and challenges are usage of security tools and usage of different technologies.

B. Privacy issues

Extraction of data and the use of analytical tools for mining information raise many privacy concerns. With the proliferation and replication of information worldwide, excellent data security and protecting privacy has become extremely difficult. Analyzers are always sensitive to users' sensitive information such as their medical records, energy consumption, online activities, supermarket records, etc. This information has been investigated, revealing concerns about profiling, discrimination, exclusion and loss control [21]. Traditionally, organizations have used data to identify (anonymize or encrypt data) differently from data recognition. Although, in recent years, it has been proven that even when data is anonymous, it can still be uniquely identified and held accountable to particular individuals [21].

One way to solve this problem was to ensure that all data was personally identifiable and subject to the regulatory framework. However, doing so may discourage organizations from using de-identification methods and, thus, increase the risk of privacy and security access to data. Privacy and data protection laws are based on the principles of personal control over information and data and purpose reduction and limitation. However, it is not clear that minimizing information collection is always a practical approach to privacy. These days, privacy activities appear to be based on user consent and the data that the person deliberately provides. Undoubtedly privacy is an issue that needs further improvement as the system stores large amounts of personal information every day.

C. challenges

In 2013, Cloud Security Alliance (CSA) identified top ten challenges for Big Data security [19]

- Secure computation in distributed programming frameworks.

- Security best practices for non-relational data bases.
- Secure data storage and transactions logs.
- End-point input validation/filtering.
- Real-time security monitoring.
- Scalable and composable privacy-preserving data mining and analytics.
- Cryptographically enforced data centric security.
- Granular access control.
- Granular audits.
- Data Provenance.

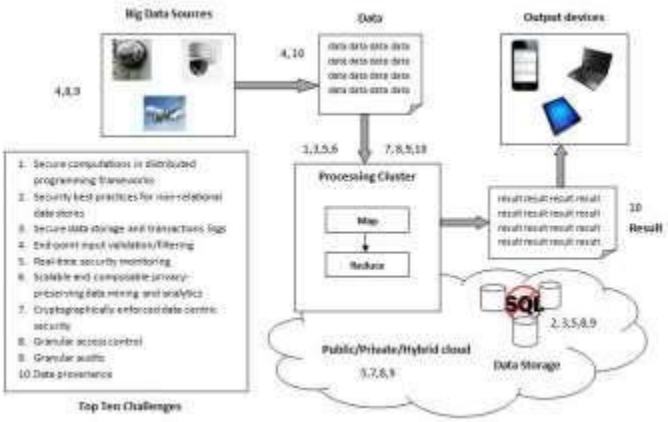


Figure 3: Top ten Challenges in the Big Data ecosystem [19].

These services need to be expanded to prevent serious damage to the mined Big Data in the clouds. Big data analytics are mounting a tower for researchers in the field of analytics to solve problems that are always occurring in the cloud computing space [20].

V. CONCLUSION

As data continues to grow, analytics tools in big data systems have become a major force of new initiatives that provide a way to store, process, and retrieve petabyte datasets. Cloud environments maximize the benefits of big data solutions by providing fault-tolerant, scalable and available environments to large data systems. Security is addressed by providing SLAs (Service Level Agreement) and data encryption. The main advantage of this is there would be encrypted data across environment, but querying encrypted data is time consuming. Whereas privacy is provided by using the User Consent and De-identification, these two are reasonable or transfers responsibility to end user.

References:

[1] Hashem, I.A.T. et al., The rise of "big data" on cloud computing: Review and open research issues. Information Systems, 47, pp. 98 – 115, 2014.

[2] Cox, Michael, and David Ellsworth. "Application-controlled demand paging for out-of-core visualization". Proceedings of 8th conference on Visualization'97. IEEE Computer Society Press, 1997.

[3] Rohit Chandrashekar, Maya Kala, Dashrath Mane, "Integration of Big Data in Cloud computing environments for enhanced data processing capabilities". International Journal of Engineering Research and General Science Volume 3, Issue 3, Part-2, May-June, 2015.

[4] Charlotte Castelino, Dhaval Gandhi, Harish G. Narula, Nirav H. Chokshi, "Integration of Big Data and Cloud Computing", International Journal of Engineering Trends and Technology (IJETT) – Volume 16 Number 2 – Oct 2014.

[5] Ali Gholami, ErwinLaure, "Security and Privacy of Sensitive data in Cloud Computing: A Survey of

Recent Developments", NETCOM, NCS, WiMoNe, CSEIT, SPM – 2015, pp. 131–150, 2015.

[6] Zhigao Zheng, Ping Wang, Jing Liu, Shengli Sun, "Real-Time Big Data Processing Framework: Challenges and Solutions", Appl. Math. Inf. Sci. 9, No. 6, 3169-3190, 2015.
[7] http://cloudacademy.com/blog/cloud-migration-benefits-risks/
[8] Samiya Khan, Kashish AraShakil, MansafAlam, "Cloud Based Big Data Analytics: A Survey of Current Research and Future Directions", Journal of Contemporary Psychotherapy, 2015.
[9] Domenico Talia, "Clouds for Scalable Big Data Analytics", IEEE Computer Society, Volume 46, Issue 5, Pages 98-101, May 2013.
[10] Ritu Aggrawal, Gautam Kumar, "Business Intelligence by Cloud Computing Using Hadoop Single Node Cluster", International Journal of Electrical Electronics & Computer Science Engineering, Special Issue - TeLMISR, ISSN: 2348-2273, 2015.
[11] Santhosh Voruganti, "Map Reduce a Programming Model for Cloud Computing Based On Hadoop Ecosystem", International Journal of Computer Science and Information Technologies, Vol. 5 (3), 3794-3799, 2014.
[12] Nikhil Gupta, Komal Saxena, "Cloud Computing Techniques for Big Data and Hadoop Implementation", International Journal of Engineering Research & Technology (IJERT), ISSN:2278-0181, Vol. 3 Issue 4, April – 2014.
[13] Samira Daneshyar, Majid Razmjoo, "Large-scale data processing using MapReduce in Cloud computing Environment", International Journal on Web Service Computing (IJWSC), Vol.3, No.4, December 2012.
[14] J. Boehm, K. Liu, C. Alis, "Sideloading - Ingestion of Large Point Clouds Into the Apache Spark Big Data Engine", ISPRS - International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XLI-B2, pp.343-348, 2016.
[15] Damien Graux, Louis Jachiet, Pierre Genevs,NabilLaya, "SPARQLGX: Efficient Distributed Evaluation of SPARQL with Apache Spark", International Semantic Web Conference, 2016.
[16] Shantanu Kalbhor, Hiteshkumar Jain, Kaushiki Upadhyay, "Providing classification and security of Big Data in Cloud computing", International Journal of Technical Research and Applications e-ISSN: 2320-8163, Volume 4, Issue 2, pp. 302-304, March-April, 2016.
[17] R.Saranya, V.P.MuthuKumar, "Security issues associated with Big Data in cloud computing", International Journal of Multidisciplinary Research and Development,Volume 2, Issue 4, pp. 580-585, April 2015.
[18] Elmustafa Sayed Ali Ahmed, Rashid A. Saeed, "A Survey of Big Data Cloud Computing Security", International Journal of Computer Science and Software Engineering (IJCSSE), Volume 3, Issue 1, ISSN (Online): 2409-4285, December 2014.
[19] https://cloudsecurityalliance.org/research/big-data/
[20] Dr. M. Bhanu Sridhar, A. Koushik, "A Study of Big Data Analytics in Clouds with a Security Perspective", International Journal of Engineering Research & Technology (IJERT), Volume 6, Issue 1, ISSN: 2278-0181, January 2017.
[21] Tene, O. & Polonetsky, J., Privacy in the Age of big data, 2012.

Dr.Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Vol-78-Issue-15

January-2020

Our Heritage

UGC Care Listed Journal

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

A Study -Challenges of Big data storage and its Techniques

Mr.DigambarSawalkar[1],Dr.Manisha Kumbhar[2]

Assistant Professor,Indira Institute of Management,Pune

Professor,Sinhgad Institute of Management,Pune

Abstract:

Inlatestyears, bigdataisone of the interesting topicfor researcher and industry.Growth of big Data is very fast because need to study and find out a solutions and itwillhelp to manage the data and systematically extract value of data and gain the usefulknowledge from datasets.Inthispaper, we focuses on concept of bigdata and also identifying challenges inbigdata storage and its techniques. The prime objective of this paper is to study the big data challenges and itstechniques associated with it.

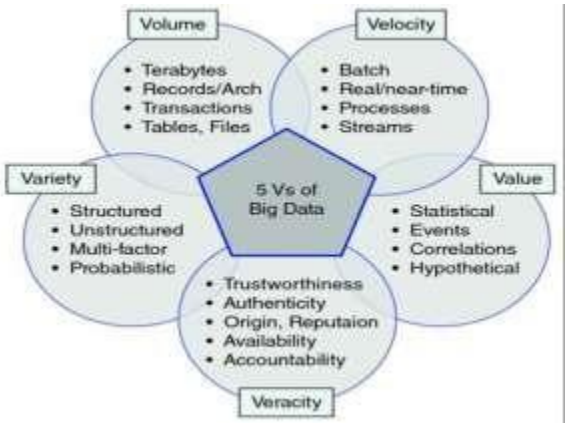
Keywords : *Big data, Hadoop, Map Reduce.*

1. Introduction

Today the big data is a buzz word and still in developing stage. Managing business data, basically the problem of initial value is considered as a case of big data.Inthis paper we are discussing Challenges of Big data storage and its techniques.Big data is a term that describes collection of data and it's too large and very complexand it becomes difficult to process by traditional data processingapplications. Big Data refers to new techniques for analyzing, storing massive or complex data.Thebenefit of big data isto increase theprocessing of database systems. Thedata is too large, it growsvery fast, it is difficult to fit in the structuresof database architectures and it also helps for gaining value from thesebig data, it should be alternative way to process it.

2. Characteristics of Big data

The characteristics of the big data arelarge Volume andspeed of data generation is very fast means velocity and generated data in different format means Variety**.** Figure 1.



Big data originals model is 3V model as follows

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

1. Volume: Big data is high volumes of data. The volume of big data to be analyzed is massive.
2. Variety: The variety means that the data sets have many different types of data, including structured and unstructured.It is useful for researcher for analyzing the data and willusethedata for their work.
3. Velocity: new data is generated with high speedand data will process to complete the challenges for development.
4. Veracity:It helps to filter through which data important or not and it also generated understanding of data.
5. Value:It is good to access valuable big data.

3. Challenges of Big data

1. **Infrastructure**
   Data needs a place for storage, like objects need a container; data must occupy space. If you are storing large amounts of data, it's necessary to have infrastructure to store it, which means investing in high-tech servers that will occupy space in your office or building. One of the easiest way to use cloud hosting and cloud storage, which take advantage of another company's infrastructure to save you that space and the trouble of setting things up yourself. Figure.2

2. **Cost**
   Running your own data center is an expensive operation. You'll need to spend money on initial setup, ongoing maintenance, and the costs associated with the people responsible for maintaining it. Again, the best solution here is to outsource the work; you'll probably have to pay a monthly fee, but it will save you money in the long run.
3. **Security**
   Security is a major issue to overcome. Hypothetically, if your data is stored somewhere, it's possible for a third party to obtain it. There are some layers of security that can prevent from unauthorized access, including encryption and reliance on third-party providers, but there is also a limit to how well these can protect youeven the FBI has trouble maintaining the security of its data when its own best practices aren't followed. You will need to run a tight operation, choosing the best partners and keeping your own team adhering to best practices at all times.
4. **Scale**
   You might be able to find a storage solution that serves your current needs adequately, but what happens if those needs change suddenly? How will you account for your needs as they stand in 5

years? For data storage needs some capacity to scale. Here, it pays to give yourself as many options as possible, since you won't be sure exactly how your needs will change in the future.

4. Techniques for big data handling

There are many techniques available for data analysis and data handling in big datalike Simple DB, Not NoSQLbut these traditional approaches are only applicable to traditional data and not big data as it cannot be stored on a single machine. These are the Big Data handling techniques -Hadoop, MapReduce. Out of these, Hadoop is one of the most widely used technologies.

4.1 Hadoop

Hadoop is an open source framework and High volumes of data are processed by Hadoop. Hadoop is used for storage and processing for data sets. The following are components of Hadoop.

1. HDFS

Hadoop has a distributed File System called HDFS, which stands for Hadoop Distributed File System. It is used for storing very large files with streaming data access patterns, running on clusters on commodity hardware. There are two types of nodes in HDFS cluster, namely namenode and datanodes.

Name node –It manages the file system and directory .it also handles the metadata of files and directories.

Datanode-it stores and retrieve blocks as per the instructions of clients or the namenode. Whatever data isretrievedsent back to the namenode with lists of blocks. Without the namenode it is not possible to access the file. So it is very important to make name node resilient to failure.

2. Map Reduce-It is a programming paradigm for managing applications on multiple distributed servers. It is divide and conquer methodwhich is used to break the large complex data into small units and process them. It reads the data from HDFS and italso read the data from other sources like mounted local file systems, the web, and databases. It divides the readable data between different computers (servers, or nodes). It is also fault-tolerant. If some of nodes fail, Hadoop knows how to continue with the computation, by re-assigning the incomplete work to another node.

5. Conclusion

In current era Bigdata has impact in all sector and industry. In this paper, wehave briefly reviewed grand challenges that big data brings us.
In latest years,too large and complex data are generated. These data need to analyze and it is difficult using traditional database management tools. In this paper, we have studied challenges and techniqueswhich is usefulfor analyzing big data. This paper present that every big dataplatform has its individual focus. In future researcher need to give more attention tobig data techniques to solve problems of big data effectively.

References

[1]M. K.Kakhani, Research issues in big data analytics, International Journal of Application or Innovation in Engineering & Management, 2(8) (2015).
[2] A. Gandomi Beyond the hype: Big data concepts, methods, and analytics, International Journal of Information Management, 35(2) (2015).

[3] C. Lynch, Big data: How do your data grow?, Nature, 455 (2008).
[4]Xiao longJinBenjaminW. WahXueqiChengYangzhouWang, Significance and Challenges of Big Data Research
[5] M.H.Padgavankar1, Dr.S.R.Gupta, Big Data Storage and Challenges, International Journal of Computer Science and Information Technologies, Vol. 5 (2) , 2014.
[6] D. P. Acharya, A Survey on Big Data Analytics: Challenges, Open Research Issues and Tools, International Journal of Advanced Computer Science and Applications,Vol. 7, No. 2, 2016
[7] Neha Begam, Big Data Challenges and Techniques, International Journal of Engineering Science and Computing, April 2017

Dr.Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Human Resource Analytics in an Organization

Santosh S Deshmukh [*1] Nilesh Jambhurkar[*2] Dushyant H. Bodkhey[*3] Manikant Roy [*4] Aparna Kulkarni [*5]

Department of MCA , Sinhgad Institute of Management, Pune

Abstract: *Human Resource Analytics (HR Analytics) is also called Talent Analytics. HR Analytics is an area in the field of analytics that applies analytics process to the human resource department of an organisation in the hope of improving performance of an employees and hence getting better result on investment. In HR Analytics there are various field but in this project we are going to predict that which all employees are going to leave an organisation in the near future. This is achieved by taking various parameter like employees last evaluation, no. of projects, promotion, salary, working hours, department etc. and analyzing these parameter in efficient way. The classifier used for prediction is Decision Tree. We have used decision tree because decision tree works best whenever there is case of Yes/No. In this project we have to just predict that the employees will leave company or not. This concept can be very useful for the organisation in retaining their employees and taking relevant decision. So, that HR department can take appropriate action regarding this and can increase return on investment.*

Keywords*: Analytics, Classifier, Decision Tree*

I.INTRODUCTION

In this present competitive world Human Resource department is vital part of any organisation. Human Resource function in an organisation is to capitalize the employee performance in service of an organisation business goal. The current economic situation is forcing the HR department to emphasis their focus on the employee performance for generating revenue to sustain in this competitive edge organisation must align their HR strategy with their business strategy.The main aim of Human Resource analytics is to provide an organisation with concept of effectively managing employees so that the goal for business can be achieved quickly and efficiently. The challenges faced by human resource analytics is to identify what data should be collected and how we can use those data to model and predict the capabilities of an individual employees so that the organisation gets an optimal return on investment.An organisation cannot function without the help of a human resource department. Human Resource affects the overall plan/strategy of an organisation. Any organisation exists because of their employees or we can say that human are the greatest resource an organisation can have. Thus, human resource department is that part of the organisation which is concerned with the people aspects. An organisation comprised of its people and ensuring that the productivity remains profitable to the organization is the key job of the HR department.Due to globalization economic scenario keeps on changing. If we want to sustain in this field then human resource department need to adapt to the change. Hence, retaining of the top talent is the primary concern of the HR Department. Recruitment of good employee and how to retain the good employee are the need of the present situation for an organisation Hence, even in this competitive world today, establishes such HR practice that can build employee commitment can help organisation in expanding responsiveness. Human Resource helps to cope and sustain in the world of fast growing and fast changing environment by exploiting business strategy with minimum risk and challenges.

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

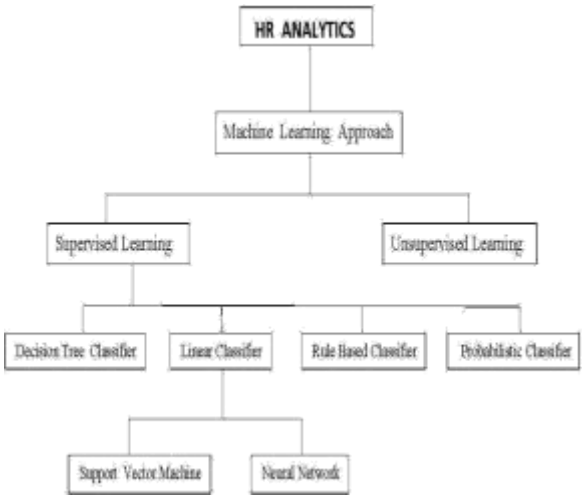
II. RELATED WORK

There are various definition of HR Analytics but we will adopt one [1] here HR Analytics is defined as from
demonstrating the direct impact of people data on important business outcomes. HR Analytics and analytics in HR are used interchangeably. It was perception that HR is soft area where numerical method cannot applied [2].
A study by Lawler III and Boudreau [3] showed that the use of analytics and matrices by HR increased the scope of HR being seen as a strategic partner in the organization. Organization such as Google, Best Buy and Sysco have been able to enhance their competitive advantage through their use of HR analytics [4]. Researchers have also observed that the use of analytics to understand how HR practices and policies impact organizational performance is powerful way for HR function to add value to their organization [5].

A survey by MIT and IBM reported that companies with a high level of HR analytics had: [6]
(i) 8 percent higher sales growth.
(ii) 24 percent higher net operating income. (Iii) 58 percent higher sales per employee.

III. PROBLEM DEFINITION

In the present world everyone wants to see the future in advance. So, here we are going to predict that which are the employees are going to leave an organisation in the near future. If the HR department can come to know in advance that which are the employee that are going to leave and from which department then it will be very helpful for the organization in decision making.



ISSN: 0474-9030
Our Heritage
Vol-78-Issue-15
January-2020
UGC Care Listed Journal

Earlier when there was not any concept of analytics then HR department used to face lot of problem in taking good decision and planning. There are various aspects of HR Analytics but here we are just going to predict that which all employees can leave the company in near future. By predicting we can understand that there is some problem with their employees or with an organization. After analyzing the problem they can take appropriate action to resolve the problem and they can retain their employees. Any organization exist because of the client/customers and in order to handle clients there are employees who work for the organization and helps in the growth of an organization. We are going to apply data mining technique on human resources data. HR department collects data of employee's satisfaction level, no. of project they are working on, salary, promotion, benefits, retirements and performance, department etc. to see the trend and work according to that.The success of an organization depend upon the type of employees an organization have. How we can attract good talent and retain it? Is the main question that is always in the mind of the head of the HR department .In order to solve this problem we are doing this project

IV. METHODOLOGY

The method for solving our problem of prediction, which are the employees that are going to leave an organisation in the near future.

(i) Decision Tree

Decision Trees (DTs) are a non-parametric supervised learn- ing method used for classification and regression. The goal is to create a model that predicts the value of a target variable by learning simple decision rules inferred from the data features [8].Decision Tree is classifier which follow supervised learning approach where first classifier is trained and then it is tested with the data and then the performance of the classifier is checked using confusion matrix because confusion matrix are made to check the performance of the classifier in which how many are predicted right and how many are predicted wrong among the collection of testing data.Tree based learning algorithms are considered to be one of the best and mostly used supervised learning methods. Tree based methods empower predictive models with high accuracy'[3]. In this project we are going to use Categorical Variable Decision Tree because here we are going to predict that who are employee's, are going to leave the company in near future i.e. it is case of Yes or No.

A. Implementation of Methodology

Data is collected from Kaggle [7] of a particular company for doing this analysis which contained various field related to employee which helped in doing this project successfully.Here we are going to implement our proposed method Decision Tree.

(I)Importing the required library
(ii) Import the csv data file.
(iii)Indexing the data file.
(iv) 50 percent data are taken as training data and 50 percent data are taken as testing data.
(v) After training the final output will be either yes/no.
(vi) Replace value of department and salary with dictionary. (vii)Converting table to array for fitting it into the Decision tree

using numpy library. (viii)Fit the model. (ix)Predict after training.
(x)Check accuracy of prediction.

Below figure will shows the result how accurately Decision Tree classifier is predicting.

Fig. 2. Decision Tree model accuracy

V. CONCLUSION

From the analysis we can conclude that decision tree model is good for predicting whenever there is a case of Yes/No. The problem of HR department when an employee leave an organization can be solved by this method by knowing in advance who all are going to leave and from which department.HR department can take some incentive measure and look to fill the loop hole of the company or employees by taking some relevant decision and retaining their best employees because no organization wants that their employee should not leave who works for the profit of the company. If employee leave then it is a very big loss for the organization as we had discussed organization comprised of human/employees. This problem can be now easily solved by applying HR Analytics.The problems of HR like planning, recruitment, manpower planning, forecasting of turnover etc. all can now be solved with the new technology like HR analytics. HR analytics has helped the organizations to improve their performance by creating a network of individuals who works for making strategy for the growth of organization. In order to stay as a market leader, fresh technique and new innovative ideas are required. As analytics is applied in each and every field then why HR area should lagged behind. HR analytics is helping the Human Resource Managers of an organization to become true strategic leaders. Thus HR analytics is changing the Human Resource Department and the HR managers to function more efficiently as business partners and achieve business goal of the organizations. HR Analytics has led to the improvement of workforce performance in an organization thus has increased the productivity of the employees in turn has increased the revenue generation.

REFERENCES

[1] S. Mondore, S. Douthitt and M. Carson, ”Maximizing the impact and effectiveness of HR analytics to drive business outcomes”, People and Strategy, vol. 34, no. 2, pp. 20-27, 2015
[2] J. W Boudreau, ”Talentship and HR measurement and analysis: From ROI to strategic organizational change”, People and Strategy, vol. 29, no. 1, p. 25, 2015
[3] E. Lawler and J. W Boudreau, ”What makes HR a strategic partner”, People and Strategy, vol. 32, no. 1, pp. 14 - 22, 2009.
[4] T. H. Davenport, J. Harris and J. Shapiro, ”Competing on talent analytics” Harvard Business Review 88, no. 10, pp. 52 - 58,2010.
[5] E. E. Lawler III, A. Levenson and J. W. Boudreau, ”HR metrics and analytics uses and impacts”, Human Resource Planning Journal, vol. 27, no. 4, pp. 27 - 35, 2004 .
[6] http://startupfocus.saphana.com/how-analytics-are-becoming- important-for-hr/
[7] KAGGLE
[8] http://scikit-learn.org/stable/modules/tree.html

Dr.Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Data science process tools in cloud computing

Ankush Kudale1, Dr. Milind Godase2, Buneshwar Tendulkar3, Rushikesh Kardile4

[1]*Asst Professor, Singhad Institute of Management , Pune*

[2] *Professor, Singhad Institute of Management , Pune*

[3 & 4] *Student, Sinhgad Institute of Management*

Abstract:

Data science and cloud computing are two emerging trends since last couple of years. These two terms is go hand on hand. Today industry is growing rapidly towards adoption of cloud and cloud services. On the other hand to growing of business and their services is need to industry, without market analysis it won't be possible to stay in market for any business. So business analytics are very much important. If business running on cloud and data is on cloud so data science of cloud is needed. In this is paper we are focusing on how data science process on cloud? What are the different tools used for it.

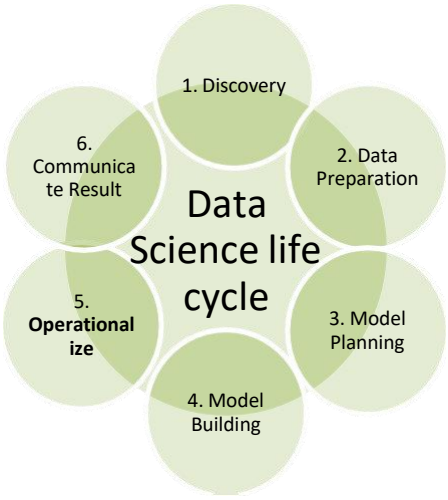
Keywords*: Data Science, cloud computing, Data science tools*

Introduction:

Data Science:

Data science is as large region of information where extraction of important knowledge and information from raw data from multiple disciplinary actions taken like used of scientific methods, theories, various tools used to extract knowledge.

Data Science life cycle



Discovery: To determine all the requirement of project by providing the right questions. Before starting need to user stand requirements, budget, priorities, technology data, final output etc

Data preparation: It includes various operations are performed on data like cleaning, reduction, integration, transformation

Model Planning: To finalize different methods and technological tools on input variables. The tools can be used for model planning like SAS, R, Python, SQL Analysis Services

Model building : Here building of data starts for testing purpose. Common tools used for it like WEKA,SPCS Modeler, SAS Enterprise Miner, MATLAB

Operationalize: To provide overview of the project, the submission of final project report along with description, code and technical information.

Communicate results: Comparison the result with initial goal and getting the exact output from it.

Cloud Computing

Cloud computing [2] is a kind of computing that depend on sharing computing resources rather than having the local servers or personal devices to handle applications. In cloud computing, the word cloud (also phrased as "the cloud") is used as a metaphor for "the Internet," so the phrase cloud computing means "a type of Internet-based computing," where the different services such as servers, storage and applications are delivered to an organization's computers and devices through the Internet. Cloud computing is comparable to grid computing, a type of computing where the unused processing cycles of all computers in a network are harnesses to solve problems too intensive for any stand-alone machine.

1.1 Cloud Computing Services

a. Software as a Service [SAAS][3] SasS is software (application/s) is hosted by cloud service provider or cloud vendor and it is accessible to customer via network using internet.

b. Platform as a Service [PAAS] It is a way to rent hardware, operating systems, storage and network capacity over the Internet. The service delivery model allows the customer to rent virtualized servers and associated services for running the existing applications or developing and testing new ones.

c. Infrastructure as a Service [IAAS]: IaaS service providers having their own equipments to support operations which include hardware, servers, storage and components for networking etc to client on per usage basis.

Importance of Data Science with Cloud Computing

Data science and cloud computing are basically hands-on[1]. Data scientists typically analyze different types of data stored in the cloud. With the rise of Big Data, organizations are storing large amounts of data online, and they need data scientists.

Cloud computing and Data scientist?

Data scientists are required to analyze different types of data which has been stored on cloud storage. There are different tools are available for different purpose like programming tools, statistical tools Data Scientist uses following tools to process data

Image source : https://data-flair.training/blogs/data-science-tools/

Here is has been observed that for data science series of tools required [4]. The most of tools deliver complex data science operations in one place. It also has been found that there are several tools that cater to the domain of data science domain applications.

Conclusion:

There are series of tools available for each part of data science process on cloud. An organization need to find suitable and adequate resources to process each process of lifecycle. The need of single tool is required to do complete the data science phase of lifecycle. So it will provide better performance for business.

References

[1] https://www.edureka.co/blog/importance-data-science-cloud-computing/

[2]Ankush Kudale ,Dr. Binod Kumar, "Protected Authentication by Login Credential and OTP for Cloud Based Application", International Journal of Computer Application (2250-1797), Volume 5– No. 3, April 2015.

[3] Ankush Kudale ,Dr. Binod Kumar, "Review -A Study On Authentication And Access Control For Cloud Computing", International Journal of Research in computer Science and Management, July 2014.

[4]https://d2h0cx97tjks2p.cloudfront.net/blogs/wp-content/uploads/sites/2/2019/03/Data-Science-Tools.jpg

Dr.Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Trends of Campus Recruitment Process by IT Companies for MCA Fresher: An Analysis

Mr. Dhirendra Kumar[1], Ms. Aparna Kulkarni[2], Prof. Santosh Deshmukh[3],
[1,2,3]*Asst. Professor, Sinhgad Institute of Management, Pune, India*
India

Abstract: *Better recruitment and selection strategies and processes result in improved hiring of skilled human resources for IT organizations. IT companies hire MCA Fresher from various resources and among that campus recruitment is a quick way to hire candidates. Companies adopt various recruitment processes to select the best out of the available pool of candidates. The different recruitment processes are Pre-placement talk, Aptitude Test, Group Discussion, Technical Interview, HR Interview and Discussion. Not all companies follow adopt all these available processes. The selection of processes depends on the roles and responsibilities of the associated job profile for which the recruitment is planned out. With reference to this context, the above entitled research paper has been prepared to reveal the frequency of Campus Recruitment Processes adopted by IT companies in last 5 years. The study will be helpful for the student studying MCA and willing to make an IT career. It can also be useful for the college/institutions which is imparting education for IT sector and also providing or willing to provide campus placements. In this research real time of placement data used and Data analysis has been done with statistical tools like Microsoft Excel and presented through pie charts, bar diagrams.*

Keywords: *IT Company Campus Recruitment Processes, MCA Fresher, Pre-placement Talk, Aptitude Test, Programming Test, Group Discussion, HR Interview and Discussion.*

I. INTRODUCTION

Selection and Recruitment of human resources for various positions of responsibilities is one among the foremost pivotal functions for any Business Organizations as they seek highly skilled professionals to refill their challenging positions. For this purpose, corporates are relying maximum on campus placements to refill their operational level positions. The Business Organizations playing in Information Technology (IT) sector is not a distinct one when it comes to selection and recruitment of the right human resources to grow the organization and to meet its mission and vision. Master of Computer Applications (MCA) is a professional post-graduate programme for candidates aspiring to delve deeper into the world of computer application development with the help of learning modern programming language. The programme is a blend of both theoretical and practical knowledge. An MCA degree endows students' an opportunity to work with tools meant to develop better and faster applications.An MCA Fresher implies a person who has qualified but yet to gain experience. Some companies keep a bracket of 0 to less than a year work experience for an MCA fresher.Campus placement is the program conducted within educational institutes or in a common place to provide jobs to students pursuing or in the stage of completing the programme. In this programme, industries visit the colleges to select students depending on their ability to work, capability, focus and aim.

Campus Placements offer a student an exquisite opportunity to get placed during the course of his academic pursuits, and supply him the comforts of a secure and secure future. Keeping in mind

the importance of the campus placement programs, it's vital for a student to organize adequately for these programs and confirm that they put their best foot forward.

The varied accrediting bodies and therefore the ranking surveys conducted by the media help the institutions to have healthy competitions among them. This method is the simplest way for them to urge the proper resources in a shorter span than counting on other sources like job portals, consultancies, advertisement based recruitments and walk-ins. Recently, providing campus placement to successful students is taken into account as institutional obligation and institutions are ranked supported number of successful job placement provided within the campus for a given year alongside thetypical salaryoffered.The main objective of the campus recruitment process is to spot the talented individuals. The standards adopted for selection by most companies are variable in nature and selection process. This process reduces the time for an industry to select the candidates consistent with their need. It's a cumbersome activity and hence majority of the businesses find it difficult to trace the proper talent. Universities and therefore the affiliated colleges usually initiates this process under training & placement cell to scale back the gap between industry and academics. The industries too has joined hands with university and colleges with special recruitment teams to capture the skills within the scholar segment.

Getting a good job in a reputed organization is a dream for most students. Today, there are lots of opportunities for good and qualified candidates. A large number of these opportunities are in the rapidly growing IT sector. With the varying types of the campus recruitment processes of IT Organizations, in most of the cases, the candidates always have a question mark in their mind about the recruitment process of the IT companies so that they can prepare for and be ready to crack those processes. This paper is an analysis to guide those segments of the future IT technocrats to get ready with the entry level skills sets in an IT organization.

1. TYPES OF CAMPUS RECRUITMENT PLACEMENT

A. POOL CAMPUS / OFF – CAMPUS PLACEMENT

This kind of campus recruitment is conducted within a group of colleges and usually understood as a Pool Campus or as an Off-Campus placement. This campus placement program is open to all students from different college campuses especially this type of campus placement program is for students from other institutions. This kind of campus recruitment program is conducted in a common place (it may be in a college or in some public place) where students from different colleges will take part.

B. IN CAMPUS PLACEMENT

This kind of campus recruitment placement is conducted within college campus for only the students of the college where campus gets conducted. This campus recruitment placement is open to only in roof students from same college and in some cases for sister colleges too. The same program is not for the students from other institutions. This program will be conducted in a college campus place where students from same colleges will take part.

C. PROJECT PLACEMENT:

Companies recruit students to do their academic project in the interiors of their industrial environment.

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

D. STUDENT INTERNSHIP PLACEMENT:

An internship is a period of work experience offered by an organization for a limited period of time. Once confined to medical graduates, the term is now used for a wide range of placements in businesses, non-profit organizations and government agencies. They are typically undertaken by students and graduates looking to gain relevant skills and experience in a particular field. Employers benefit from these placements because they often recruit employees from their best interns, who have known capabilities, thus saving time and money in the long run. Interns may be high school students, college and university students, or post-graduate adults. These positions may be paid or unpaid and are temporary. Typically, an internship consists of an exchange of services for experience between the intern and the organization. Internships are considered to be a step up from work experience. The students are no longer just shadowing, they get treated much more like an employee, often having their own desk. The selects are likely to be asked to complete certain tasks on their own that carry an element of responsibility.

2. CAMPUS RECRUITMENT PROCESSES

The campus recruitment process starts with a preparation by all the stake holders, the recruiters, the students and the campus placement team of the institution.For the students, to get recruited in company, the placement team arranges training to train the students (if required) in the key skills that are required by the recruiter (usually IT Companies in this case). HR systems also play a vital role in communicating the job description and Job profile to the potential applicants. The research study conducted earlier (Robert T Bretz Jr, and Timothy A Judge, 1994) emphasize that the organizations need to have specific attributes communicated for different job profiles offered by them.

Here the campus placement process gets started and usually registration process; based on the job description and the profile; is initiated by the campus placement team. This process helps in the elimination of the students who usually have no interest in the in the job profiles opened for the registration. Unless a student registers with the Placement Cell he / she will not be eligible for Campus recruitment. The details about the rules and regulations for registration and the data sheet in excel format is issued to all students. The students will be intimated regarding the various recruiter visits, their eligibility criteria and related details through the group mail, notice board and circular to the departments concerned.The general policy followed is one man one job. It is not a unique policy. The idea is to give opportunities for everybody.The following are the various steps in the campus recruitment processes.

- Pre-placement Talk
- Aptitude Test
- Group Discussion
- Programming Test
- Technical Interview
- HR Interview and Discussion

A. PRE – PLACEMENT TALK:

In this process, a brief presentation about the company is made during the pre-placement talk. Basically the presentation includes the information like selection procedure, company's milestones, organizational achievements, candidate scope of improvement within the organization if selected, salary, employment benefits. Usually this presentation will end up with question and answer session, students are given chance to ask questions about.

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

B. APTITUDE TEST

In this process, the candidates who apply for the positions are offered aptitude test. The students are usually evaluated on the base of quantitative, verbal aptitude, non-verbal aptitude, and technical aptitude. Sometimes competency in English language also checked in the same process. This is usually a simple aptitude test but depending on company and the position looking for, the difficulty level of the test may be at the higher side.

C. GROUP DISCUSSION

Most of the companies have this round as a filtering round. Organizations conduct GDs to find out whether you possess the critical qualities/skills to contribute effectively to the goal accomplishment process. Group Discussions are held because business management is essentially a group activity and working with groups is the most important parameter of being successful as a manager. Apart from that, the candidates are evaluated on the basis of their communication skills, knowledge, leadership skills, listening skills, conceptualizing ability, etc. In this process, a common topic is placed before the group and a formal discussion or knowledge sharing is expected by the judge. This round may or may not be conducted.

D. PROGRAMMING TEST

This is also a filteration process of the candidates. In this process, problems are given and candidates are supposed to write codes to solve the problems. The company usually conducts this test on computer machine or pen-paper coding test is conducted. The idea behind the test is to check the problem solving skills. This round may or may not be conducted.

E. TECHNICAL INTERVIEW:

Technical interviews are common amongst employers recruiting for engineering, science or I.T. roles. Essentially, it's an interview to assess the technical ability, usually related to the technical knowledge required for the roles for which the company has initiated the recruitment process. This interview is usually conducted face-to-face but in some cases it might be telephone interviews, while others might be conducted over Skype.

F. HR Interview and Discussion

An HR interview is conducted to judge the personality, strengths, weaknesses, capability to handle the role, to check background of the candidate, and to understand if the candidate is the right fit for this job. This is usually a must that is conducted.In the HR discussion, discussion is made on compensation, relocation, incentive, vacation, leaves and other perks.

3. BATCH WISE ANALYSIS OF ADOPTION THE CAMPUS RECRUITMENT PROCESSES BY THE COMPANY

Here, batch refers to the candidates for which the company initiated the campus recruitment process. On the basis of primary data collected from the colleges, we tried to analyze the adoption of the campus recruitment processes by the companies in terms of percentage. Given below is the analysis.

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

A. BATCH 2016 (JUN 2015 – MAY 2016)

As per the data collected from the 82 IT companies for campus recruitment of MCA 2016 batch fresher, 32 companies has adopted pre-placement talk, 59 companies adopted aptitude test, 10 companies

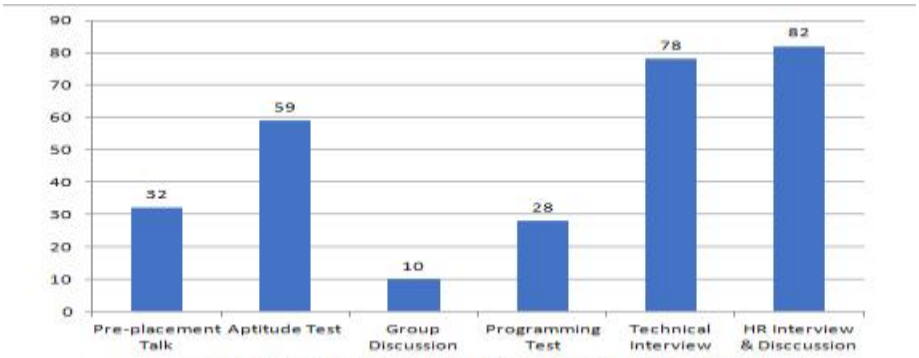


FIG.(1) : CAMPUS RECRUITMENT PROCESS (BATCH 2016 MCA FRESHER)

adopted group discussion, 28 companies adopted programming test, 78 companies adopted technical interview and 82 companies adopted HR interview and discussion (Fig. 1).

B. BATCH 2017 (JUN 2016 – MAY 2017)

As per the data collected from the 109 IT companies for campus recruitment of MCA 2017 batch fresher, 32 companies has adopted pre-placement talk, 105 companies adopted aptitude test, 16 companies adopted group discussion, 26 companies adopted programming test, 101 companies adopted technical interview and 109 companies adopted HR interview and discussion (Fig. 2).

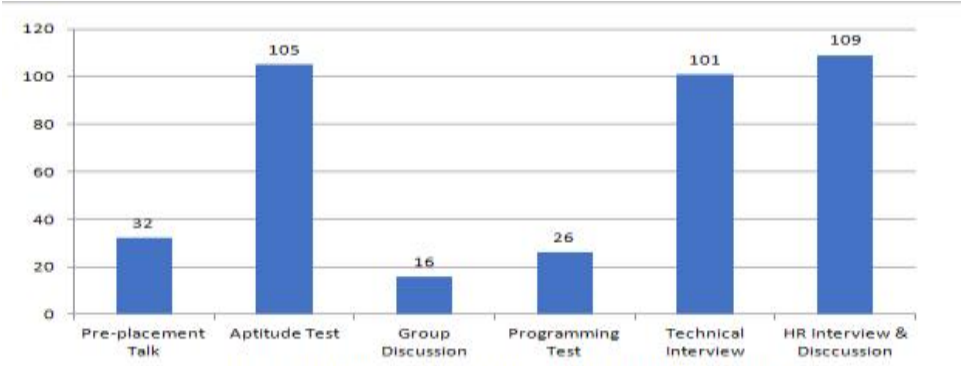


FIG.2 : CAMPUS RECRUITMENT PROCESS (BATCH 2017 MCA FRESHER)

C. BATCH 2018 (JUN 2017 – MAY 2018)

As per the data collected from the 118 IT companies for campus recruitment of MCA 2018 batch fresher, 38 companies has adopted pre-placement talk, 96 companies adopted aptitude test, 22 companies

adopted group discussion, 35 companies adopted programming test, 104 companies adopted technical interview and 110 companies adopted HR interview and discussion (Fig. 3).

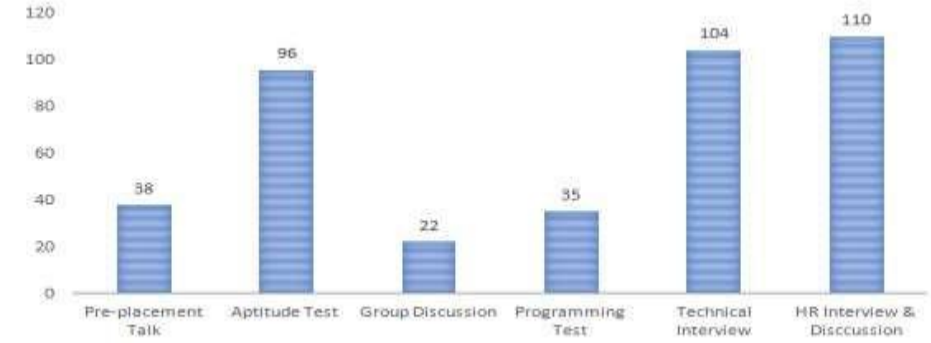


FIG.(3): CAMPUS RECRUITMENT PROCESS (BATCH 2018 MCA FRESHER)

D. BATCH 2019 (JUN 2018 – MAY 2019)

As per the data collected from the 125 IT companies for campus recruitment of MCA 2019 batch fresher, 37 companies has adopted pre-placement talk, 115 companies adopted aptitude test, 7 companies adopted group discussion, 29 companies adopted programming test, 109 companies adopted technical interview and 114 companies adopted HR interview and discussion (Fig. 4).

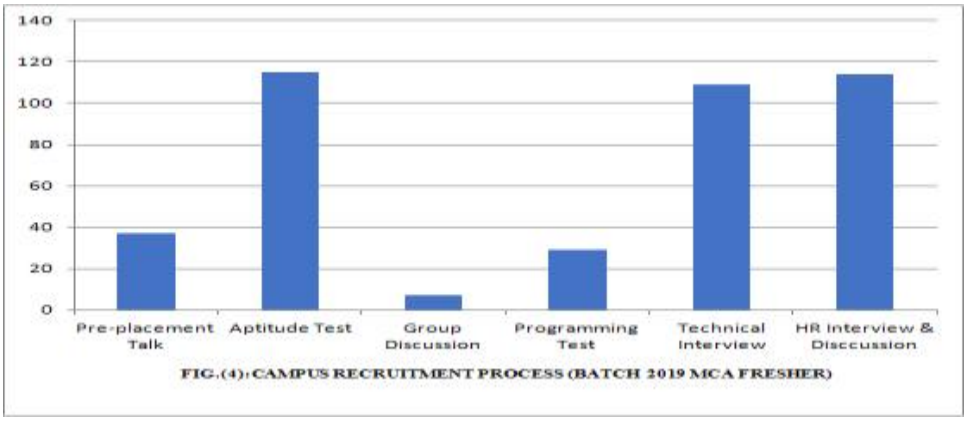


FIG.(4): CAMPUS RECRUITMENT PROCESS (BATCH 2019 MCA FRESHER)

E. BATCH 2020 (JUN 2019 – DEC 2019)

As per the data collected from the 56 IT companies for campus recruitment of MCA 2020 batch fresher, 27 companies has adopted pre-placement talk, 43 companies adopted aptitude test, 4 companies adopted group discussion, 19 companies adopted programming test, 53 companies adopted technical interview and 55 companies adopted HR interview and discussion (Fig. 5).

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

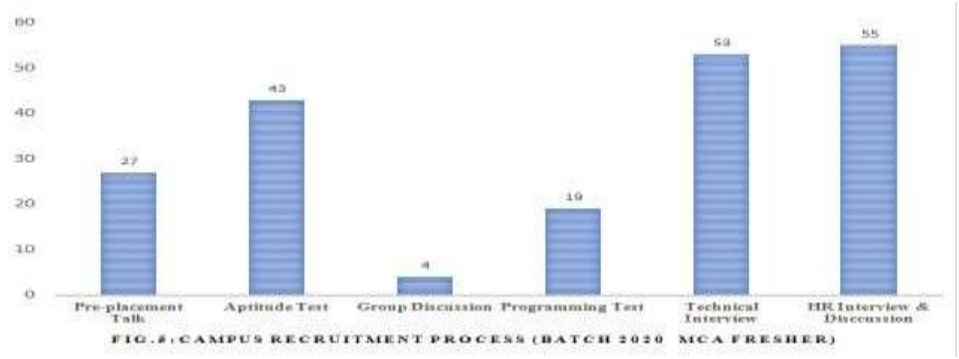


FIG.5: CAMPUS RECRUITMENT PROCESS (BATCH 2020 MCA FRESHER)

4. AVERAGE OF ADOPTION OF PROCESSES IN LAST FIVE YEARS

Based on the last 5 years data it has been observed that, on an average, 34.09% companies has adopted pre-placement talk, 85.83% companies adopted aptitude test, 12.11% companies adopted group discussion, 28.13% companies adopted programming test, 91.38% companies adopted technical interview and 96.51% companies adopted HR interview and discussion (Fig. 6).

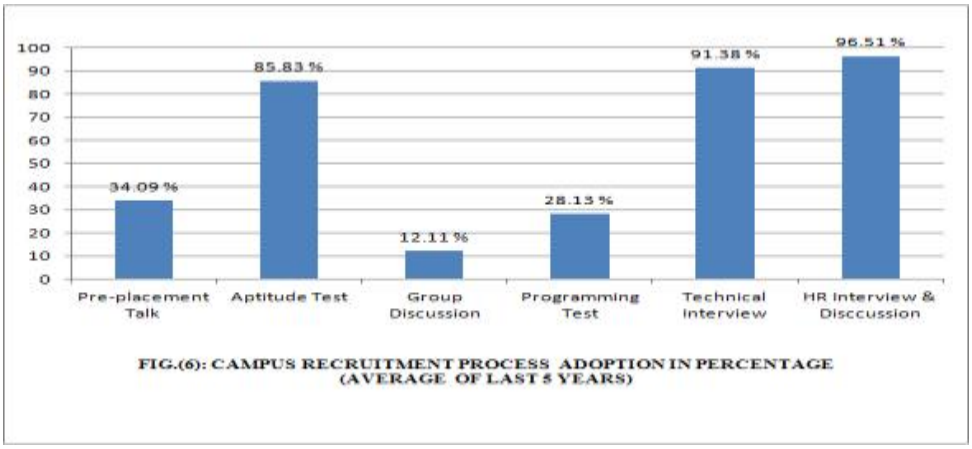


FIG.(6): CAMPUS RECRUITMENT PROCESS ADOPTION IN PERCENTAGE (AVERAGE OF LAST 5 YEARS)

5. ADVANTAGES OF THE ANALYSIS

This study will help an MCA Fresher to understand about the campus recruitment process of the IT companies, the various kinds of frequently conducted processes and the frequency of the processes.

It can also be helpful for the IT aspirants from other related or partially related streams of study viz. B.E. (CS/IT/ENTC/Mech./etc, M.SC. (CS), BCA, BSC (CS) etc.)

This study will also help the Colleges/Institutions in selecting the training area that should be imparted to the future IT aspirants.

6. CONCLUSION AND RECOMMENDATION

Through this analysis it can be clearly concluded that HR Interview and technical interviews are almost equal in frequencies and are the topmost choices of the campus recruitment process while it comes to MCA fresher recruitment. Aptitude test is also significant choice as a selection process by maximum IT companies. Around one fourth companies also choose Programming Test as a selection tool and very few companies conducts the Group Discussion in their recruitment process of MCA Fresher.It is a recommendation to IT Aspirants to be more prepared for Technical Interview, HR Interview, and Aptitude Test. However they should be prepared for programming test and Group Discussions as well to crack the processes.

REFERENCES

[1] Prabhakara Raya R., Samuel Rajkumar V., Ganesan P., Jayakumar S.K.V., "Stakeholders's Perception in a Campus Recruitment Process", Meditarrenean Journal of Social Sciences, ISSN: 2039-2117(online), 2039-9340 (print), Vol. 6 No.5, pp. 96-101, September 2015.

[2] Cynthia Kay Stevens, "Effects of Pre-interview Beliefs on Applicants' Reactions to Campus Interviews" published in Academy of Management Journal, Vol. 40 no. 4, pp. 947- 966, August 1997.

[3] Shenoy Varun, "Branding Innovations for Ideal Placements", International Journal of Management, IT, and Engineering (IJMIE), Vol. 6, Issue 1, pp. 380-387, January 2016.

[4] Powell, Gary N, Goulet, Laurel R, Recruiters' and applicants' reactions to campus interviews and employment decisions, Academy of Management Journal, Vol. 39, Issue 6, pp. 1619-1640, December 1996.

[5] Powell, Gary N., Applicant Reactions to the Initial Employment Interview: Exploring Theoretical and Methodological Issues. Personnel Psychology, Vol. 44, Issue 1, pp. 67-83, December 2006.

[6] Taylor M.S., Bergmann T. J., Organizational recruitment activities and applicants' reactions at different stages of the recruitment process, Personnel Psychology Vol. 40, Issue 2, pp. 261-285, June 1987.

[7] Bottjen Audrey, Cohen Andy (2001), "The benefits of college recruiting", Journal of Sales & Marketing Management, Vol.153, No 4, pp. 12.

[8] https://www.samyakinfotech.com/training/soft-skills-training/campus-recruitment-training-program/

[9] https://www.wikijob.co.uk/content/internships/advice/placement-or-internship

[10] https://www.shiksha.com/mca-master-of-computerapplications-chp - MCA Definition

[11] https://www.indiastudychannel.com/experts/43802-Meaningof-fresher-in-candidates-profile - Fresher Definition

[12] https://en.wikipedia.org/wiki/Internship Internshiprelated

[13] https://www.aptitude-test.com/aptitude-tests.html -Aptitude Test

[14] https://gdpi.hitbullseye.com/Group-Discussion.php -Group Discussion

[15] https://www.allaboutcareers.com/careers-advice/interview-tips/technical-interview - Technicalinterview

[16] https://www.mapsofindia.com/education/how-to-prepare/hr-interview.html - HR Interview

Dr. Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

"The Study of Data Mining Process with the help of Data Mining Implementation Process & Techniques"

[1]Miss Dhanashree Shinde , [2]Dr.Sunil Khilari

[1]MCA,[2]MCA,PhD

[1]Assistant Lecturer ,[2] Assistant Professor

[1]Vishwakarma College of arts, [2]Sinhgad Institute of Management Commerce and Science

Abstract:

Data mining is process where we have to collect large amount of data & extract required and useful data from row data, for data mining process we required some data mining techniques and tools. In this paper we discus four important point's i.e. Introduction of Data mining, Data mining implementation process, architecture of data mining process and some tools which are useful for processing on raw data , in data mining implementation process steps involves such as Business Development, Data understanding, Data Preparation, Modeling, Evaluation, Deployment etc. to working on that data we required some techniques and tools, which are Rapid Minor, Orange and weka, these tools are used to sort various types of data and all these are open source and available for everyone. The stages of data mining implementation process are shown in Fig A, Figure B describes Architecture of Data mining process and Figure C describes stages of clustering.

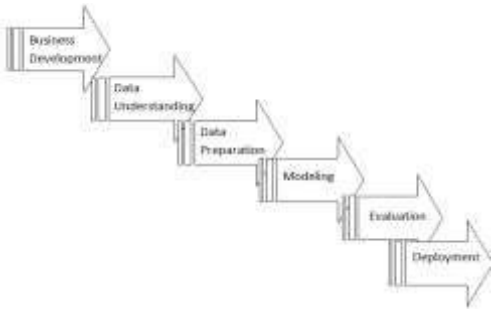
Keywords: *Data Mining Implementation Process, Data Mining Techniques, Data Mining Tools.*

I) INTRODUCTION

There are multiple types of databases like Relational databases Data warehouses Advanced DB etc. It is impossible to find required data from multiple databases because there is a huge amount of data consist in every database and we required only few amount of useful data from entire data. To improve these and finding knowledgeable and require data we need to bifurcate the entire data, it is not an easy process if we do it via human efforts , so we have some techniques which we use to extract useful data from the large amount of data this process is nothing but data mining process. Data mining can be performing using data mining implementation process.

Fig .A

Data mining implementation process



Business Development:

It understands the project targets and prerequisites it is a process of understanding customer requirement as well as what they actual wants to achieve. Reveal significant factors, at the starting, it can impact the result of the project.

Data Understanding:

It examine multiple type of data that means it collect original data from multiple organizations and then get familiar to that data to detect interesting subsets for concealed information hypothesis, it contain following tasks

Tasks:

- Collects initial data
- Describe data
- Explore data
- Verify data quality.

Data Preparation:

It is a process of selecting data from multiple sites and cleaning raw data and transforming raw data into the useful data

Tasks:

- Select data
- Clean data
- Construct data
- Integrate data
- Format data

Modeling:

It is the process of creating a data model for the data to be stored in a Database. This data model is a conceptual representation of Data objects, the associations between different data objects and the rules.

Tasks:

- Select modeling technique
- Generate test design
- Build model
- Access model

Evaluation:

We discover data by mining method or in data selection but all the data which we discover it may not be used data, it is also huge amount data and all data may not be useful so pattern evaluation used to find or sort only needed data which we required.

Tasks:

- Evaluate results
- Review process
- Determine next steps

Deployment:

It includes scoring a database, utilizing results as company guidelines, interactive internet scoring. The information acquired will need to be organized and presented in a way that can be used by the client. However, the deployment phase can be as easy as producing. However, depending on the demands, the deployment phase may be as simple as generating a report or as complicated as applying a repeatable data mining method across the organizations.

Tasks:

- Plan deployment
- Plan monitoring and maintenance
- Produce final report
- Review project

II) DATA MINING ARCITECTURE

The significant components of data mining systems are a data source, data mining engine, data warehouse server, the pattern evaluation module, graphical user interface, and knowledge base.

Fig.B

Here let us see how these modules are work given in architecture.

- World Wide Web: website where from data gets.
- Database : databases store different data types of data
- Data warehouse: process of collecting Multiple data together
- Other data repositories: is a process of getting data from multiple sites
- Data cleaning: Clear data which is not usable
- Integration : multiple data collecting together and collecting in data warehouse
- Server: getting data from database.
- Pattern evaluation: Discover only interested patterns from the entire data.
- Data mining engine :suggesting software for mining data.
- Knowledge base: save previous data information for reuse
- Graphical user interface: is any user who uses system.

III) DATA MINING TECHNIQUE

Data mining is a process of mining different kind of data for that process we have to use some mining techniques they are as follows

Data Classification:

Data Classification is also called as supervise learning. In our database we already have train data in which we find class data, for finding that data we need classifier, classifier is a classification model, with the help of that model we are able to classify the given data

The steps we used to classify data is called as Learning step or training step where we construct classification model with the help of training data.

Classification contain given points

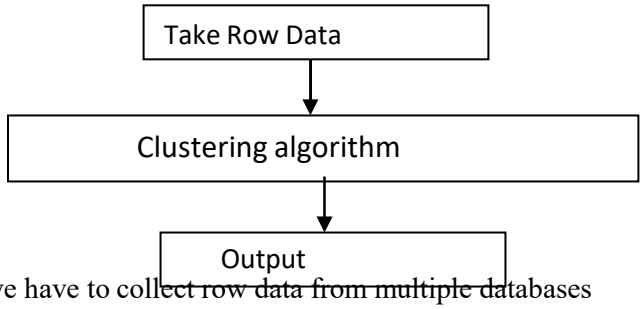
- Classification rule
- Decision tree
- Mathematical formula

Clustering

Clustering is mostly used technique of data mining called as partition of database bases on similarities

Stages of clustering:-

Fig.C



1. Take row data: in this stage we have to collect row data from multiple databases

2. Clustering algorithm: in this stage we have to use clustering algorithm to sort data

3. Output: and then we will get result in the form of output.

Example for clustering Data mining

- Search engine
- Marketing etc.

Association

In data mining association rule is used to predicting customer behavior, this rule helps uncover relationships between non relational data in a relational database or other information related to it

- Classification of association rule.

Single dimensional Association

In single dimensional only one dimension or predicator items refer only one predicate.

Multi dimensional Association

It refers two or more dimensions of predictor for output

Hybrid

In hybrid method predicates or dimensions can be repeater.

III Data mining Tools:

Rapid Minor:

Rapid minor is an open source data mining tool. Programming language used for this tool is java .this tool can be used over a vast range of applications including for business applications, commercial applications, training, education, research, application development, machine learning. It consist three modules

1. Rapid Miner Studio- This module is for workflow design, prototyping, validation etc.
2. Rapid Miner Server- To operate predictive data models created in studio.
3. Rapid Miner Radoop- Executes processes directly in Hadoop cluster to simplify predictive analysis.

Orange:

It is free software. As it is component-based software, the components of orange are called ‘widgets'. These widgets range from data visualization & pre-processing to an evaluation of algorithms and predictive modeling

Weka:

Weka is also called as Waikato Environment it is machine learning software developed at the University of Waikato in New Zealand. Weka supports most of the data mining tasks. Weka is software which is a collection of machine learning algorithm. It works on the assumption that data is available in the form of a flat fill.

Conclusion:

We will understand some basic stages which need to complete data mining implementation process. Data mining architecture gives brief idea about how each and every module is working inside this process. Data mining technique and tools are used to work with data it includes getting data from different places,

organized it and distribute as per the requirement of user or sorted useful data. Tools like weka, orange etc. are used to work on raw data to extract useful data.

References:

1. Bharati M. Ramageri DATA MINING TECHNIQUES AND APPLICATIONS Indian Journal of Computer Science and Engineering Vol. 1 No. 4 301-305.

2. Mengjiao Shang 2017 the characteristics of data mining as a cross discipline [J] Times Finance 263-264.

3. Jingfang Yang 2018 The application of machine learning algorithm in data mining [J] Electronic Technology & Software Engineering 191.

4. HouDi R Groth 2001 Data Mining - Building Competitive Advantages of Enterprises [M] (Xi'an: Xi'an Jiaotong University press).

5. DATA MINING: CONCEPTS, BACKGROUND AND METHODS OF INTEGRATING UNCERTAINTY IN DATA MINING Yihao Li, Southeastern Louisiana University Faculty Advisor: Dr. Theresa Beaubouef, Southeastern Louisiana University.

6. Agrawal, R., & Srikant, R. (2000, May). Privacy-preserving data mining. In ACM Sigmod Record (Vol. 29, No. 2, pp. 439-450). ACM.

7. Agrawal, R., & Srikant, R. (2000, May). Privacy-preserving data mining. In ACM Sigmod Record (Vol. 29, No. 2, pp. 439-450). ACM.

8. Agrawal, R., Gehrke, J., Gunopulos, D., & Raghavan, P. (1998). Automatic subspace

9. clustering of high dimensional data for data mining applications (Vol. 27, No. 2, pp. 94-105). ACM.

10. Agrawal, R., & Srikant, R. (2000, May). Privacy-preserving data mining. In ACM Sigmod

11. Record (Vol. 29, No. 2, pp. 439-450). ACM.

11. erry, M. J., & Linoff, G. (1997). Data mining techniques: for marketing, sales, and customer support. John Wiley & Sons, Inc..

Dr.Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Analysis of Strength and Capabilities of Major Data Science Machine Learning Algorithms

Dr. Sunil Khilari[1] Dr. Sachin Kadam[2]

Abstract:
As Data Scientists, it is significant that we have a concrete understanding of what's going on "under the cover" when utilizing easy-to apply Machine Learning libraries, rather than simply plugging and keep going through fit-predict-score functions. This research study take an overview of the major machine learning algorithms and their capabilities', issues , challenges, and all the applications and deployment tools that make it easier to present results to an audience of both data science experts and business users. Here researcher is studying how to extract hidden sense from data and use for making business decision.

Keyword*: DS-Data Science, ML-Machine Learning, AI- Artificial Intelligence, DL- Deep Learning*

1. Introduction

Machine Learning Tasks: Machine learning tasks, which are by far the most common ones. Theyare:

1. Regression
2. Classification
3. Clustering
4. Feature Selection
5. Feature Extraction

Algorithm's Performance:

Two important ways to characterize the effectiveness of an algorithm are its space complexity and time complexity. Time complexity of an algorithm concerns determining an expression of the number of steps needed as a function of the problem size. Since the step count measure is somewhat coarse, one does not aim at obtaining an exact step count. Instead, one attempts only to get asymptotic bounds on the step count. Asymptotic analysis makes use of the O (Big Oh) notation. Two other notational constructs used by computer scientists in the analysis of algorithms are Θ (Big Theta) notation and Ω (BigOmega)notation.

The performance evaluation of an algorithm is obtained by totaling the number of occurrences of each operation when running the algorithm. The performance of an algorithm is evaluated as a function of the input size n and is to be considered modulo a multiplicative constant.

An algorithm is a set of rules for carrying out calculation either by hand or on a machine or an algorithm is a sequence of computational steps that transform the input into the output. To analyze an algorithm is to determine the amount of resources (such as time and storage) necessary to execute it. Most algorithms are designed to work with inputs of arbitrary length. Usually the efficiency or running time of an algorithm is stated as a function relating the input length to the number of steps (time complexity) or storage locations (space complexity).

There are different ways an algorithm can model a problem based on its interaction with the experience or environment or whatever we want to call the input data. This taxonomy or way of organizing machine learning algorithms is useful because it forces you to think about the roles of the input data and the model preparation process and select one that is the most appropriate for your problem in order to get the best result.

Algorithms Grouped By Similarity

Algorithms are often grouped by similarity in terms of their function (how they work). For example, tree-based methods, and neural network inspired methods. I think this is the most useful way to group

algorithms and it is the approach we will use here.This is a useful grouping method, but it is not perfect. There are still algorithms that could just as easily fit into multiple categories like Learning Vector Quantization that is both a neural network inspired method and an instance-based method. There are also categories that have the same name that describe the problem and the class of algorithm such as Regression and Clustering.
We could handle these cases by listing algorithms twice or by selecting the group that subjectively is the "best" fit. I like this latter approach of not duplicating algorithms to keep things simple. In this section, we list many of the popular machine learning algorithms grouped the way we think is the most intuitive. The list is not exhaustive in either the groups or the algorithms, but I think it is representative and will be useful to you to get an idea of the lay of the land.There is a strong bias towards algorithms used for classification and regression, the two most prevalent supervised machine learning problems you will encounter. If you know of an algorithm or a group of algorithms not listed, put it in the comments and share it with us. Let's dive in.

1. Objectives of Study

Based on literature reviews the researcher has framed following objectives:

1) To identify various machine learning algorithms used in data science

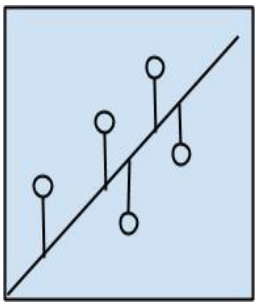
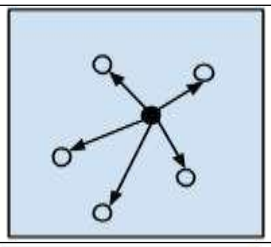
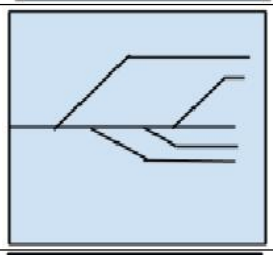
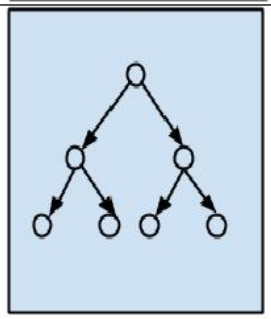
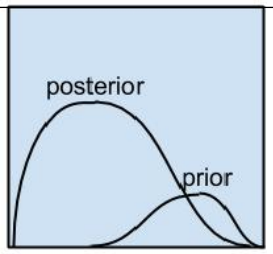
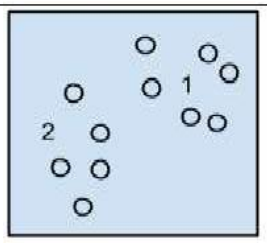
ISSN: 0474-9030

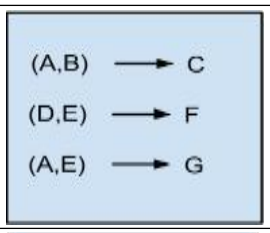
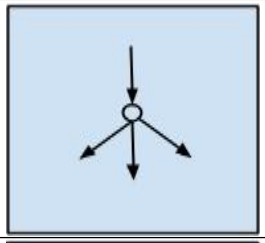
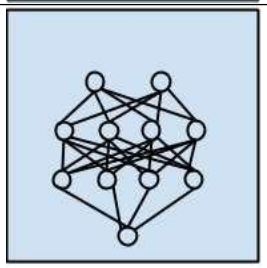
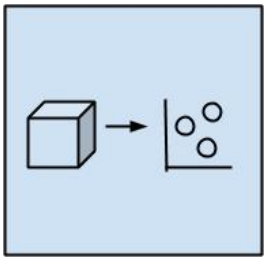
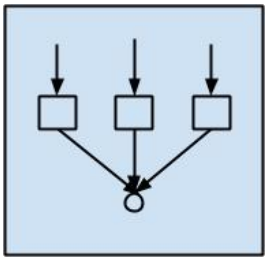
Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Algorithm Category	Functions	rithm Name
Regression Algorithms		1. Ordinary Least Squares Regression (OLSR) 2. Linear Regression 3. Logistic Regression 4. Stepwise Regression 5. Multivariate Adaptive Regression Splines (MARS) 6. Locally Estimated Scatterplot Smoothing (LOESS)
Instance-based Algorithms		1. k-Nearest Neighbor (kNN) 2. Learning Vector Quantization (LVQ) 3. Self-Organizing Map (SOM) 4. Locally Weighted Learning (LWL) 5. Support Vector Machines (SVM)
Regularization Algorithms		1. Ridge Regression 2. Least Absolute Shrinkage and Selection Operator (LASSO) 3. Elastic Net 4. Least-Angle Regression (LARS)
Decision Tree Algorithms		1. Classification and Regression Tree (CART) 2. Iterative Dichotomiser 3 (ID3) 3. C4.5 and C5.0 (different versions of a powerful approach) 4. Chi-squared Automatic Interaction Detection (CHAID) 5. Decision Stump 6. Conditional Decision Trees
Bayesian Algorithms		1. Naive Bayes 2. Gaussian Naive Bayes 3. Multinomial Naive Bayes 4. Averaged One-Dependence Estimators (AODE) 5. Bayesian Belief Network (BBN) 6. Bayesian Network (BN)
Clustering Algorithms		1. k-Means 2. k-Medians 3. Expectation Maximisation (EM) 4. Hierarchical Clustering

Association Rule Learning Algorithms		2. Apriori algorithm 3. Eclat algorithm
Artificial Neural Network Algorithms		1. Perceptron 2. Multilayer Perceptrons (MLP) 3. Back-Propagation 4. Stochastic Gradient Descent 5. Hopfield Network 6. Radial Basis Function Network (RBFN)
Deep Learning Algorithms		1. Convolutional Neural Network (CNN) 2. Recurrent Neural Networks (RNNs) 3. Long Short-Term Memory Networks (LSTMs) 4. Stacked Auto-Encoders 5. Deep Boltzmann Machine (DBM) 6. Deep Belief Networks (DBN)
Dimensionality Reduction Algorithms		1. Principal Component Analysis (PCA) 2. Principal Component Regression (PCR) 3. Partial Least Squares Regression (PLSR) 4. Multidimensional Scaling (MDS) 5. Linear Discriminant Analysis (LDA) 6. Mixture Discriminant Analysis (MDA) 7. Quadratic Discriminant Analysis (QDA) 8. Flexible Discriminant Analysis (FDA)
Ensemble Algorithms		1. Bootstrapped Aggregation (Bagging) 2. Weighted Average (Blending) 3. Stacked Generalization (Stacking) 4. Gradient Boosting Machines (GBM) 5. Gradient Boosted Regression Trees (GBRT) 6. Random Forest 7. Computer Vision (CV) 8. Natural Language Processing (NLP)

2) To Identify strength and capabilities of of machine learning algorithms

SN	Algorithm Name		Strengths	Capabilities
1	Decision Trees	DT	-Decision trees can learn non-linear relationships, and are fairly robust to outliers. -Ensembles perform very well	-Easy to use and understand. -Can handle both categorical and numerical data. - Resistant to outliers, hence

			in practice, winning many classical (i.e. non-deep-learning) machine learning competitions.	require little data preprocessing. - New features can be easily added. - Can be used to build larger classifiers by using ensemble methods.
2	Linear Regression	LR	-Linear regression is straightforward to understand and explain, and can be regularized to avoid overfitting. - In addition, linear models can be updated easily with new data using stochastic gradient descent.	- Linear Assumption -.Remove noise - .Remove collinearity - .Gaussian distribution - Rescale inputs
3	K-Means Clustering	KMC	-K-Means is hands-down the most popular clustering algorithm because it's fast, simple, and surprisingly flexible if you pre-process your data and engineer useful features.	- Specify number of clusters K. - Initialize centroids by first shuffling the dataset - Keep iterating until there is no change to the clusters. - Compute the sum of the squared distance between data points and all clusterss. - Assign each data point to the closest cluster. - Compute the centroids for the clusters
4	Conditional Random Fields	CRF	- Used to predict any sequence in which multiple variables depend on each other - To model sequential data	-Graphically representing dependencies between entities, and including rich observed features of entities
5	Recurrent Neural Networks (RNNs)	RNN	Neural networks perform very well on image, audio, and text data, and they can be easily updated with new data using batch propagation. Their architectures (i.e. number and structure of layers) can be adapted to many types of problems, and their hidden layers reduce the need for feature engineering.	- An RNN remembers each and every information through time. It is useful in time series prediction only because of the feature to remember previous inputs as well. This is called Long Short Term Memory. -Recurrent neural network are even used with convolutional layers to extend the effective pixel neighborhood
6	Support Vector Machines	SVM	-SVM's can model non-linear decision boundaries, and there are many kernels to choose from. - They are also fairly robust against overfitting, especially in high-dimensional space.	-SVMs are effective when the number of features is quite large. - It works effectively even if the number of features are greater than the number of samples. -Non-Linear data can also be classified using customized hyperplanes built by using kernel trick. -It is a robust model to solve

				prediction problems since it maximizes margin.
7	Principal Component Analysis	PCA	- Removes Correlated Features - Improves Algorithm Performance - Reduces Overfitting - Improves Visualization	- Applying variance thresholds is based on solid intuition - This is an easy and relatively safe way to reduce dimensionality at the start of your modeling process
8	Least Squares and Polynomial Fitting	LSPF	- Simplicity - Applicability - Theoretical Underpinning	- Geometrically accurate result - Broad range of functions - Simple and easy to implement

3) To explore issues and challenges machine learning algorithms

SN	Algorithm Name		Weakness	Applications	Implementations
1	Decision Trees	DT	-Unconstrained, individual trees are prone to overfitting because they can keep branching until they memorize the training data. -This can be alleviated by using ensembles. -Prone to overfitting. - Require some kind of measurement as to how well they are doing. -Need to be careful with parameter tuning. - Can create biased learned trees if some classes dominate.	-Data mining -Data Modelling -Engineering -Fault Diagnosis	Python / R
2	Linear Regression	LR	-Linear regression performs poorly when there are non-linear relationships. -They are not naturally flexible enough to capture more complex patterns, and adding the right interaction terms or polynomials can be tricky and time-consuming.	- Financial portfolio prediction, - Predictive Analytics - Decisions & Avoiding errors - Generate new Insights	Python / R
3	K-Means Clustering	KMC	-The user must specify the number of clusters, which won't always be easy to do. - The true underlying clusters in your data are not globular, then K-Means will produce poor clusters. K-means is not necessarily the most optimal one.	- Identifying Fake News - Spam filter - Identifying fraudulent or criminal activity - Document analysis	Python / R
4	Conditional Random	CRF	-The computational expense of training.	- Natural Language Processing	

	Fields		-Computational burden when there are a large number of training instances, when the graphical structure is complex, when there are latent variables, or when the output variables have many outcomes	extracting Proper nouns from sentences	
5	Recurrent Neural Networks (RNNs)	RNN	Deep learning algorithms are usually not suitable as general-purpose algorithms because they require a very large amount of data. In fact, they are usually outperformed by tree ensembles for classical machine learning problems. In addition, they are computationally intensive to train, and they require much more expertise to tune (i.e. set the architecture and hyperparameters). -Gradient vanishing and exploding problems. -Training an RNN is a very difficult task. -It cannot process very long sequences if using tanh or relu as an activation function	- Problem Formulation - Text Summarization - Language Translation - Call Center Analysis	Python / R
6	Support Vector Machines	SVM	- SVM's are memory intensive, trickier to tune due to the importance of picking the right kernel, and don't scale well to larger datasets. Currently in the industry, random forests are usually preferred over SVM's. -The biggest limitation of Support Vector Machine is the choice of the kernel. The wrong choice of the kernel can lead to an increase in error percentage. -With a greater number of samples, it starts giving poor performances. -SVMs have good generalization performance but they can be extremely slow in the test phase. -SVMs have high	- Face detection - Classification of images - Bioinformatics - Handwriting recognition	Python / R

			algorithmic complexity and extensive memory requirements due to the use of quadratic programming.		
7	Principal Component Analysis	PCA	- Independent variables become less interpretable - Data standardization is must before PCA - Information Loss	- Senate voting - Text mining - Stock Market - Artificial Intelligence application	Python / R
8	Least Squares and Polynomial Fitting	LSPF	- Sensitivity to outliers - Test statistics might be unreliable when the data isnot normally distributed - Tendency to overfit data	- Control System - Estimation - Statistics - Mathematical modelling	

4. Hypothesis

In order to attain the aims and objectives of the research, the researcher has formulated the following hypotheses for testing:

H1: There is a significant co-relation between machine learning algorithms in data science.

H2: There are huge number of issues and challenges to use machine learning algorithms in data science

5. Conclusion

We have studied the Machine Learning Algorithm and also learned about the categorization of Machine Learning Algorithms: Regression Algorithms, Instance-based Algorithms, Regularization Algorithms, Decision Tree Algorithms, Bayesian Algorithms, Clustering Algorithms, Association Rule Learning Algorithms, Artificial Neural Network Algorithms, Deep Learning Algorithms, Dimensionality Reduction Algorithms, Ensemble Algorithms, Supervised Learning, Unsupervised Learning, Semi-Supervised Learning, Naïve Bayes Classifier Algorithm, K Means Clustering Algorithm, Support Vector Machine Algorithm, Apriori Algorithm, Linear Regression, and Logistic Regression. We have also used images that make easy to understand Machine Learning Algorithm. Furthermore, researcher is short listing top 10 machine learning application and its real-time usage in applications. This short-listing is based on analysis of all strength and weakness of all machine learning algorithms. Testing of hypothesis is the future scope of this study.

6. References

1. ALEXA, M., BEHR, J., COHEN-OR, D., FLEISHMAN, S., LEVIN, D., AND SILVA, C. T. 2001. Point set surfaces. In IEEE Visualization 2001, 21–28.
2. BERNARDINI, F., MITTLEMAN, J., RUSHMEIER, H., SILVA, C., AND TAUBIN, G. 1999. The ball-pivoting algorithm for surface reconstruction. IEEE Transactions on Visualization and Computer Graphics 5, 4, 349–359
3. https://towardsdatascience.com/top-10-machine-learning-algorithms-for-data-science-cdb0400a25f9
4. https://towardsdatascience.com/top-10-machine-learning-algorithms-for-data-science-cdb0400a25f9
5. https://www.evineyardapp.com/blog/2017/05/30/overview-of-grapevine-structure-and-function/
6. https://elitedatascience.com/machine-learning-algorithms
7. https://machinelearningmastery.com/a-tour-of-machine-learning-algorithms/
8. http://mnemstudio.org/ai/cluster/k_means_python_ex1.txt

Dr.Chandrani Singh ,Director –MCA,SIOM

ISSN: 0474-9030

Our Heritage

Vol-78-Issue-15

January-2020

UGC Care Listed Journal

Data Analytics in Healthcare Industry scope for diagnose and cure the major disease

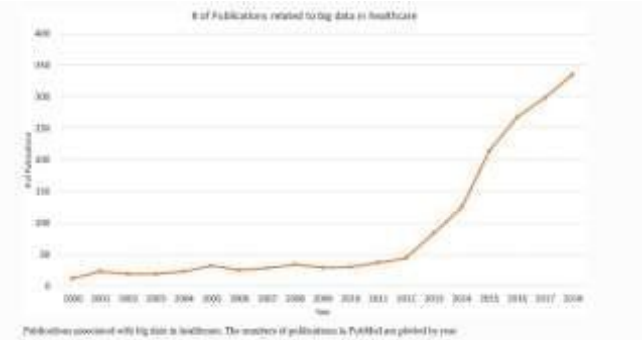
Shubham Kanugo[1],Dr.Sunil Khilari[2]

Abstract:
This research paper talks about the different inventions and innovations done to find data related to various major diseases and their cure. This paper also puts light on how data analytics is helping in prevention and curing of diseases. Health industry is using data analytics very actively and positively which is mentioned in this paper. Healthcare industry is working from local to global. Continuous growth in digital healthcare sector is leading to generation of plenty of data which can be structured or non-structured that needs to be handled very precisely so that it can give some fruitful results. For that data analytics is required at very large level. A large scope of research and development is available to benefit healthcare industry. This paper also puts light on how data analytics is playing a crucial role in healthcare industry by benefitting local people at ground level and big health organizations simultaneously.

I. INTRODUCTION

Medical Science is developing day by day. The day when computers entered medical science its scope increased dramatically. We don't know what is the limit of usage of data analytics in medical science. Every bit of time towards future is giving new opportunities of data analytics in medical science. Doctors are using previous data to cure and prevent many diseases in which data analytics is playing a key role. Huge amount of work is being conducted around the globe to provide a better support for healthcare organization. Graph[1] shows continuous rise in the number of publications regarding big data in healthcare

Graph 1:



II. DATA ANALYTICS AND MEDICAL SCIENCE HAND IN HAND

A) Improved Diagnostic Accuracy: Predictive analysis using historical data such as prescription, symptoms, habits, etc. is used by data analytics technologies and machine learning algorithms which in turn provide improved diagnosis.

B) Electronic Health Record: EHR is a revolutionary change in medical history. It provides a systematic collection of patient's record in digital format. As the use of EHR is increasing it is very much

helpful in accurate diagnosis and treatment. It also increased the quality of treatment by reducing lab tests and office visits.

C) To Trigger Real-time Alerts: Data analytics is useful when it is done on real time data and for medical science real time data is key factor for treatment and precaution which is provided by the wearable devices. Doctors can track health statistic of a patient virtually and can trace the medical behavior of patient.

D) Drug Development: Finding and inventing a new drug is a process which includes research with accurate data. To provide data for this research data analytics is providing a solid helping hand. Usage of previous data helps in development of new drug based on its effect.

III. LOCAL TO GLOBAL APPROACH

As data analytics is helping in personal health care services similarly it is also increasing efficiency in global healthcare analytics. International institutions like WHO, UNESCO and World Bank are the key beneficiaries of these kind of services. All the levels of data analytics done in healthcare have a impact which is globally measurable. Data analytics and data science tools are making it easy to find the rate of different healthcare issues and guides in planning of eradication any diseases on large level.Government organizations are using data analytics techniques to plan many medication campaigns to eradicate severe diseases like Polio, AIDS etc. In country like India data analytics is used but not at good level but in developed nations like USA data analytics have a huge impact in prevention and treatment of various diseases.

IV. INNOVATIVE APPROACHES

Since the data is increasing at very tremendous level in healthcare industries data analytics is necessary to perform in the other sectors also from where the healthcare data in being obtained. Major healthcare data generation is from the patients coming to doctors and general health surveys. Apart from these different industries like IT industries and many more industries are using data analytics in finding, analysing and pointing out the health related problems in their employees. Their main focus is on fine health of their employees so that they can give a good productivity.

Similarly other industrial sectors are also getting aware regarding this and they are actively taking part in using data analytics for healthcare of their employees.

As whole world is heading towards artificial intelligence, healthcare industry service providers also heading towards this amazing technological concept to boost healthcare services. For that many research shows a predictive modelling is required to accomplish this goal. The fuel to give a start to this whole thing is the data analytics done by the various available tool, smart wearables, EHRs, etc. Figure[2] shows how the predictive analytics have some pros and cons also.

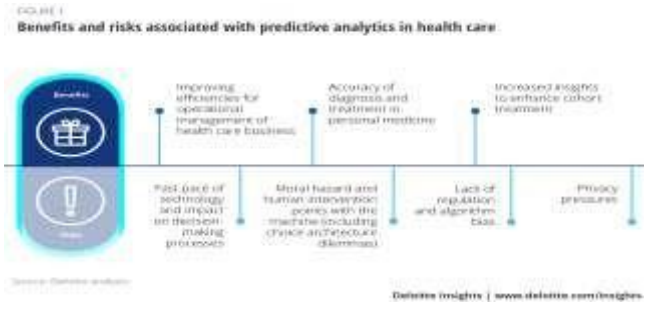


Figure 2:

V. CONCLUSION

Data analytics is playing a key role in medical science. Visualising the data about healthcare is very much beneficial to understand its severity and planning. Making a healthy world is everyone's goal and data analytics is going to play a huge role in it. Future of healthcare industry will be based on data analytics and Healthcare organization need to use data analytics to achieve wider range of beneficiaries. The use of advanced data analytics is also reducing the imprecise diagnosis and increasing accuracy in treatment. Looking at drastic increase in population all over the globe it is necessary for healthcare industry to upgrade with newer techniques of data analytics and data management. Many tech giants are involving themselves at very large scale to ease the healthcare treatment by using the strong potential of data analytics. Data analytics will be highly helpful in fighting with epidemics. Not only it is useful for the health service providers but also it is supporting individuals to understand the better health practices. There are continuous growth and research is going on to introduce artificial intelligence also. People are also getting and spreading awareness among their peers about the usage of data analytics in healthcare and its benefits to personal health. All this lead to a healthier tomorrow for human beings and a huge credit will be bagged by DATA ANALYTICS.

VI. BIBLIOGRAPHY

1] James W. Cortada, Dan Gordon and Bill Lenihan in research paper "The value of analytics in healthcare

2] Wullianallur Raghupathi and Viju Raghupathi in research paper "Big data analytics in healthcare: promise and potential

3] Ashwin Belle, Raghuram Thiagarajan "Big Data Analytics in Healthcare"

4] www.Delloite.com/insights ,"Predictive analytics in health care Emerging value and risks"

5] Sabyasachi Dash, Sushil Kumar Shakyawar, Mohit Sharma & Sandeep Kaushik,"Big data in healthcare: management, analysis and future prospects"

6] www.healthitanalytics.com

7] www.altexsoft.com/blog/datascience/7-ways-data-science-is-reshaping-healthcare/

8] www.bigdata-madesimple.com/top-6-use-cases-of-data-science-in-healthcare/

9] www.mobisoftinfotech.com/resources/blog/data-science-in-healthcare-use-cases/

Dr. Chandrani Singh ,Director –MCA,SIOM

Android And Bluetooth Network based Approach to Detect Students: Using AI *(Student Attendance System)*

Nihal M. Mulla

Master In Computer Application, (1st Year),

nihalmulla9784@gmail.com

Sinhgad Institute of Management, Vadgaon (Budruk), Pune.

Dr. Manisha Kumbhar

Professor

manisha.kumbhar@sinhgad.edu

***ABSTRACT*— This system approach is used to spot the students throw the Smart phones by using network. This system is taking the particular number which is attendance in class. The Student attendance is very important because so many successful industries, schools and Universities want to engage the students and making sure that they will come regularly in the school. Automated Attendance System performs the daily job of attendance marking and analysis with reduced human intervention.**

In this research paper the student attendance system is designed and implemented based on the Android operating system and Network. In comparison to other attendance system this system provides the faster, cheaper, and ONE TIME ATTENDANCE And generate the daily, monthly and yearly reports. Maintenance and monitoring of attendance records plays a needed role in the analysis of performance of any organization.

Keywords—Android, Engage,* human intervention, ONE TIME ATTENDANCE*, Monitoring, job-activity, needed-vital

I. INTRODUCTION

The technology advancements and increase in internet the student attendance system is taking the particular number which is attendance in class. Successful industries, schools and universities begin by engaging students and making sure that they will come regularly so the attendance rate become very important.

The attendance is important because students are additional to likely to success in academics when they attend class consistently. It's difficult for the every teacher who taking the lecture to build student's skills and progress if a large number of students is frequently absent.

Because of the advancement of technology today has dip itself towards education. The attendance of technology has reached its maximum of providing sustainable technology towards quality education through delivery and effective learning and smart devices have become a way of life especially in higher education academic fields be able to develop their paper attendance into smart attendance system. In this paper, we will not only explain the how is the work the automatic student attendance system but also identify the challenges and difference between our attendance system and other attendance systems associated with it and discuss reasons why attendance system implement this technique.

II. ANDROID OPERATING SYSTEM

Android is a software and application platform and operating system for mobile devices, based on the Linux kernel, and developed by Google and later the Open Handset Alliance. It allows developers to write managed code in the Java language, controlling the device throw Google-developed Java libraries. There are over 2.5 billion Androids in use and over 1.4 million devices activated every day. Android is the one of the most used mobile operating system with a market share of 87% and Over 2.9 million applications available in Google play store.

III. ANDROID FEATURES

User Interaction:

Android Provides pleasing, attractive and comfortable user interaction.

Connectivity:

Now a day's any Android supports different connectivity technologies like Bluetooth, Wi-Fi.

Messaging:

SMS and android cloud to device messaging framework is available in android operating system.

Multitasking:

Android supports multi-tasking, multi-programming, which provides flexibility of running from one application to another or running different applications simultaneously.

Hardware Support:

Android supports video or still cameras, touch screens, GPS, accelerometers, gyroscopes, magnetometers, proximity and pressure sensors, thermometers.

Java support:

Most of the android applications are written in java language but there is an absence of java virtual machine in the platform of that DVM is presented. DVM is specially designed for android and battery powered mobiles.

IV. PROPOSED OF STUDENT ATTENDANCE SYSTEM

A. System Tools:

Android Studio has been used for a development environment. Now a day's Java, PHP, HTML5 And CSS3 have been used as programming and scripting languages. While MySQL has been used for a Database management system. WAMP server has been used as a local host. And CSS as a script for fine-tuning the screens appearance.

B. System Database

Database of the present system consists of five tables: users, students, courses, departments and attendance logs. Figure (1) shows the these relational database.

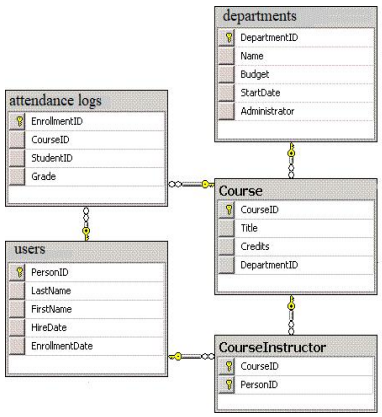


Fig-1-Student Attendance Database

C. System Users:

There are three types of system users: Administrator, Presenter and Instructor. Any user who wants to use the attendance system must get user name and password which admin afford it.

This Automated Attendance system consist from three parts, first part is admin session, who can login to system and edit on all database tables. The second part is instructor session, who login to system for marking attendance and third part is presenter session, that also login to system to show attendance and report all these tasks.

The homepage of this system is the login page. When user open this application then this application shows the login page to the student, as shown in Figure (2), It involves three input types: Text fields, button and labels. And Also there are two textbox for entering username and password

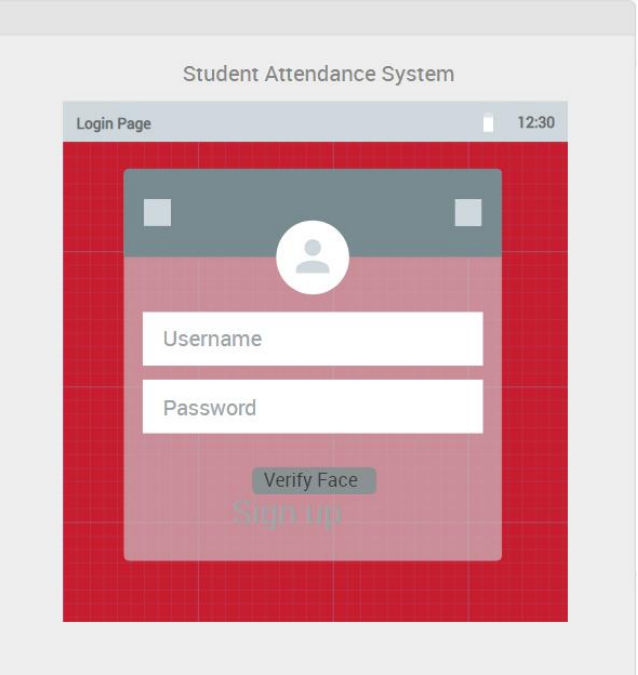


Fig-2- Login Page

D. Administrator Session

After enter the user name and password, the application will redirect the admin into the "Dashboard" page. It holds the buttons for Department, Courses, Users, students and logout as shown in figure (3). These buttons are used for adding, deleting and editing the department, course, student and user respectively. The proposed of this system is, suppose that current academic system consists of four classes, and two semesters. Figures (4), (5), (6) and figure (7) shows managing these sections.

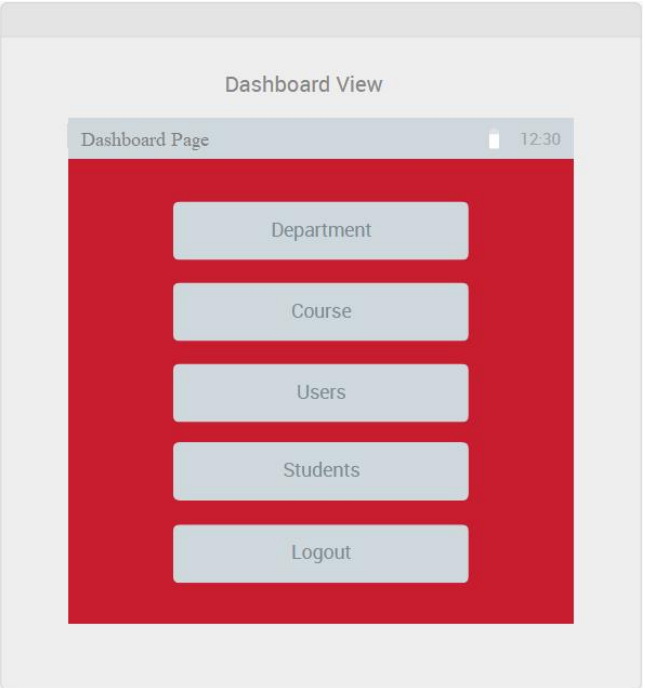


Fig-3- Dashboard View

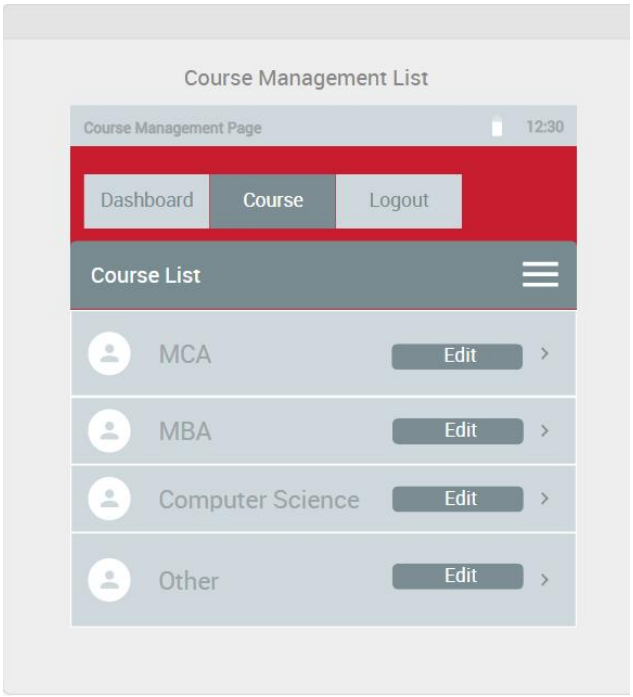


Fig-4-Course Management List

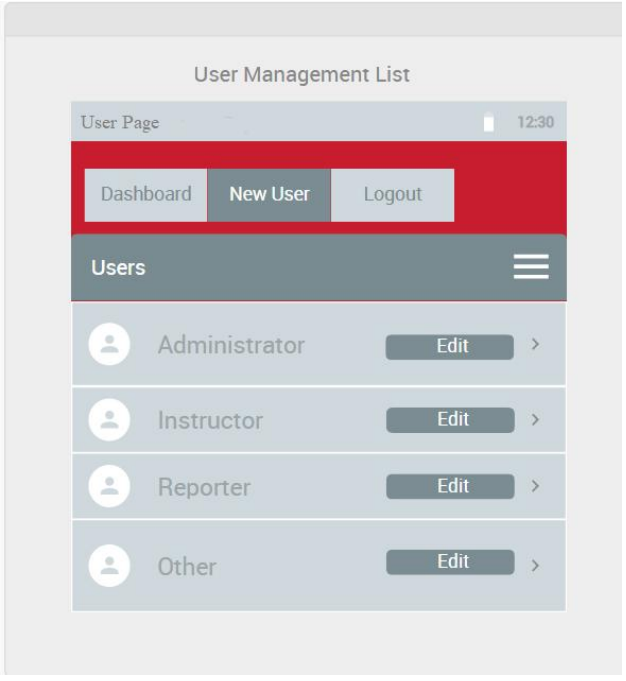


Fig-5-Users Management List

E. Instructor Session :-

For taking the students attendance for particular department and class, instructor must be login to the system. After submitting the user name and password of the instructor, the system will redirect that instructor to "take attendance" page as shown in figure (8). After selecting the department, class, semester, and the current course, all names of students at that class will appear in students list as shown in figure (9).

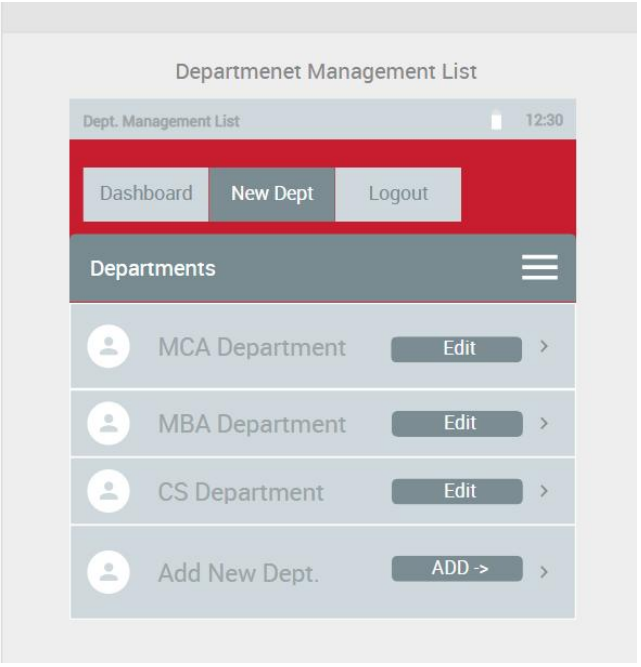


Fig-6-Department Management Page

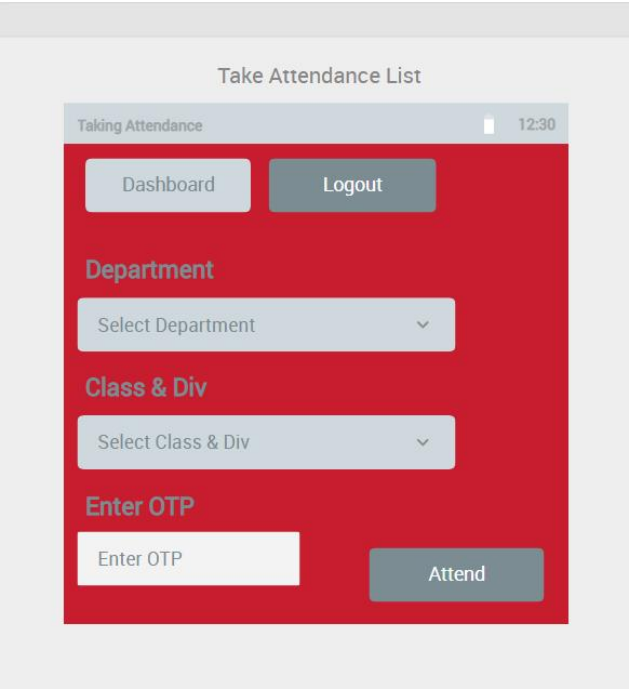


Fig-7-Taking Attendance Page

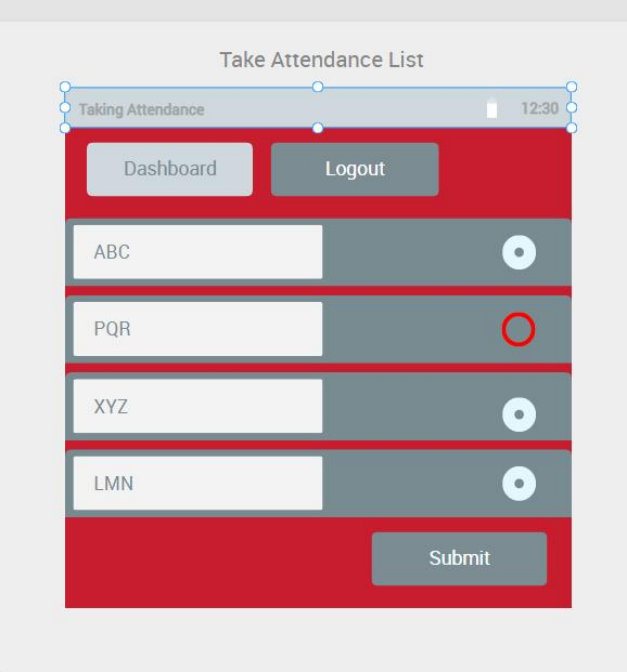


Fig-8-Student Attendance Page

After taking an attendance, a statistics page will be shows to acknowledge an instructor about both present and absent students, as shown in Figure (10).

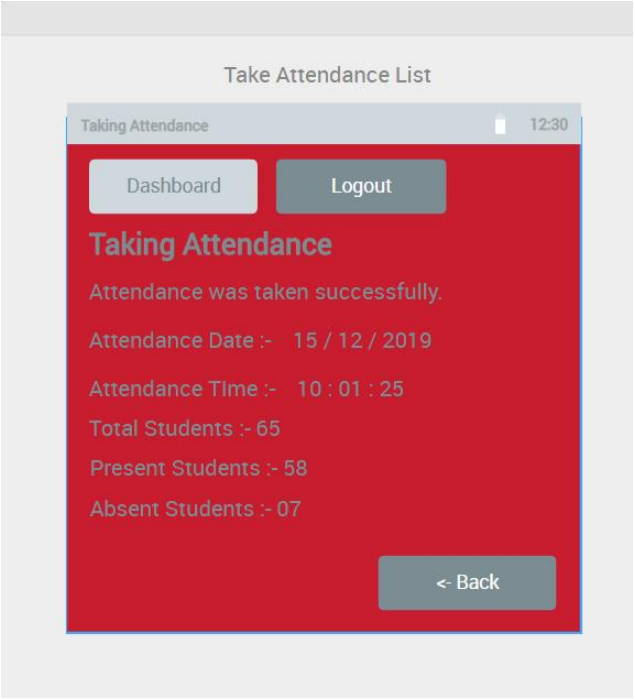


Fig-9- Attendance Statistics Page

F. Presenter session

The third user of the system is the Presenter. The presenter is responsible for extract a report of attendance, for a particular course, as shown in figure (11), or student in specific course, as shown in figure (12).

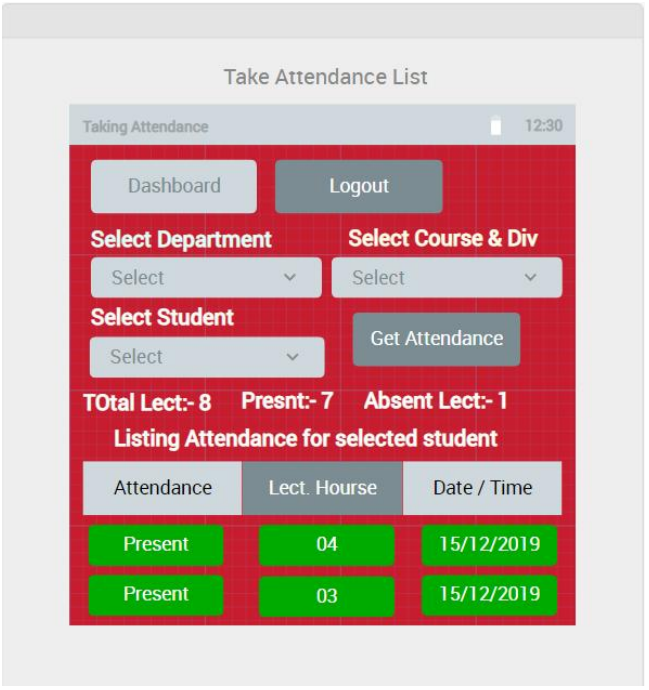


Fig-10-View Student Attendance report Page

v. ANDROID FEATURES:-

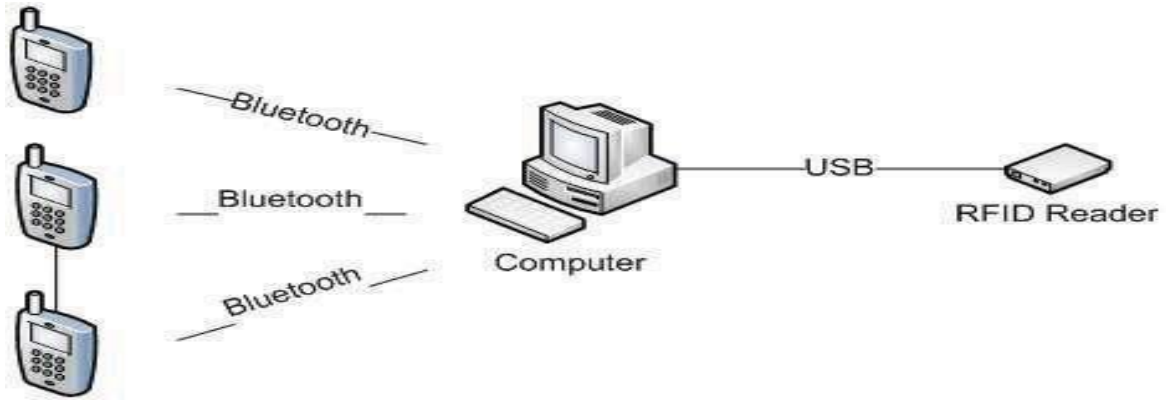
1. **User Interaction:** Android Provides beautiful, attractive and comfortable user interaction.
2. **Connectivity:** Android supports different connectivity technologies like Bluetooth, Wi-Fi, and WiMAX.
3. **Messaging:** SMS, MMS and android cloud to device messaging framework is available in android operating system.
4. **Web browser:** Browser present in android operating system depends on web kit in mix with Chrome's V8 JavaScript engine supporting.
5. **Multitasking:** Android supports multi-tasking, which provides flexibility of running from one application to another or running different applications simultaneously.
6. **Hardware Support:** Android supports video or still cameras, touch screens, GPS, accelerometers, gyroscopes, magnetometers, proximity and pressure sensors, thermometers.

1. HOW IT WORKS FRONTEND?

- Firstly, Install the app in lecturer and students mobile.
- When the new lecture begins the student will switch on the app and the student enter the there username and password in login page and click on the to verify the student face in app.
- When the student username, password and most important thing student face verification is done successfully then student can login successfully.
- Then student go to the taking attendance page and it will select the appropriate information related to the there academic year and attend the there Attendance.
- The students who are present for the lecture can easily mark the attendance.
- Due to this, the time will be saved of the lecturer.

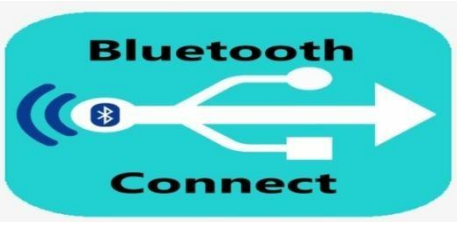
2. HOW IT WORK BACKEND?

The motive of the development of biometric system is to take student attendance more efficiently. This method uses the student's matrix card to route student's attendance and sent information to the computer and the computer will send data to a mobile phone lecturer. The listing of student's will be automatic, quicker and more security intensive than current methods of registration.



3. WHY TO USE BLUETOOTH FOR THIS APPROACH:-

While there are numerous other technologie's like WIFI, AIRPORT, INFRARED, ZIGBEE and many more but the key among them are range, power consumption, and intended use. ***Bluetooth*** wireless technology in its most common implementations up to a range of 30 feet(10m). This range, depending on the ***Bluetooth*** device class, can extend to 100 meters and has been shown, in some tests, it support an even greater range. ***Bluetooth*** technology consumes
a low amount of power and is therefore appropriate for smart phone and battery-operated devices . The technology



provides voice, data, and audio connections betweendevices.

VI. REVIEW OF LITERATURE ON DIFFERENT ATTENDANCE MANAGEMENT SYSTEM

1. Computerized Attendance System :-

A desktop application developed by S. K. Jain, U. Joshi, and B. K. Sharma (2010) , in which all the list of the registered student's in a particular course will be displayed when the lecturer start the application. The attendance is done by clicking a check box next to the name of the students that are present, and then clicked on register button to mark their attendance. But in this also, a human involvement for attendance tracking is needed.

2. Bluetooth Based Attendance System :-

In 2013, Vishal Bhalla, Tapodhan Singla, Ankit Gahlot and Vijay Gupta , have proposed the attendance system which can take attendance using Bluetooth. In this project, attendance is being taken using instructor's smart phones. Application software is installed in instructor's mobile telephone enables it to query student's mobile telephone throw Bluetooth connection and through transfer of student's mobile telephone Media Access Control (MAC)

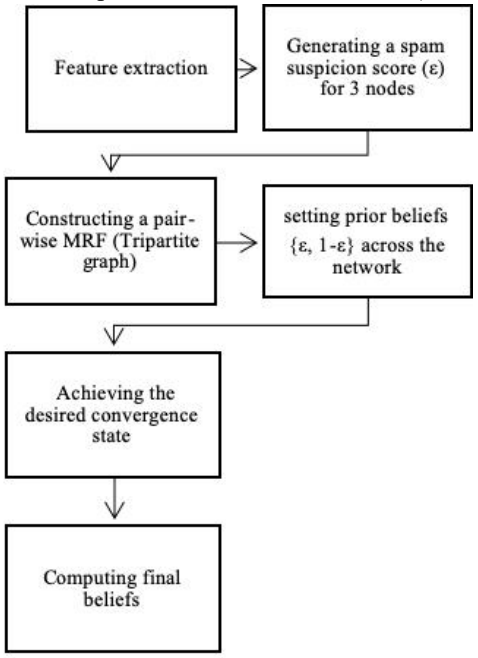


Fig. 1. Figure to show workflow in SpEagle framework

addresses to the instructor's mobile telephone, attendance of the student can be confirmed. The

Problem of this particular system is student's phone is required for attendance. If student didn't carry the mobile phone with him without mobile phone his attendance will not considered in Bluetooth Based Attendance System. The second problem of this proposed system is , in case of students' absent if his mobile is given to his friend then also present is marked, so attendance of student is not necessary only phone should be in Bluetooth coverage area.

3. NFC based Attendance System :-

(Media Anugerah Ayu, "TouchIn: An NFC Supported Attendance System in a University Environment", 2014) In this paper author presents the implementation of an (AMS) Attendance Management System that is based on the Bluetooth and NFC technologies in a multiuser environment. It uses fingerprint & the Bluetooth address of the NFC enabled smart phone of the user to authenticate to identity of the user. A Java based desktop application receives the NFC tag IDs, other information associated with the mobile phone and the user and submits them to an analyzer for the interpretation of the user's behavior. But in this case, student must be having NFC enabled phone to mark attendance in the class room.

4. Fingerprint based Attendance System:-

In 2013, Seema Rao and Prof.K.J.Satoa proposed one new automated attendance system for employee attendance using fingerprint. This automated attendance system checks one fingerprint template with all templates stored in the database, like wise it checks for all employee which will take more time. The main problem in this case is it is very time consuming as it check one fingerprint with all the temple stored in the database. (Neha Verma, Komal Sethi and Megha Raghav, 2013) Fingerprint recognition based identification system is designed for student identification. This system is being designed for taking the attendance in institutes like NIT Rourkela. In this automated attendance system, fingerprint template matching time is reduced by the partitioning database. In this system all student's of every class has to stand in a long waiting line to make attendance, again this system is suffering from fingerprint device, and one most important disadvantage of this system is that it is work within short distance.

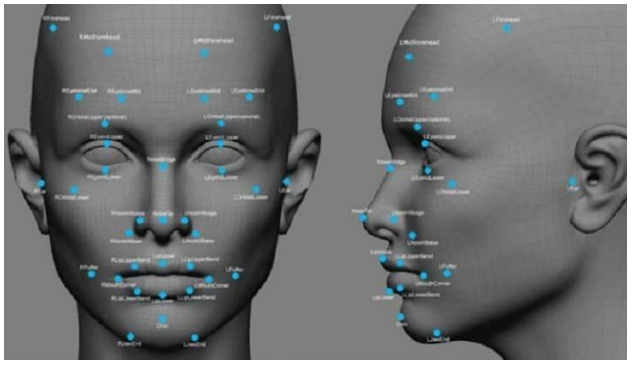
5. Iris Based Attendance System :-

In 2010, Seifedine Kadry and Mohamad Smaili has developed one system. In this paper, a wireless iris recognition automated attendance management system is designed and implemented using Daugman's algorithm (Daugman, 2003). This system based on biometrics and wireless technique solves to the problem of the spurious attendance. It can make the user's attendances more easily and effectively. This automated attendance system is based on RF wireless technique, it is too expensive. In this system all students of every class has to stand in a long waiting line to make attendance, and most important disadvantage is that it is work within short distance and it is expensive automated attendance system.

6. Face Recognition based Attendance System:-

(Muthu Kalyani.K and Veera Muthu.A, 2013) has proposed Face Recognition based Attendance System, where we use a CCTV camera to be fixed at the entry point of a classroom, which automatically captures the image of the student and checks the observed image with the face database using

android enhanced smart phone. It is typically used for two purposed. Firstly marking this automated attendance for student by comparing the face images produced recently and secondly, recognition of human who are strange to the environment i.e. an unauthorized person. For verification of image, a newly emerging trend 3D Face recognition is used which claims to provide more accuracy in matching the image database, The main problem of this system is recognized face will compare with the all entire database for the authenticate the individual attendance.



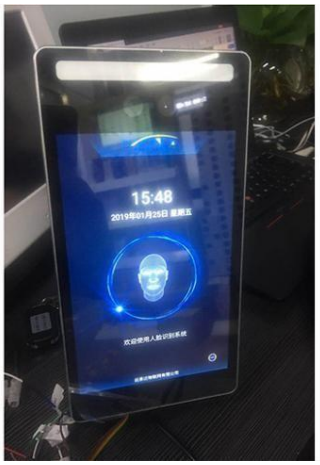
7. **Mobile Based Attendance System:-**

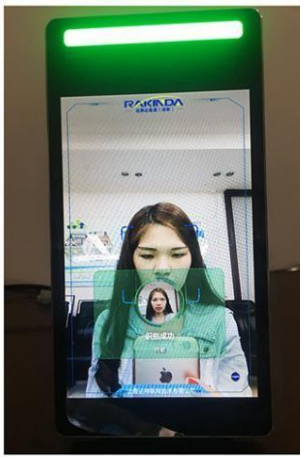
In 2013, Dr. S. Ramnarayan REDDY, Deepanshu GOYAL and Ankit BANSAL, tried to implement a system which overcomes the limitations of the existing approach by taking the attendance through teacher's mobile phones. Doing the same work on mobile phone not only saves our resources but also enables the user to get easy and interactive access to the attendance records of student's. This system is implemented on S60 Symbin platform, so teacher must be having S60 Symbin platform mobile phone and human involvement for taking the attendance there.

8. **RFID based Attendance System:-**

BISAM-BIS attendance Management System by BIS Software Development Services PVT Limited presents an attendance management for schools and colleges. This automated attendance system can send SMS and email alert to parents/guardians of the students automatically. The student will register at the gate by touching RFID device with their RFID tag and send the data to BISAM server in the school/college. The server will process the attendanced data and send an SMS to the parents/guardians of the absentee of the student through BISAM SMS gateway server. The system also has Time Manager Software for managing the employee's attendance and HR related functionalities.

Solution:- As per the above cases in each case there is some problems. The 3rd and 6th case is Bluetooth based attendance system and Face recognition based attendance system we combine these two system and solve the problems and make the Android And Bluetooth Network based Approach to Detect Students: Using **AI.**





➢ Proposed of System :-

The proposed of automated attendance system is based on Bluetooth Network and face recognition algorithm. Another one purpose of this system is to solve the way of traditional attendance system and make the attendance system as automated. When the lecturer enters in classroom then the student can open this application and enter their username and password and verify their face in this app. In this feature the face recognition is only take the live student face it does not recognize the any type of images and also it does not recognize the video faces.

➢ CONCLUSION :-

We covered almost all of the technologies in the Bluetooth attendance system and conclude that with the advancement of this technology and with the increasing demands of the people on new procedures are has been developed. It will be really beneficial for the students and as well as for the professors of the respective universities and colleges as with the advancement of this technology they can put to utilize their lectures in a best manner.

Therefore, we can conclude that in the future, we can consider Bluetooth attendance technology system as a good option in near future to meet the growing requirements of the generation in effective manner. The system is very easy to use. Users are directed as what step to take next by providing them with timely information displayed on their smart phones. Accidental touching of tags which may result in an unnecessary trigger is avoided since users need to deliberately connect to the terminal via Bluetooth first before the tag application is activated. The system is requires minimal initial calibration to initialize which tag is used as Entry tag or Exit tag. The system is very useful in school/college environment, work places and any organization that requires strict authenticated and authorized users to be at the premises. Prediction of the unacceptable user/student's behavior is automatically sent to the administrator. This saves administrator's time from manually scrutinizing the system to make inferences from user's data.

➢ References :-

1. REFERENCES ON ATTENDANCE MANAGEMENT SYSTEM :-

1. Advance Research In Science And Engineering (IJARSE), Vol. No.2, Issue No.3, March, 2013, ISSN-2319-8354(E).

2. Muthu Kalyani.K and Veera Muthu.A, "SMART APPLICATION FOR AMS USING FACE RECOGNITION", Computer Science & Engineering: An International Journal (CSEIJ), Vol. 3, No. 5, October 2013, DOI : 10.5121/cseij.2013.3502.

3. S. K. Jain, U. Joshi, and B. K. Sharma, They developed the "Automated Attendance Management System," Masters Project Report, Rajasthan Technical University, Kota.

4.Vishal Bhalla, Tapodhan Singla, Ankit Gahlot and Vijay Gupta, "Bluetooth Based Attendance Management System", International Journal of Innovations in Engineering and Technology (IJIET) Vol.3 Issue 1 October 2013, ISSN: 2319 – 1058.

5.Seema Rao and Prof.K.J.Satoa, "An Attendance Monitoring System Using Biometrics Authentication", International Journal of Advanced Research in Computer Science and Software Engineering, Volume 3, Issue 4, April 2013, ISSN: 2277 128X.

6.Neha Verma, Komal Sethi and Megha Raghav, "AN EFFICIENT AUTOMATIC ATTENDANCE SYSTEM USING FINGERPRINT RECONSTRUCTION TECHNIQUE", International Journal Of Advance Research In Science And Engineering (IJARSE), Vol. No.2, Issue No.3, March, 2013, ISSN-2319-8354(E).

7. Dr. S. Ramnarayan REDDY, Deepanshu GOYAL and Ankit BANSAL, They Develop the "Mobile Based Attendance Management System". Miss. Namrata N. Shahade, Miss. Priya A. Kawade and Mr. Satish L. Thombare, "Student's Attendance Tracker System in Android", INTERNATIONAL JOURNAL FOR THE ENGINEERING APPLICATION AND TECHNOLOGY (IJFEAT), IN Feb 2013, pg-[119-124], ISSUE NO: 2321-8134.

8. Mehmet Kizildag, Erden Basar, Murude Celikag, Emine Atasoylu and Sayedali Mousavi, "An Automated Attendance Monitoring and Registration System for EMU's SPIKE Seminar Series", Proceedings in Academia.edu.

9. Media Anugerah Ayu, "TouchIn: An NFC Supported Attendance System in a University Environment", International Journal of Information and Education Technology, Vol. 4, No. 5, October 2014, DOI: 10.7763/IJIET.2014.V4.448.

10. BISAM-BIS Automated Attendance Management System by BIS Software Development Services PVT Limited. [Online]. Available: http://www.softwarehouse.co/school-attendancebrochure.pdf

2. REFERENCES ON MOBILE PHONE DETECTION :-

1. k.mohan dece, "novel mobile detector sensing alarming and reporting system" Arpn journal of the science and technology, ISSN 2225-7217, Vol. 2, No. 1, January 2012.

2. Jawad Ahmad Dar , "Centralized Mobile Detection in Examination Hall Using Arduino Duemilanove (ATmega328)" International Journal of the Scientific & Engineering Research, ISSN 2229-5518, Volume 5, Issue 8,August-2014.

3. Christian C. Mbaocha. 2012. "Design and Implementation of Intelligent Mobile Phone Detector". Academic Research International. Vol. 3, No. 1, July 2012.

4. Kanwaljeet Singh, Mandeep Singh and Neena Gupta They developed this system "Design and Implementation of Cell-Phone Detection based Line follower Robot". International Journal of the Electronics and Computer Science Engineering. ISSN- 2277-1956. Volume1, Number 3. Accessed from www.ijecse.org in 22nd October 2014.

5. Sujith M, Bibin Joseph, Anoop P S, Dileep John. 2014. "Mobile Sniffer and Jammer". International Journal of Research in The Engineering and Technology. Volume: 03 Special Issue: 01.

6. Amaal Al Masri. “Use of Smart Phone’s For Assessing the Student’s In School/College/University English Literature In Jordan". European Scientific Journal. October edition vol. 8, No.24 ISSN: 1857 – 7881.

7. Human Behaviour Analysis through Smartphones † Kostas Konsolakis 1, Hermie Hermens 1,2, Claudia Villalonga 3 , Miriam Vollenbroek-Hutten 1,4 and Oresti Banos 1,5

8. Lawal W, Akinrinmade A. F, Ijarotimi O. 2013. “Effects of The Unlimited Mobile Phone’s By Using in the Selected And stipulate Public Places in The Nigeria and a Case Study of The Akure". International Journal of the Science and Research (IJSR), ISSN: 2319-7064. Vol: 2 Issues 5 May 2013.

9. James E. (2011). Influence of SMS, Internet on Students Performance in The Public Examinations. In National Daily Newspaper, Thursday April 21.

10. Ling, R.S. (2004). Mobile Connection: The Cell Phone’s Impact on Society, Morgan Kaufmann, San Francisco.

Dr.Chandrani Singh ,Director –MCA,SIOM

Python

for Beginners

THE X TEAM

Prof. Rahul E. Borate,
Dr. Sunil Khilari,
Prof. Rahul S. Navale

SPD

Python for Beginners

With this hands-on guide, you'll learn how to write effective, idiomatic Python code by leveraging its best features. You will go through Python's core language features and libraries, and this book shows you how to make your code shorter, faster, and more readable at the same time.

This book is great for newcomers; the content is easy to read and the lessons teach idiomatic Python so that when a developer breaks out into the world from simple projects to more advanced topics, they are already coding stylistically. The book does a good job of covering the basics and offering the reader a solid foundation of knowledge.

About the Authors

Prof. Rahul E. Borate, B.Sc., MCA, Sinhgad Institute of Management (MCA), Vadgaon (Bk), Pune. is Assistant Professor in Sinhgad Institute of Management (MCA), Vadgaon (Bk), Pune. He has 7 years of extensive Teaching and LMS handling experience. He has attended many seminars, conferences and workshops. He has vast and rich knowledge in the field of Python Programming, C# .Net, C, C++, DBMS. He has guided 70 major PG projects and 150 minor PG projects in various domains.

Dr. Sunil Khilari, Ph.D., MCA, MBA(IT), MCP, DSQM, ITIL, IPPro, is a mentor for MCA students for creating learning environments for the subject "Information Security and Audit and Software Testing and Quality Assurance". He shares his 14+ years of IT industry experience for the betterment of the student community. Sunil focuses on constant upgradation of the educational system and processes to facilitate its core purpose through FDP, conferences, seminars, workshops, industry visits etc. Sunil has published a patent on "Green Calc-Com" in the Government of India –IPR Gazette. He helps implement IT good practices as per ITIL for the bridging the gap between Academic and Industry. Sunil is a researcher in Software Patenting for formalization of software prior art, claims and Inventor of all prior art related to software

Prof. Rahul S. Navale, B.Sc., MCA, Sinhgad Institute of Management (MCA), Vadgaon(Bk), Pune. is Assistant Professor in Sinhgad Institute of Management (MCA), Vadgaon (Bk), Pune. He has 3 years of extensive teaching experience. He has attended many seminars and conferences. He has vast and rich knowledge in the field of Web Technology, DBMS, LMS, etc. He has guided 40 major PG projects and 90 minor PG projects in various domains. Rahul focuses on constant upgradation of the educational system and processes to facilitate its core purpose through conferences, seminars, workshops, industry visits, etc.

ISBN: 978-93-5213-875-3

9 789352 138753

First Edition/2019/Paperback/English

THE X TEAM

SPD

MRP: ₹ 375.00

SHROFF PUBLISHERS & DISTRIBUTORS PVT. LTD.

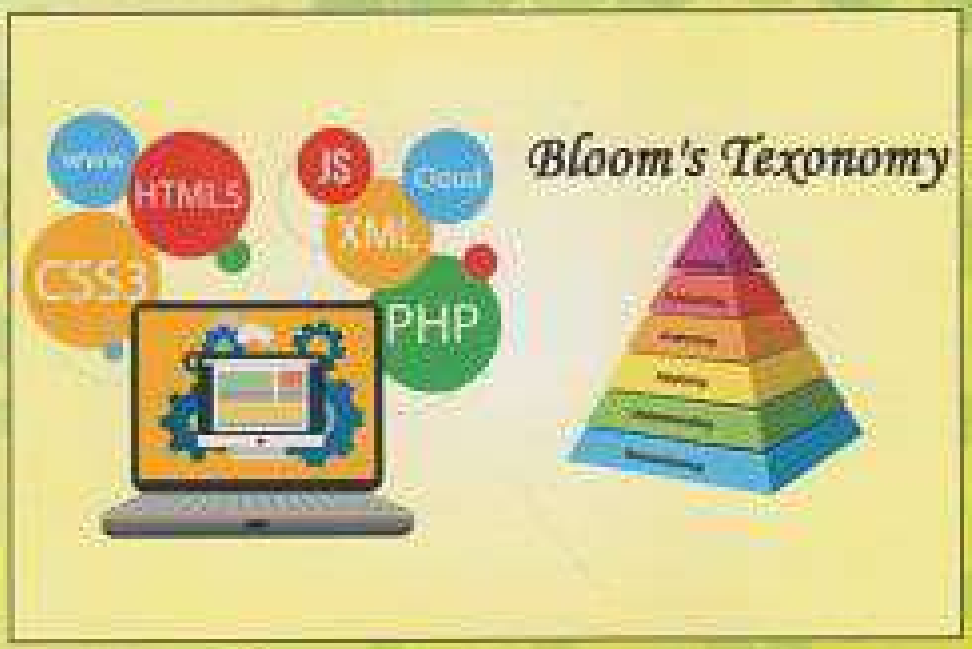
CBCS PATTERN

M.C.A. MANAGEMENT: SEMESTER-II

NEW SYLLABUS

WEB TECHNOLOGY

Dr. SUNIL KHILARI
SNEHAL JOGLEKAR



NIRALI PRAKASHAN

mHealth apps as an effective tool for health management

Pradnya Bhambre[1] Dr. Mrs. Nusrat Khan[2]

Abstract

In recent years use of Smartphones is remarkable in performing daily routine activities. Many different Smartphone applications help us to complete our routine tasks. Some of these apps are free of cost while some are paid. Currently, mHealth is a rapidly growing field in health care. Thus, now Smartphones are also used to take care of our health by means of a fitness or disease management applications. Users of these apps are increasing and these apps are enhancing with new features. Purpose of this study is to explore different uses of mHealth apps and the study focuses on the extent of usefulness in providing required health care services. Considering the majority of user's Smartphone OS, this study is restricted to Android Smartphone users only. Therefore, the research study is conducted and primary data is gathered. To illustrate the uses and to evaluate the effectiveness of mHealth apps, data is collected from male and female Android Smartphone users of all age groups, which consists of health care service providers and people who use these applications for health management. This data is analyzed and effectiveness of mHealth apps is interpreted depending on the user's perspectives.

Keywords m*Health apps, Fitness, Diagnosis, Preventive care, Treatment, Smartphones, Patient, Android.*

1. Assistant Professor, Modern College, Shivajinagar, Pune
pradnyabhambre@gmail.com
Mob: 9075102499
2. Associate Professor, Sinhgad Institutes
Nusrat.khan@sinhgad.edu
Mob: 9823377161

I. INTRODUCTION

Many medical applications for Smartphones have been developed and widely
used by health care service providers and patients. The use of Smartphones is increasing more and more in every field. mhealth applications make Smartphones useful tools in the practice of patient care and communication with care team. Also, Smartphones can play a very important role in educating patients, self-management of diseases, and remote monitoring of patients. [1]

Mobile health technology or mHealth is an evolving field in health care domain. It uses Smartphones, tablets and other mobile devices to deliver health care and preventive health care services.

mHealth is used by Health care service providers to:

- Access clinical information
- Collaborate with care teams
- Communicate with patients
- Real-time monitoring of patients,
- Provide health care remotely

mhealth is used by patients to:

- Track their health data
- Access clinical records
- Communicate with service providers

Mobile health technology is an important tool in improving the health of patients in underdeveloped nations. It allows government officials to extend their reach into rural or impoverished areas.

But there are challenges like protecting the privacy and security of patient information, interoperability with other health technologies, and determining safest and most effective mHealth apps. [2]

Play Store contains hundreds of free and paid healthcare apps in Health and Fitness category. There are sub- categories like Hiking and Walking apps, Cooking and Recipe apps, Fitness and Workout trackers, Diet Companion apps, Stress Relief apps, Women's Health apps etc.

These mHealth apps are useful in following aspects:

- Disease awareness and diagnosis
- Communication and support given by healthcare service providers
- Treatment support
- Remote monitoring
- Storing patient data
- Health tracking
- Diet advice
- Workout tracking

II. LITERATURE REVIEW

Patients and health care service providers use different mobile health technologies like mobile health apps, mobile-enabled patient portals and telemedicine etc. to improve patient care and to facilitate their administrative tasks. Mobile health is part of the wider domain "eHealth". By using mobile health and eHealth, service providers get the information needed to improve health care outcomes at lower costs.

mHealth apps for service providers: These apps can be used by providers for supporting clinical decisions. Eg. to perform searches or access clinical reference tools, monitor and follow up. Some mHealth apps use GPS technology to track a patient's movement for a specified period, generate questions about the patient's well-being, and include regular reminders to measure symptoms.

mHealth apps for patients: Now a days, there is tremendous growth in mobile health apps for patients. Some estimates predict around 500 million patients are using mobile health apps in the year 2015. Apple, Google and Microsoft etc. software companies are trying to market new products that use mHealth apps in combination with fitness tracker to bring health information to a central source. But there are challenges like accuracy and lack of regulatory authority for mHealth apps.

Patient portals: These portals facilitate the communication between service providers, staff and patients. They allow patients to check lab test reports, write prescriptions, read clinical records, educational information and check appointments using mobile devices. These features facilitate administrative tasks such as register patients, schedule appointments, send reminders, and help patients to contact easily and securely with service providers.

Mobile-enabled EHRs: These can be accessed anytime and anywhere with the help of Smartphones, tablets and other mobile devices. This helps providers use time more productively in and out of the office to accomplish tasks like updating patient records and prescribe medicines.

Secure text messaging (STM): It helps service providers securely exchange text and picture messages using mobile devices and office workstations. These messages are encrypted while they are being transmitted to and from a device or workstation.

Monitoring devices: mHealth apps and wearable sensors are used for remote health monitoring and improving patient's condition. Many companies are developing products that measure biological factors (such as blood pressure, weight, and glucose) and behaviors (such as mobility and taking medicine), then store that information in a secure place, accessible by service providers. This can help health care service providers to keep track of patients suffering from chronic illness. However, there are

challenges like to establish and get paid for remote monitoring.

Telemedicine: with cloud-based health information technology (HIT), and other technology such as two-way video, service providers can review lab reports in real time, see patients, and prescribe required treatment. It has some important benefits, such as better access to health care, better preventive care and reduced costs.

Clinicians & mobile health: The mHealth field is remarkably dynamic, and healthcare providers use it in a range of ways. In developing countries, providers use mobile healthcare for:

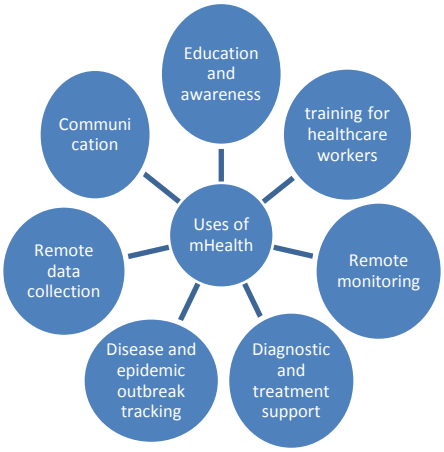


Fig 1. Uses of mHealth apps

Health care service providers often use mHealth tools to view or store patient data, read medical news and information. mHealth tools can help service providers to get the clinical intelligence needed such as drug-drug interactions and guidelines for clinical practice.

Providers also use mHealth tools to coordinate care with their staff. Eg. service providers can request and share clinical records, schedule future care, and document treatment. Similarly, service providers can use mHealth technology to communicate with patients. This helps service providers to provide immediate help to intensive care patients. [2]

Text messaging may be an important tool to reduce the global burden on health care by providing more effective disease prevention and management support.[3]

The number of mHealth apps is increasing rapidly, the extent of awareness and use of these apps by patients and providers was still low. The majority of people using mHealth apps found them useful for better health management. Thus, to enhance the use of these apps, it is necessary to first increase awareness and knowledge about these apps to the public and service providers. [4]

mHealth domain enables users to use a technology at any place. This offers significant advantages over PC-based systems, to which many individuals do not have sufficient access or proficiency to be comfortable in using for healthcare monitoring. [5]

III. RESEARCH METHODOLOGY

Author conducted an explorative study to analyze the use of mHealth apps in health management. Android Smartphone users are considered as respondents for this study.

Random sampling is used as survey method. Primary data has been gathered from 33 valid respondents out of total 36 respondents. Questionnaire Technique is used to collect the data. The questionnaire is being designed into two sections- 1. Uses of mHealth apps 2. Extent of usefulness of mHealth apps in providing different health related services

Secondary data has been gathered from websites and research papers published in journals.

Objective of Study

The main objective of this study is to analyze the effectiveness of mHealth apps for health care service providers and health managing users.

Sub Objectives

- To understand different uses of mHealth apps
- To evaluate the usefulness of mHealth apps in providing different health related services

IV. DATA ANALYSIS

Data is gathered through questionnaire by interacting with various Smartphone users. Primary data is analyzed to know the extent of effectiveness of mHealth apps in health management. Thirty-three (33) valid responses were received from all age groups of mHealth

app users. Then, users are analyzed to know the extent of use of these apps in health management by considering group of health care service providers and people who use these apps for health management. Gathered data is analyzed and following results are summarized:

Table 1. Uses of mHealth apps

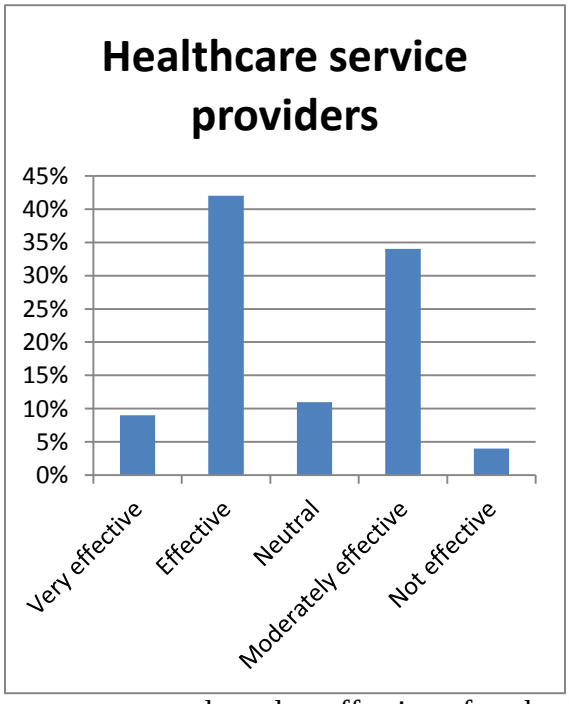
Uses of mHealth apps	Health care service providers	Health managing users
1.Diagnosis	31%	47%
2.Communication	28%	69%
3.Treatment support	8%	19%
4.Remote monitoring	5%	12%
5.Store patient data	72%	54%
6.Health tracking	39%	73%
7.Diet advice	9%	44%
8.Workout tracking	11%	68%
9.Reminders	53%	86%

Above table shows the percentage of uses of mHealth apps by health care service providers and health managing users.

- Popular functions in service providers are storing patient data and reminders.
- And service providers use at the minimum remote monitoring, treatment support and diet advice function.
- Maximum used functions by people managing their health are reminders, health tracking and communication with service providers.
- Minimum functions used by people managing their health are remote monitoring, treatment support, and diet advice.
- Functions used by both of these users in maximum extent are remote monitoring and treatment support.

The bar graph below shows that

- Maximum i.e. 39% health managing users and 42% health care service providers agree that mHealth apps are effective for health management.
- 22% health managing users and 34%health care service providers agree that mHealth



apps are moderately effective for health management.

- Only 17% health managing users and 4% health care service providers

consider that mHealth apps are not effective for health management.

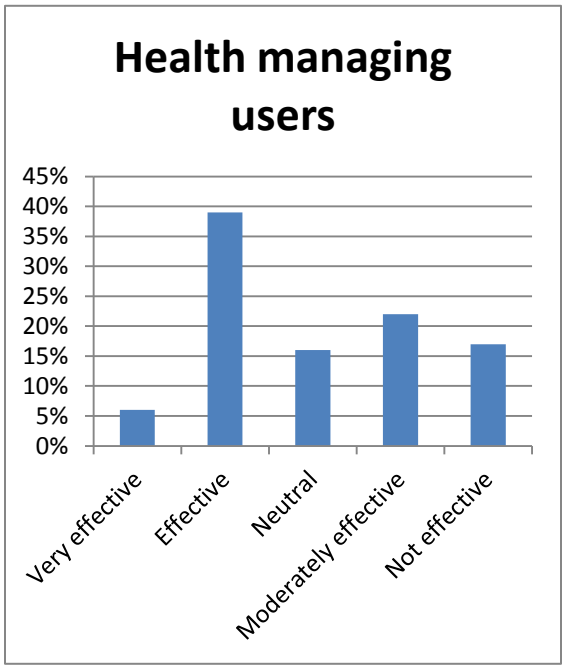


Fig. 2 Effectiveness of mHealth apps from user's perspective

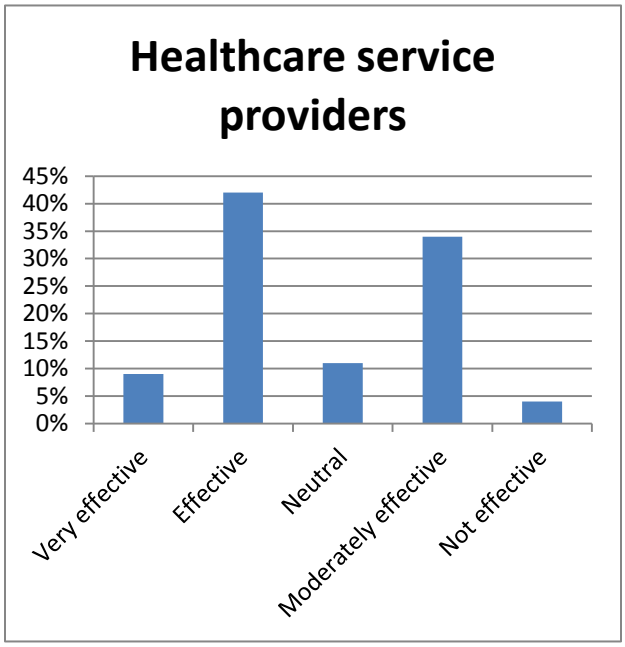


Fig. 3 Effectiveness of mHealth apps from healthcare service provider's perspective

- But only 6% health managing users and 9% health care service providers think that mHealth apps are very effective for health management.
- And 16% health managing users and 11% health care service providers are neutral about the use of mHealth apps.
- Majority of the users and service providers consider mHealth apps are effective or moderately effective.
- Very less number of users and service providers think mHealth apps are not effective for health management.

V. CONCLUSION

From the rapid proliferation and deep penetration of Smartphones into society, it is clear that there are significant opportunities to exploit the potential of Smartphones in healthcare.[6] And many Smartphone apps are available in healthcare which provides different healthcare services to the users. Using these apps, saves time, money and efforts of the user's and service providers. Patients can get feel and advantage of medical care at any time, at any place.

But, healthcare service providers and health managing people are still not using these apps efficiently and to the optimal extent.

Therefore, there is need to aware and educate healthcare service providers and people about different prominent uses of mHealth apps. Also, more user centric mHealth apps are required to be developed which fulfill all needs of users for better health management.

References

[1]Mosa, A. S. M., Yoo, I., & Sheets, L. (2012). A Systematic Review of Healthcare Applications for Smartphones, BMC Medical Informatics and

Decision Making, 12, 67. Retrived from https://www.ncbi.nlm.nih.gov/pubmed/22781312

[2]Athenahealth. (2018, Oct). Mobile Health Apps. Retrived from https://www.athenahealth.com/knowledge-hub/mobile-health-technology/apps

[3]Cole-Lewis, H., & Kershaw, T. (2010), Text Messaging as a Tool for Behavior Change in Disease Prevention and Management, Epidemiologic reviews, 32(1), 56–69. Retrived from https://www.ncbi.nlm.nih.gov/pubmed/20354039

[4]Kayyali Reem., Peletidi Aliki, Ismail Muhammad, Hashim Zahra, Bandeira Pedro, & Bonnah Jennifer.(2017). Awareness and Use of mHealth Apps: A Study from England Pharmacy:, Journal of Pharmacy, Education and Practice, 5(2), 33. Retrived from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5597158

[5]Marshall, A., Medvedev, O., & Antonov, A. (2008). Use of a Smartphone for Improved Self-Management of Pulmonary Rehabilitation. International Journal of Telemedicine and Applications, 2008, 753064. Retrived from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2442909

[6]Boulos Maged N. Kamel, Wheeler Steve, Tavares Carlos, & Jones Ray. (2011), How smartphones are changing the face of mobile and participatory healthcare: an overview, with example from eCAALYX, BioMedical Engineering OnLine, 10, 24. Retrived from https://biomedical-engineering-online.biomedcentral.com/ /articles/10.1186/1475-925X-10-24