PERCEIVED INFLUENCE OF SOCIAL MEDIA ON ACADEMIC ACHIEVEMENT OF UNDERGRADUATE STUDENTS

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ABSTRACT

The usage of social media has grown globally, and it now has a substantial impact on academics and other activities. Users can communicate information, ideas, and opinions on virtual platforms using social media, which is a computer-based technology. The most active users of social media are students. Undergraduate students use social media in large numbers. It will have an impact on the personal and professional lives of the students. In India, social media is exploding, prompting this survey to try to determine the influence of social media on various categories of youth by reducing the scope of the study. The purpose of this article is to investigate the impact of social media on academic achievement of undergraduate students. Students agree that social media aids them much in their academic pursuits. Students spend a lot of time on social media, according to the report, and they must strike a balance between social media and academic activity.

Keywords: Social Media, Academic Achievement, Undergraduate Students

I. Introduction

According to [18], social media refers to the ways by which people interact in virtual communities and networks by creating, sharing, and/or exchanging information and ideas. It allows people to connect with others who have similar or shared interests, dreams, or goals. Communication via mobile phones has become easier, faster, and less expensive thanks to WhatsApp messaging. It is less expensive than traditional phone messaging. Individuals can use WhatsApp to communicate with friends and relatives in other countries without incurring international SMS rates.

Social media appears to be regarded as a current tool that aids in the improvement of education, socioeconomic, political, scientific, and technological development through Information and Communication Technologies all over the world (ICTs). Modern communication technology has transformed the entire world into a "Global village."Internets, satellite, cable data transmission, and computer assisted equipment are all examples of ICTs, according to [34]. Social media is the most extensively used information-sharing app of the twenty-first century. Social media, according to [18], is a category of internet-based apps that allow the creation and exchange of user-generated content and expand on Web 2.0's ideological and technological underpinnings. According to [4], social media is a set of web-based apps based on an ideological framework that allow users to create and share user-generated content.

A. Objective of the Study

The objective of the paper is to study the impact of social media on academic achievement of undergraduate students.

II. Concept of Social Media

Individuals and communities use social media to exchange, co-create, discuss, and alter user-generated content, which is built using mobile and web-based technology [17]. The word "social media" is frequently used. It's a website that not only gives you information but also engages you in conversation. It's a group of web-based tools that let people create and share user-generated content. Because members of the news are sometimes referred to as "media," it's easy to mix up social media with social news. That social news site is also a social media site, to add to the mix. The following are some examples of media websites:

• Social Bookmarking: engage with others by tagging websites and looking through those that have been bookmarked by others (Blink list, simple).

• Social News: participate by voting on articles and leaving comments (Digg, propello).

• Social Networking: Interact by adding friends, leaving comments on photos and profiles, and joining discussion groups (Facebook, 2go, BB chat)

• Social Photo and Video Sharing: communicate with other users by sharing photographs and videos and leaving comments on their submissions (Youtube and Fliki).

• Wikis: contribute by creating new entries and updating old ones (Wikipedia, wikia).

People interact in various social media networks by creating, sharing, exchanging, and commenting on each other's contributions. According to [4], social media is a collection of web-based apps that are founded on an ideological framework and allow users to create and share user-generated content. Social media has become one of the most popular routes for communication thanks to platforms like 2go, BB chat, blogger, and wiki a. The use of mobile social media has grown, resulting in new browsing opportunities.

A. Mobile Social Media

The term "mobile social media" refers to the use of social media on mobile devices. Users can create and distribute user-generated content via social media, which is a collection of mobile marketing apps. Mobile social media is distinct from traditional social media in that it incorporates new features such as the user's present location and the time between sending and receiving messages.As per [18], there are four forms of social media:

- Space-timers (location and time sensitive): message exchange that is relevant to a certain location and time (Face book, 2go, BB chat)
- Quick-time (time sensitive): moving traditional social networking apps to mobile applications to improve immediacy (posting twitter messages, status update [2go], and updating display picture [dp] [bbm]).
- Space-locators (location sensitive): exchange message with relevance for one specific location which are tagged to certain place (yelp, sype).
- Slow-timers (neither location nor time sensitive): transfer traditional social media application to mobile devices (reading a wikipedia entry).

B. Social Networking Sites

It's a term for any website that allows users to establish public profiles and form relationships with other users who view those profiles. An example would be a community-based website, an online discussion forum, chat rooms, and other online social spaces. Any sort of social media or computer-mediated communication, including but not limited to Facebook, Twitter, LinkedIn, and Myspace, as well as the first social networking sites, Byword, Bebo, and Friendster, is referred to as "social networking sites." Social networking sites, according to [11], are web-based services that allow users to establish profiles, view user relationships, and search and move around within that list. A social media platform or service is an online service or platform that encourages people who share shared interests, hobbies, or backgrounds to develop social networks through real-world interactions. It's a website that lets users share information with a small group of people. It's a great method to stay in touch with family and friends while also sharing images from your travels [2]. It has a user profile, social media links, and a few additional features. The following terms will be thoroughly examined in order to gain a clear understanding of social networking:

• Impact of Social Networking Site

• Social Networking and Education

C. Impacts of Social Networking Sites

Through email and instant chat, online communities are formed, and a gift economy and reciprocal altruism are encouraged through collaboration. 2go and other social networking software are rapidly being studied by academics. Scholars from a wide range of fields have begun to investigate the impact of social networking sites, particularly how they may impact issues of identification, privacy, social, young culture, and education. Several websites are beginning to tap into the social networking concept's humanitarian potential.In a research conducted by HCL Technologies in 2011, it was shown that 50% of British workers are forbidden from using social media during working hours. When people are conversing, the content of their messages, in this opinion, indicates a lot about them. When discussing, comments, images, and status should speak less about an individual. In summation, Kim says: "if you are mindful of what you are doing, you can maintain a measure of privacy

on a social network" [19], and, in reference to this, Proverbs 10:19, states that "In the abundance of words, there does not fail to be transgression, but the one keeping his in check is acting discreetly".

D. Social Network and Education

Students' interactions with technology may be influenced by the emergence of social networking sites. [26] distinction between digital natives and digital immigrants has long been considered a good portrayal of how people of a certain age range, notably those born before and after 1980, use technology. Social networking and its educational uses have piqued the interest of many researchers. "Social networking sites, like much else on the internet, provide a dynamic target for researchers and policymakers," [36]. According to recent figures, social media is used by 47 percent of adults in the United States. According to a national poll done in 2009, 37 percent of internet teenagers use social networking sites, up from 555 percent three years later [21]. It has also shown that it provides chances inside professional education, however there are certain restrictions.

III. Academic Achievement

Academic achievement is measured over time by a student's performance on school-based assessments and examinations. It's also a statistic for determining how well a learner learns [16]. These tests and assessments could be designed by teachers and then standardized. As a result, academic achievement is defined as determining individual students' levels of achievement in tasks, courses, and programmes to which they have been suitably exposed and tested by civic achievement assessments, according to research. According to studies, social media addiction has a strong and favourable relationship with student academic performance [5]. [36] discovered that social media addiction had a favourable correlation with academic procrastination but a negative correlation with academic achievement in his study. [24] discovered that internet addiction predicted academic procrastination among undergraduate students in their study. Online addiction is linked to academic procrastination among medical students at Shiraz University,

according to [15], with male students being more addicted to the internet than female students. According to [15], male students were also more addicted to the internet than female students.

[23] found that female students were more addicted to social networking than their male counterparts in another study. [17], on the other study, found a connection between social addiction and academic performance among Chinese undergraduate students at Peking University. Students' academic procrastination is unaffected by social media addiction, according to [38]. Despite this, [17] noted that the majority of students have internet-capable phones and prefer to acquire their information from the internet. While most students use the internet to gain crucial information for academic pursuits, they are distracted by WhatsApp, Facebook, and other social media sites, according to [17]. This distraction affects all students, regardless of gender, and can lead to academic procrastination.

Previous study on whether gender has a role in encouraging academic procrastination among students, on the other hand, has been mixed. [7]discovered that gender had a relationship with academic procrastination in a study of university students, with male students having a higher level of academic procrastination than female students.According to [7], academic procrastination was also found to be negatively associated with students' academic progress. Most of the studies have found a substantial difference in academic procrastination between male and female college students, suggesting that gender influences academic procrastination. On the other side, [1] found no noteworthy differences and variations have been observed in academic performance of male and female of UG students, therefore, gender has made negative impact on the relationship or connection of gender and academic performance.

As same as that of past studies which were based on the connection between academic performance and gender was completely inconclusive. For e.g. most ofthe studies of secondary school students described that gender factor has made little impact on academic performance[5] [25] [35]. Alternatively, some of the study revealed that it

has not made much impact on the academic performance on students[6] [23] [29].

IV.   Benefits of Social Networking

As there are lots of arguments related to the negative impact of the social networking sites in young students, it is also essential to explain the positive and good face of using these sites. Large number of schools now using these sites to promote education, their schools and provide assignment to those who need it most [10]. Young ones can gains lots of advantages from all these sites generally. Through social networking sites, teens can express themselves in their own ways and also have a chance to interact with kids of same interests and show their ability in that environment [10].

At last, in order to gain various info and resources, most of the high school students use all these sites and prepare well for their future study [8].

V.   Social Media In The Classroom

The use of social media in the classroom has been a heated topic for years. Many parents and educators are concerned about the ramifications of allowing social media use in the classroom [20]. As a result, cell phones have been banned in the classroom, and schools have imposed restrictions on several popular social media websites. Students are utilizing social media despite adult worries. As schools recognize the importance of incorporating these tools into the classroom, the rules are shifting. [13] investigated the advantages of using Facebook in the classroom. Steve Joordens, an introductory psychology professor at the University of Toronto, encouraged his 1,900 students to contribute to the course's Wikipedia entries in early 2013.

VI.   Impact of Social Media on Academic Achievement Of Undergraduate Students

As per the theory of [25], a complete web based facility that permits users to forma semi public and public profiles in limited environment is mainly known as Social networking sites. The advent of the Smartphone has boosted social media usage by allowing users to access many social networking sites with only a few clicks

[19].Individuals from various areas of life have long recognized social networking sites as valuable tools for educating and interacting [37].Students can utilise social media to share their daily learning experiences, which can help them improve academically [14] [3]. On the other hand, social networking has damaged students' academic advancement [25]. When a student becomes unduly engrossed in the use of social media, it affects his academic performance and ability to succeed in class [2]. Attention of students towards the social networking sites is necessary but it significantly diverted to not suitable actions like baseless conversation[20]. Some students have become socially isolated as a result of social networking, and extracurricular and academic programmes are insufficient to suit their demands [32]. Teenagers are especially prone to social media; the more they use it, the more it affects their study habits, assuming that their online friends begin to wield power over one another [33]. People of all ages are increasingly using social media as a means of communication. Especially, Undergraduate students have more interest in field of internet in comparison to others, also they participate more in online social networking. From the beginning of social media, the number of users gradually increases while most of the UG students have neglect it as it have made a negative impact on their performance in university and reduce the quality of their education. As an outcome, some of the current concerns that consideration of social media to highly influence the academic success of Undergraduate Students.

VII.   Literature Review

As per the theory of [37], one of the main and useful advantages of social media is that it can assist students to develop skills of self directed learning and can also search deep about the subjects and collects several information with the help of internet. On the social media platform, they also interact with extraordinary students and with them they gain different types of ideas, information that will surely help them to rise through formal and informal activities.

[27] used an ethnographic approach to investigate the impact of social media on

meaningful learning and educational practices. They did it by looking at student and teacher Facebook posts from a South African Information Systems course. According to the findings, Facebook served as a collaborative "open" "third room" that allowed students to express themselves, grow their learning communities, and create knowledge.

[12] investigated the situation in Nigeria. 97 percent of students utilize social media networks, according to a poll of 536 pupils. The most popular social networking site was Facebook, followed by "2go" and YouTube. The majority of students (91%) used social media for less than 4 hours each day. A quarter of the students thought social media had a positive effect on their academic performance, while 32% said it had a negative effect and the rest indicated it had no effect. Around 75% of students said they had used it for academic purposes.

According to [19], social media has a favorable impact on users' ability to form and sustain relationships, which helps meet students' academic demands. Abroad students, mainly, gain more from using social media and developing new friendships that help them succeed academically.

The researchers [30] investigated the link between students' use of social media sites and their academic achievement. Students' use of social media interferes with their learning, according to the study, also made high affect on their attendance. The results were plotted in a scatter diagram to display the beneficial relationship and connection between the variables. Use of social media and achievement in academics have an impact on each other. Simply said, when a kid becomes too absorbed in the usage of social media, his academic performance and achievement in class suffer.

[22] performed research to analyze students' perceptions of social media in education and to investigate how it could be utilized to augment traditional learning. Despite the fact that about Ninety-Two Percent of the total respondents agreed that on daily basis they use social media while Fifty-Seven percent completely prefers virtual or digital learning environment for learning. According to the survey, which included teachers, respondents are concerned related to online professions and queries about the significance of social media in field of education.

The goal of [14] study was to investigate the relationship between social media use and academic achievement among Pakistani students. The data suggest that social media has a negative impact on academic achievement. When used properly, social networking platforms can help students and teenagers obtain information that can help them enhance their academic performance.

Affect of social media on the performance regarding to academics and scholars of 108 Saudi Students was deeply researched and investigated by [2]. Twitter, followed by Facebook, is the most popular social media network, according to study results. Near about 60% of the respondents confess that extra use of social media can affect negatively on their performance so that use of social media 10hrs in a week would definitely not affected their academic performance.

[3] investigated how the use of social media platforms influences the academic success of university and college students. A total of 300 pupils were randomly selected. The data was gathered through the use of a questionnaire. With the help of some descriptive analysis, the questionnaire results were analyzed. As per findings. Somewhere it has made some positive impact also.

As per the investigation of [31] regarding to general attitudes of students towards the proper use of social media with several factors like gender, class, academic history of parents, status and standard of social and economic, contexts of social media, several tools used to link various accounts of social media. According to the research, students' views toward using social media were found to be robust and hopeful.

[28] discusses the impact of social media on the subject of education. Social media had both beneficial and negative effects on education and pupils, according to the study. It also stressed measures to mitigate the harmful impact of social media on students' academic performance, such as limiting access to social media platforms and the amount of time spent on them.

VIII.   Conclusion

Today the world has reached at heights with the help of social media. It is very easy and comfortable to access social media from any corner of the world. Social media has become the need of many people for educational, work and business purpose. It is an open platform for everyone to share views, ideas, opinion and information. The study revealed that many people know about social media and use social media frequently. Most of the students prefer to use social media tools at night. The very common use of social media done by UG student is for academic purpose to learn new things online. Students agree that social media helps them a lot in academics. The study also reveals that students spend a lot of time on social media and they need to balance social media and academics activities.

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A DESCRIPTIVE STUDY ON CONSUMER'S PERCEPTION TOWARDS ONLINE FOOD AGGREGATORS

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ABSTRACT

Today's marketing has a new path thanks to the mobile application era. All traditional company models have become obsolete as a result of the mobile application, which has opened up incredible new business opportunities. A mobile application is a hybrid of marketing and technology that advertises and sells services and goods via the Internet. More individuals are being connected through mobile applications today, and they are willing to trade using them. It also has an impact on how businesses and organisations operate. The purpose of this paper is to study the consumer's perception toward online food aggregators. This research is notable because it provides a thorough review of the literature on consumer perceptions of online food aggregators. It improves my awareness of people's tastes, time management effectiveness, affordability, cuisine choices, available discounts, and door-to-door service without sacrificing quality.

Keywords: Online food aggregators, Consumer Perception, E-commerce, Consumer Buying Behavior

I. Introduction

The global expansion of e-commerce is being driven by economic progress and increased internet availability. As consumers' disposable income grows, electronic payments become more secure, and the number of suppliers and the scope of their delivery networks expand, consumers are increasingly gravitating to online services. The term "online to offline" refers to a type of e-commerce in which clients are initially drawn to a product or service before being persuaded to buy it in person. Digital Food Delivery (FD) systems are a rapidly expanding industry of e-commerce. The growth of online FD has changed the way many customers and food suppliers interact all over the world, as well as the industry's sustainability implications (which are defined by three factors: economic, social, and environmental concerns) to understand the scope for further improvements that has not yet been assessed [1].

Zomato is one of the most popular online meal delivery firms, and it recently paid $350 million for UberEATS. As a result, they were able to capture roughly 50-55 percent of the market share in terms of order volume, putting them ahead of their nearest competition Swiggy [2].

Swiggy began operations in 2014 and was a late entrant into a large market, with Zomato, the industry leader, as its lone competitor. Swiggy has reached an elite group of start-ups in just four years, and their battle with Zomato

is so fierce at the moment that the latter is investing hundreds of crores to catch up with Swiggy [9].

On the basis of current figures, it is expected that the market share of Zomato and UberEATS would reach 50-55 percent, overtaking Swiggy.Overall, the rivalry between Swiggy and Zomato has been fierce, but Swiggy has the highest repeat order rates and is the customer's preferred ordering app. According to statistics, roughly 90% of customers only use Swiggy [2].

By 2023, the Indian internet food market is anticipated to be worth $12.3 billion. The global growth rate is 9.01 percent, whereas India's online meal delivery sector is increasing at a pace of 15%. Swiggy makes $1.5 billion in sales, while Zomato makes $800 million. Between April 2017 and March 2018, both companies delivered 96 million orders [26].

Food apps, for example, have become increasingly vital for businesses to innovate and enthral existing customers. There is minimal indication that the internet and mobile technology have aided consumers in satisfying their everyday needs by allowing them to order from their favoriteeateries using a display. This study is significant because it describes users' opinions toward the use of food apps, as well as how these apps include built-in purchasing, planning, and socially enjoying meals and snacks [22].

Technology has played a crucial role in changing the food delivery industry, and it has

led to changes in consumer expectations by motivating them to do everything online, including having cooked meals delivered to their doorstep. Consumers value convenience above all else, as placing a purchase is as simple as a few clicks on any mobile device.Consumers prefer the services given by online food aggregator's portals for a variety of reasons; including technological reliance, convenience, and the time it takes for food to be delivered.

The rise in family income, as well as changes in lifestyle and eating habits, must result in increased market growth. The demand for food applications is increasing, and this, combined with low prices, has resulted in the business's expansion [2].

India has the distinction of having one of the world's youngest populations, with an average age of 27 years. The demand for new-age platforms like food apps has grown as a result of the mix of a young demographic and disposable wealth. This has led in impulsive purchasing power as a result of the strong readiness to try new items or services, resulting in the rapid expansion of food apps in India[2].

A. Objective of the Study

The objective of the paper is to study the consumer's perception towards online food aggregators.

II. TAM Theory

The TAM hypothesis was utilized by [28] to describe customer attitudes toward technology. The TAM theory uses customer behaviour and perception to explain the factors of computer acceptance across a wide spectrum of end-user computer technology [19].

The technology acceptance model (TAM) theory outlines how users or customers respond to new technologies. When explaining the customer's perception and application of new technology, the TAM theory emphasizes perceived ease of use and perceived utility. According to [21] research, the former choice is easy for customers who use a specific system, however the latter option states that a person who uses a specific system will increase their productive output. According to [20], innovation is defined as a concept that is viewed differently by different people.

Consumers' conviction and faith in food applications are built on trust.It is a critical aspect that shapes and influences user perceptions of food apps. Customers are influenced by external and interpersonal elements, according to [11], which are essential in the behaviour of customers who use food applications [1].

III. Perception

Teenagers' dietary preferences, according to [23], are influenced by nutritional variables as well as other major external elements such as home, school, and social environment, as well as the hygiene and cleanliness of the surroundings. According to [15], brand knowledge is very important in consumer perception, especially when it comes to their buying habits. [20]Investigated the numerous elements that influence a large number of respondents' purchasing decisions for a variety of food goods. Factors such as the product's brand are important since people are rapidly drawn to a brand, but wealth and age are dependent factors.According to [17], changes in eating habits can affect consumer perception and consumption of products. He went on to say that an increase in income can lead to an increase in the amount of money spent.

Perception is also a process by which humans select, organize, and interpret senses [18]. It is the instantaneous reaction of sensory receptors such as the eye, nose, and ear to key inputs such as colour or scent. Anything that triggers a receptor is referred to as a stimulus. Perception research is only concerned with how customers react when making a decision. Each person reacts to stimuli in their own way, influenced by their own biases, wants, and experiences. Overall perception is the process of selecting, organizing, and interpreting data in order to derive a meaning that will impact decision-making. The client, for example, receives information inputs from what he or she sees or hears in an advertisement, smells, or handles a product, and these processes are referred to together as perception [26].

According to [13], internet shoppers' perceptions are not influenced by their age or gender, but rather by their qualifications or income. People's judgments of customer service, dedication, and web security of online

shopping demonstrate substantial proportionality to their online buying intentions, according to four major elements of an online platform identified [25]. Perception is a concept that refers to an individual's perception of the world. Observations can be influenced or changed by a variety of variables [17].

IV.   Online Food Delivery

As a result of the rapid growth of e-commerce, many new types of businesses have evolved, including B2B (Business to Business), B2C (Business to Consumer), C2C (Customer to Consumer), and O2O (Online to Offline) [29]. Consumers order food for goods or services online and pick them up at a real site [16]. This is an extension of a digitalization trend in which customers order food for goods or services online and pick them up at a physical location. The proliferation of smartphones and tablets has enabled instant payments, as well as the creation of physical infrastructure for quick delivery, both of which have propelled e-commerce growth. Food, accommodation, real estate, and auto rentals are just a few of the industries where O2O services have evolved [30]. Integrated online food aggregators systems like Zomato, Swiggy, Uber Eats, and others have propelled the growth of this business. Many services are performed by online food delivery portals, including offering consumers with a wide selection of food options, receiving orders and transferring these orders to the food producer, tracking payment, instituting food delivery, and facilitating tracking features. Meals Delivery App (FDA) is a type of online FD because it allows clients to order food through mobile apps [35].
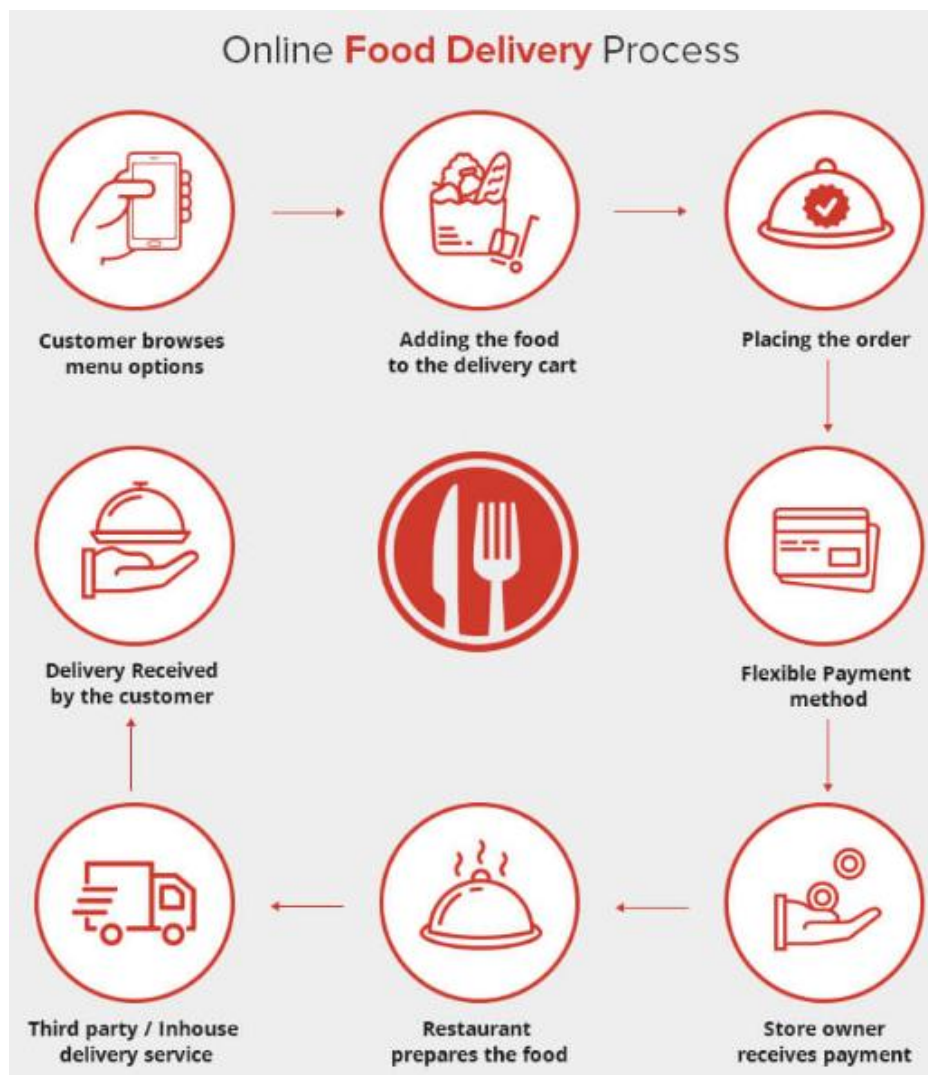

Figure: Exhibits online food delivery process (Source: www.21twelveinteractive.com)

Online Food Service Platforms

The two types of food delivery services offered are restaurant-to-consumer delivery and internet platform-to-consumer delivery. McDonald's, KFC, and Domino's are examples of restaurant-to-consumer delivery companies that make food and deliver it to clients. The order can be placed on the restaurant's website or on a third-party platform like Eleme in China, Uber Eats in the US, Just Eat in the UK, and Swiggy or Zomato in India. Through partner restaurants, third-party platforms provide online meal delivery services. Delivery is not always available at partner restaurants. Online FD services necessitate flexible and effective real-time delivery capabilities. Restaurants can hire specialised delivery crews or use existing staff, such as waiters in local restaurants, for self-delivery, as Domino's, McDonald's, and KFC have done. Outsourced logistics, which is a network of freelance contractors and delivery personnel that provides a cost-effective and efficient food delivery technique [15], is another option for restaurants. Online food delivery platforms can either hire or train competent delivery workers in-house, or use logistics outsourcing to engage people who aren't necessarily their employees.

V.   Evolution of Online Food Aggregators

Globally In terms of expanding into new markets and nurturing clients' nutritional habits, the internet meal delivery service has been active. Meal Panda, an Indian online food aggregators service, ran a promotion campaign in 2018 that offered clients large discounts, resulting in a tenfold increase in subscribers. Even if online meal delivery appears to be quite popular in some countries, it is still in its early stages of development, and it will require significant funding to support promotions and advertising, as well as provide incentives to member businesses [21]. A restaurant will gain new customers and orders as a result of such a campaign. Customers' eating habits must be cultivated by exposing them to online food purchases in order for online meal delivery to be sustainable. Online food delivery websites and suppliers are encouraging customers to skip cooking at home or going out to eat by offering lower-cost meals or other benefits such as free delivery[15].

The global online meal delivery market is expected to reach $151.5 billion in sales in 2021, encompassing 1.6 billion people, indicating a 10% year-over-year rise (YOY). The online meal delivery sector produced $76.2 billion in sales in 2017, according to a Statista analysis. By the end of 2019, the total had climbed to $107.4 billion, a 41 percent growth in just two years.Meanwhile, the COVID-19 epidemic resulted in an increase in the amount of online food orders, as people turned to meal delivery services due to limited or non-existent dining options. According to a research, revenues in the global online meal delivery business increased by 27% year over year, surpassing $136.4 billion in 2020. In the coming years, the growing trend is predicted to continue, with the total expected to reach $182.3 billion by 2024. According to Statista, platform-to-consumer delivery sales will reach $70.7 billion in 2020, up 32 percent year on year. In the next three years, this amount is likely to rise to around $97 billion. Several restaurants offered delivery during the pandemic and plan to continue doing so. In 2019, there were 1.17 billion active users. This sum climbed by 25% year over year, reaching 1.46 billion in 2020, according to figures. In the next three years, the number of people who use online meal delivery services is predicted to reach around two billion. According to statistics, the number of platform-to-consumer users surged by 30% during the coronavirus pandemic, from 539 million in 2019 to 704.7 million in 2020. By 2021, this number is expected to climb to 791 million. China is the world's largest online food delivery industry, with sales estimated to reach $51.5 billion in 2020, a 28 percent increase in the wake of the COVID-19 outbreak. According to Statista, the Chinese market is expected to generate over $57 billion in revenue by 2021. The United States, the world's second-largest market, is expected to expand by 30% in just two years, with revenue of $28.4 billion in 2021. With sales expected to reach $11.6 billion by 2021, India is the world's third-largest online meal delivery firm. With $6.5 billion and $3.8 billion, the United Kingdom and Brazil are ranked fourth and fifth, respectively. Total

sales of the five largest online meal delivery services will reach $107.3 billion in 2021, up 40% in just two years, according to Statista. Even while online meal ordering is becoming more popular in India, it is still limited to major cities. Due to the lack of internet connection in rural areas, there has been no discernible rise [23].

VI. Food Delivery Aggregators

Food delivery is a global industry, propelled by the new economy that has swept over North America, Europe, and Asia in recent years. China's food delivery applications have the highest userbase and market penetration, with over 650 million users, and their delivery aggregators are regarded the second largest market and well-funded.

Table 2: Exhibits the list of Online Food Delivery Aggregators Globally

Uber Eats	The most commonly used meal delivery service, operating on six continents and ranking first or second in gross orders in the majority of nations.
Just Eat	Food delivery leader in the UK, with operations in Europe and Australia, and a holding in Brazilian food aggregator iFood.
Grubhub	Up until 2018, the first aggregator in the US, along with Seamless, managed over 50% of online meal delivery in the US.
Takeaway.com	A European aggregator accountable for the majority of online food delivery in Germany, the Netherlands, and Belgium (through subsidiaries).
Door Dash	The global market leader in online food delivery in the United States, as well as the creator of the platform-to-consumer model.
Postmates	An affiliate of Uber Eats since 2019, accountable for about 10 percent of online food delivery in the United States
Deliveroo	It competes with Uber and Just Eat in 13 countries, having pioneered platform-to-consumer in the UK.
Delivery Hero	Delivery Hero owns a majority interest in food delivery systems in over 40 countries through its many companies (including Food Panda).
Ele.me	Ele.me is one of China's two main meal delivery services, and it is owned by Alibaba. It has a user base of around 200 million.
Meituan Dianping	The other half of the online food delivery industry in China. Tencent is the largest stakeholder, with a 20 percent stake
Rappi	Backed by Soft Bank, Rappi has aggressively pushed into the South American market, currently active in nine countries
Jumia Food	Part of the African e-commerce behemoth Jumia, which became Africa's first company to be valued at over $1 billion
Damae-Can	Damae-Can, Japan's most popular takeaway app, boasts over 20,000 eateries and 2.3 million active users
iFood	By far the most popular aggregator in Brazil, accounting for over 70% of all online takeout orders in the nation.
Zomato	In January 2020, it purchased Uber Eats India, the most popular of India's domestic meal delivery apps.
Yandex.Eda	Due to the absence of Uber in Russia, Yandex.Eda has been handed complete control over the platformto-consumer industry.

VII. Consumer Perception on E-Commerce

According to [28] research report, "Consumers Perception towards Online," e-shopping is quite popular due to its convenience and affordable pricing. During the holidays, online shopping saves a person from having to visit multiple stores and stand in huge lines to purchase an item. The internet has altered consumer purchasing patterns and has proven to be a worldwide success. Many businesses have begun to use the internet in order to reduce marketing costs and lower product prices in order to compete. A study by[33] looked at "people's perceptions of internet buying." According to this survey, many consumers consider online shopping to be a better and easier choice, however some find it difficult.Many people believe that online shopping will be more popular than traditional buying. People will prefer cash on delivery in the future, and online marketing will have a broad scope [3].

The research article "Influence of e-commerce on customer buying behaviour" by [19] discusses why customers purchase things online when shopping. In his research, he found three elements that influence consumers' decision to shop online. The following are the qualities of a shopping site: product type, characteristics, and pricing. According to the report, the accessibility and convenience of using shopping sites provide clients with the option of purchasing or not purchasing. There are also other challenges that buyers confront while purchasing goods online.As a result, they have shifted to offline purchasing. Consumers who have difficulty with offline purchases are more at ease with internet shopping. [36] claim in the same research paper that elderly populations with understanding of technology have a good attitude toward internet purchasing. However, older customers who are unaware of the internet do not engage in purchasing because they have a negative attitude regarding online shopping and prefer to shop offline [13].

According to a study by [11], online shopping is popular among consumers who are purchasing goods. Despite this, the study reveals that customers are still uncomfortable and unsafe when shopping online.Furthermore, according to the report, online shopping is popular among teenagers for meeting their needs. The first part of any business, according to [12], is online purchasing. The report also underlines the importance of e-commerce in educating and promoting consumers to engage in online purchasing, since this will affect their decisions. According to [5], internet purchasing is an innovative platform in a competitive business environment, defining business revolution [14].

Perceptions of every individual consumer regarding to online meal ordering differs and it also affects most of the part by the presence of high speed internet and online food services. On the basis of their individual ideas, the perception of consumer changes as an outcomes of several identities and their individual beliefs. Delivery of food applications have become famous between technophiles of India[9].

VIII. Consumer Perception Towards Onlinefood Aggregators

Customers' attitudes toward online food purchases reflect their ease with using food applications. Even among the mobile food applications, their preference is a perception based on consumer feedback. Because technology is used to deliver the meal at any given time, the smart method has reduced paperwork and time spent by a server at the restaurant to write down the order. In retrospect, these new food-ordering systems have become a source of concern for healthy dining. This can be tailored to fit within a balanced diet, as well as customized diet regimens [31].

E-commerce is developing rapidly around the world, according to [1] research, and this has contributed to an increase in the food industry's growth. The Technology Acceptance Model was used by the researchers to better comprehend online meal ordering apps.Consumer attitudes about online meal ordering services like Swiggy and Zomato have made it more accessible and useful to purchase food online. It also varies in terms of information technology innovation, attitudes toward e-commerce websites, and external influences such as social media, friends, and family. According to [6], using a smartphone mobile interface to track and follow up on orders has provided restaurants an advantage in delivering orders to customers swiftly. The study concluded that ordering food online is convenient, effective, and simple to use, and that it will continue to improve over time. [4] conducted research to examine the perceptions, behaviours, and enjoyment associated with ordering food online. Furthermore, the study demonstrates that online meal ordering saves time due to the variety of options accessible.Through free internet connection, they can browse their favourite foods at any time. According to [8], research article "An Analysis of Online Food Ordering Applications in India: Zomato and Swiggy," perceived control and convenience in food apps are critical for users and non-users alike [32].

According to [4] study, food apps have a high online penetration. The service providers strive to maintain a consistent level of quality. Consumers' decisions to order online have been

influenced by external factors such as culture, socioeconomic status, reference group, and household, as well as internal elements such as experience, personality, and self-image, as well as perception and attitudes [21].

When compared to the previous group, [6] discovered that children use food apps whereas seniors do not. According to the findings, children are addicted to food applications. Furthermore, the cost of food, potential discounts, and special offers has all motivated customers to use food apps. The second factor is delivery convenience and efficiency. [10] concludes that food applications enable clients to save time. The convenience of ordering food online is the primary reason for doing so. Customer retention is a significant difficulty in the online platform, according to [7]and a high level of customer satisfaction is essential to retain customers. In today's competitive economy, it's difficult to keep clients satisfied over time [24].

IX.   Past Studies

[37] report is about a research piece titled "Consumer perception on food apps," with the goal of examining consumer perceptions of food apps and analysing the factors that influence consumer perceptions of food apps. To gain a better understanding of the research, a survey approach was used, in which a questionnaire was distributed to people of all ages, genders, and income levels, and the questionnaire was constructed using the TAM model. A T-Test analysis was also performed to provide a better interpretation of this study, and an overall conclusion was drawn about the lessons learned from this research about how people perceive food apps, how this research could be improved, and what the researcher learned during this research project.

"The design and implementation of an online meal ordering system" was the subject of [43] research. The empirical approach was adopted in this investigation. According to the document, the design phase was largely focused with specifying system pieces in a way that best fit the organization's business needs. Many of the issues revealed during the system analysis would be eliminated if this software product was implemented properly.

[41],A total of 100 samples were gathered in this study using the descriptive approach. They discovered that a wide range of users can utilise the software if they know how to handle an Android smart phone. This method will address significant issues that consumers are experiencing as a result of the adoption of an online meal ordering system. The application allows users to receive orders and alter data, as well as assist administrators in managing the meal order system.

With a descriptive methodology, [39] investigated "Meal finder-mobile food ordering application." In comparison to the old technique, the suggested online restaurants system saves time and eliminates errors, requiring a sample size of 180. The proposed approach would entice customers while also include offers on food goods, allowing eateries to expand their online market. The restaurant's meal ordering application can also manage billing, making it a modern approach to expand a business through E-commerce. The concept of sophisticated e-restaurants can be further developed in the future with the help of a GPRS-enabled module.

[40] conducted "A Study on Consumer Perception and Attitude Towards Digital Food App Services" using a survey approach for primary data and secondary data sources such as newspapers, magazines, and journals.129 size of samples has been taken, This survey found that while customised applications are a convenient way for customers to place orders and for businesses to attract new customers, the ease of use must be prioritised. The respondent's preferred method of payment is cash on delivery, which is also in the growth stage.

[42] researched "Consumer Expectations and Satisfaction with Online Food Ordering". They argue they don't have enough time to prepare food, there isn't enough variety, and they don't receive enough points and cashbacks. Consumer satisfaction could be improved by better understanding their expectations and giving more enticing options when purchasing meals online.

[38] 50.8 percent of consumers order food online because they don't want to cook, according to their research report 'Consumer's view on Online meal ordering.' It allows clients

to have food delivered directly to their home in less than an hour.

X.   Conclusion

Online ordering of meal delivery systems has become a major sector as a result of increased internet use and changes in people's lifestyles. Consumers are lured to purchase online not only because of the convenience, but also because of the diversity of options accessible, such as more exact information and lower pricing. This study is noteworthy for providing a comprehensive overview of the literature on consumer views of online meal delivery services. It enhances my understanding of people's preferences, time management skills, cost, culinary options, available discounts, and door-to-door service without sacrificing quality.

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AN INVESTIGATION OF ATTITUDE OF TEACHERS TOWARDS THE USE OF MOBILE LEARNING

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ABSTRACT

Technology is constantly evolving at a hurried pace and has brought positive changes in every field of society including education. Since technology has an important role in imparting knowledge to students, therefore it is important to know the attitude of teachers towards mobile learning as they are a motivating and direct source. Herein is an attempt to explore the attitude of college teachers towards mobile learning. In this context, the teachers of Jammu and Kashmir higher education were surveyed and data was collected from the 68 college teachers using an online survey method. The research shows that a significant number of teachers have a positive attitude towards the use of mobile learning. However, educational communities should organize training programmed regarding the use of mobile technology, as lack of training becomes a barrier to e-learning for teachers and students.

Keywords: Mobile Learning, Teachers, Higher Education, Attitude.

1.0 Introduction

Nowadays, there is a great need to use the e-learning systems with pedagogical practice. As the 21st century is digital native, pedagogy, curriculum transaction and evaluation must be equipped with information and communication technology supported pedagogical innovations. The Covid-19 pandemic has led to embrace digital platforms for facilitating teaching and learning processes and has brought fresh inquiry for digital technologies. Hence, there is a need of the hour that instructors should focus on digital proficiency to explore new paradigms of teaching and learning.

Since ancient time, there was an offline teaching i.e., education system was predominantly based on face-to-face interactions between teachers and students in educational institutions, but the advancement of technology has bring a lot of changes in education sector, from black board or white board to projector and then e-learning, indeed, the use of technology in education has come long way since human civilization (Muttappallymyalil, Mendis, John, Shanthakumari, Sreedharan, & Shaikh, 2016). Technology in today's modern society is constantly evolving at a hurried pace and has brought positive changes in the field of education (Talkeer, 2017). One of the developments is introduction and use of mobile devices in education, that is well thought-out the latest introduced type of learning (Hosseini, Kaad, &Alhazmi, 2015). Mobile learning is an approach of learning to transform education through innovative ICT-based technologies which is learner-centric for the benefits of learners (Bashir & Khan, 2020).

Mobile Learning refers to the activity of imparting knowledge to the learning community through hand-held devices connected via a wireless network, at anyplace and anytime (Peters, 2007; Wang, Wu, & Wang, 2009. More significantly, mobile learning can contribute to the universal guarantee to deliver quality education for children, youth and adults, as expressed in the goals of Education for All (EFA) (UNESCO, 2010).

2.0 Context and Review of Literature

More recently, the use of mobile devices is becoming prevalent and popular in teaching practices as they have an important role in facilitating teaching-learning opportunities. Mobile-learning is emerging as a new trend of learning and has been accepted by the teaching and learning community (Bozkurt et al., 2015). This type of technology has been already introduced in some educational institutes in order to reduce gaps and problems concerning the time and place of learning and is removing the time and geographical barriers for learning by placing learning opportunities at the fingertips of learners (Ally & Prieto-Blázquez, 2014; Awadhiya & Miglani, 2017).

Ansari and Tripathi (2017); Camilleri and Camilleri (2019) have already shown how development of multifunctional mobile phones and well-designed mobile apps are contributing heavily towards efficient learning. Similarly, the role of e-learning during covid-19 pandemic lockdown was significant and unforgettable. M-learning was a panacea during covid-19 crisis and was reported by various authors (Biswas, Roy, & Roy, 2020; Bashir & Khan, 2020; Dhawan, 2020; Raheem & Khan, 2020). Using mobile technology in teaching-learning practices could bridge the gap of formal and informal learning (Bashir & Khan, 2020). Since technology has an important role in propagation of knowledge, therefore it is important to know teachers' attitude towards the use of e-learning or mobile learning.

3.0 Objectives

The main aim of this research study is to determine the Attitude of teachers' towards the use of mobile learning in higher education. The objectives of the study were:

1. Identifying the teachers' time consuming educational mobile apps for teaching and learning.
2. Exploring the teachers' attitude towards the use of mobile learning in higher education.
3. Identifying the significant differences in teachers' attitude towards mobile learning in higher education in terms of age and experience.

4.0 Research Questions

Therefore, this research investigation seeks to answer the succeeding research questions:

● To what extent teachers' attitudes are towards the use of mobile learning in higher education?
● Is there any significant difference in the attitude of teachers towards the use of mobile learning on the basis of age and experience?

5.0 Method

The present study is descriptive research using online survey methods.

5.1 Participants and sampling technique

The participants of the study are 68college teachers from Jammu and Kashmir and data has been collected from them via online mode using Google forms in the months of July-august, 2020 using a convenient sampling technique.

5.2 Tools used

The measurement used in the study is the mobile learning attitude scale developed by Al-Emran, Elsherif and Shaalan (2016). Mobile learning attitude scale consists of 10 items with a 5-point Likert-type scale having options like strongly agree, agree, undecided, disagree and strongly disagree.

5.3 Data analysis

Quantitative data analysis was used to analyze the data and the results are present in the form of descriptive and inferential statistics such as simple percentages and t-test.

6.0 Results and Discussion

The results are present in two parts i.e. percentage and differential analysis on attitude of teachers towards mobile learning.

Summary of frequency of teacher's spends hours per week on the internet for their learning.

In order to classify the frequency of teacher's spending hours per week on the internet for their learning and its description is given below in table 1.

Table 1: Snapshot of Teacher's spends hours per week on internet for their learning

S. No.	Description	Frequency	Percentage
01	0 hours	02	2.94
02	1-4 hours	31	45.59
03	5-10 hours	19	27.94
04	more than 10	16	23.53
	Total	68	100%

Frequency of teacher's weekly mobile use for study or learning is grouped into 4 categories as: (1) 0 hours per week (2) 1-4 hours per week; (3) 5-10 hours per week; and (4) more than 10 hours per week. It was found that 2.94% (n=2) use 0.0 hours of their total internet use in their learning, 45.59% (n=31) use 1-4 hours of their total internet use with their learning, 27.94% (n=19) use 5-10 hours

of their total internet use with their learning, and 23.53% (n=16) use more than 10 hours of their total Internet use with their learning. This

shows that the majority of teachers prefer to use mobile devices for their learning.

Table 2: Attitude of teachers towards the use of Mobile Learning in their learning in higher education

S. no.	Statement	Strongly disagree		Disagree	Undecided	Agree	Strongly agree	Mean
01	Mobile technology is a useful and effective tool in education.	F	01	02	05	35	25	4.19
		%	1.47	2.94	7.35	51.47	36.77	
02	Mobile technology can offer opportunities for communication and collaboration among teaching staff.	F	00	01	05	37	25	4.26
		%	00	1.47	7.35	54.41	36.77	
03	Mobile technology can help in finding many resources related to my work.	F	00	00	05	34	29	4.35
		%	00	00	7.35	50.0	42.65	
04	Mobile technology allows students to be more active with course material.	F	02	06	18	29	13	3.66
		%	2.94	8.82	26.47	42.65	19.12	
05	Mobile technology is suitable for providing feedback for my students.	F	02	04	18	31	14	3.73
		%	2.94	5.88	26.47	45.59	19.12	
06	Mobile technology can help me to develop my teaching skills.	F	01	06	10	31	20	3.92
		%	1.47	8.82	14.71	45.59	29.41	
07	Mobile Apps can help me to manage my work.	F	02	04	12	34	16	3.85
		%	2.94	5.88	17.65	50.0	23.53	
08	Mobile technology can help me in preparing Learning material for my students.	F	00	01	04	43	20	4.20
		%	00	1.47	5.88	63.24	29.41	
09	Mobile technology facilitates the communication between the students and their teachers/ instructors.	F	02	02	15	33	16	3.86
		%	2.94	2.94	22.06	48.53	23.53	
10	Mobile technology can make my educational role more flexible.	F	02	06	08	39	13	3.80
		%	2.94	8.82	11.77	57.35	19.12	

Note: Sample size (N=68)

After observing the each statement of teachers attitude towards the use of mobile learning, it has been found that 36.77% (n=25) respondents reported strongly agree, 51.47% (n=35) agree, 7.35 (n=05) undecided, 2.94 (n=02) disagree and 1.47% (n=01) strongly disagree on mobile technology is an effective and useful tool in education. Similarly, it has been observed that 36.77% (n=25) respondents reported strongly agree, 54.41% (n=37) agree, 7.35% (n=05), undecided, 1.47% (n=01) disagree and 00% (n=00) strongly disagree on mobile technology can offer opportunities for communication among teaching staff. However, the responses to statement by the teachers are that 42.65% (n=29) reported strongly agree, 50.0% (n=34) agree, 7.35% (n=05) undecided, 00% (n=00) disagree and 00% (n=00) strongly disagree on that mobile technology can help me in finding resources

related to my work. Moreover, 19.12% (n=13) reported strongly agree, 42.65% (n=29) agree, 26.47% (n=18) undecided, 8.82% (n=06) disagree and 2.94% (n=02) strongly disagree on mobile technology allows students to be more active with course material.

Also, on mobile technology is suitable for providing feedback for my students, 19.12% (n=13) reported strongly agree, 45.59% (n=31) agree, 26.47% (18) undecided, 5.88% (n=04) disagree and 2.94 (n=02) strongly disagree. Furthermore, 29.41% (n=20) reported strongly agree, 45.59% (n=31) agree, 14.71% (n=10) neutral, 8.82% (n=06) disagree and 1.47 (n=01) strongly disagree on Mobile technology can help me to develop my teaching skills.

In addition, 23.53 (n=16) reported strongly agree, 50.0% (n=34) agree, 17.65% (n=12) undecided, 5.88% (n=04) disagree and 2.94% (n=02) on mobile Apps can help me to manage

my work. On the other hand, 29.41% (n=20) reported strongly agree, 63.24 (n=43) agree, 5.88% (n=04) undecided, 1.47% (n=01) disagree and 00% (n-00) strongly disagree on Mobile technology can help me in preparing Learning material for my students.

Likewise, 23.53% (n=16) reported strongly agree, 48.53 (n=33) agree, 22.06% (n=15) undecided, 2.94% (n=02) disagree and 2.94% (n-02) strongly disagree on Mobile technology facilitates the communication between the student and their teachers/instructors. Finally, 19.12% (n=13) reported strongly agree, 57.35

(n=39) agree, 11.77% (n=08) undecided, 8.82% (n=06) disagree and 2.94% (n-02) strongly disagree on Mobile technology can make my educational role more flexible.

Differences on Attitude of teachers towards the use of mobile learning on the basis of experience and age

The comprehensive description regarding independent t-test on Attitude of teachers towards the use of mobile learning on the basis of experience and age are given below in subsequent table 2.

Table 2: Summary of independent t-test on attitude of teachers towards the use of mobile learning on the basis of experience and age

Group	Mean	SD	N	Df	t-value	Significance
Experience (< = 5 yrs)	42.14	5.85	42			
Experience (= > 6 yrs)	44.15	5.43	26	66	1.414	Insignificant
Age (30 or less)	39.30	5.55	23	66	4.124**	Significant
Age (31 or above)	44.75	4.94	45			

Note: **Significant at 0.01 level of confidence

As presented in Table 2, the results suggest that the mean scores for Experience (< = 5 yrs) and Experience (= > 6 yrs) do not show any noteworthy differences among the teachers in their attitude towards the use of mobile learning. The calculated value of *t* is 1.414 and the confidence level is $p > 0.05$. Hence, the mean values show that both groups are willing to grab the mobile technology advantages in their teaching and learning. On the other hand, a significant difference was found on the basis of age in which teachers having age 31 or above showed significantly higher attitude towards mobile learning as compared to 30 or less age counterparts.

7.0 Conclusion and Implications

The result reveals that a significant number of teachers in Jammu and Kashmir have positive attitudes towards the use of Mobile learning. Maximum teachers make use of time on the Internet for searching educational material. On one hand, no significant difference was found on the basis of experience among higher education teachers. On the other hand,

significant differences were observed on the basis of age among teachers. The present study significantly reveals that mobile learning has bridged the gap between formal and informal education, thus educational institutions must provide adequate infrastructure and training for successful implementation of mobile learning in teaching and learning. However, lack of training in the use of mobile technology is a barrier to mobile learning, therefore it is suggested that educational institutions must provide training to the educators and as well as to the students' community as it will help them to make teaching learning successful. Further, this inquiry advocated that mobile learning is greatly personalized, portable and customized and it should be integrated in the teaching-learning process which could bridge the gap of formal and informal learning (Bashir & Khan, 2020). This investigation suggests that future inquiries should be conducted on online learning satisfaction and academic performance of teachers and students at higher education stage.

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ACADEMIC ACHIEVEMENT IN RELATION TO SCHOOL SATISFACTION OF ADOLESCENTS

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ABSTRACT

The focus of the present study is to investigate the academic achievement in relation to school satisfaction of adolescents. The study was conducted on a sample of 600 adolescent students selected from different schools of Moga district of Punjab. Meenakshi Sharma's School Satisfaction Inventory (2019) and Academic records of previous class were used to collect the data. For analysis and interpretation of data, Mean, Standard Deviation, 2x2 ANOVA and Pearson Correlation Coefficient were used as statistical measures. The findings of the study revealed that a significant gender difference has been found in the school satisfaction of adolescents but no significant locale difference has been found in school satisfaction of adolescents. Moreover no significant interaction effect of Gender and Locale has been found in the School Satisfaction of adolescents. The result of the study also concludes significant gender difference, significant locale difference and significant interaction effect of gender and locale on the academic achievement of adolescents. Moreover the study reported that school satisfaction has a significant positive relationship with the academic achievement of adolescents. Thus the study recommends the productive and healthy school environment for the development of school satisfaction and better academic performance of adolescents.

Keywords: Academic Achievement, School Satisfaction, Adolescents

Introduction

Adolescence is the distinct and critical phase of life that involves many physical and psychological changes. In this transition stage adolescents are more concerned with their academic development for bright future. Academic Achievement is the attainment of knowledge and development of skills in the academic tasks measured by grades, standardized test or exams etc. It is the performance of students in school related activities (Ganai and Mir, 2013).In words of Verma and Upadhaya (1981), Academic Achievement is the assessment of individual's learning after a training period. There are many factors like family factors, school related factors and student related factors that influenced the learning process and achievement of adolescents (Nelson *et al.* 2010). Amongst all as revealed by DiPerna *et al.*(2002), student's characteristics (Social, motivational, behavioural, affective and cognitive) constitute the significant determinants of Academic outcomes of the students. As reported by Kumar and Dileep (2006) Student's behavioral characteristics i.e. satisfaction and belongingness towards school is the most significant predictor of academic achievement. The perception of adolescents about their schools i.e. how they asses their school environment, interpersonal relationships can be described as school satisfaction (Huebner and McCullough,2000). School satisfaction is the sense or belonging about the quality of school life. Oliver and Desarbo (1988), defines that school satisfaction is "the favorability of a student's subjective assessment of numerous outcomes and experiences related with education and being shaped continually and related experiences in campus life". Student's satisfaction with their school life plays an important role for successful learning. School Satisfaction is the significant requirement for learner's success (Sinclarie, 2014).School satisfaction and student's academic achievement are the key indicators of quality of education. Rashidi and Moghadam (2014) described that student's satisfaction and academic achievement are such factors that are highly interrelated with each other. Classroom environment, Teaching learning styles (Keri,2003), Teachers efficiency (Ross,1994), Teachers' support, peer support (Changchit and Klaus,2008), physical facilities at school(Nadeem, 2012)were such constructs that puts profound impact on the school satisfaction of students and their engagement in learning. Higher satisfaction level of students develops the pleasant and positive school environment for both teachers and students that is conductive for better academic achievement as reported by Miller,(1977).

Review of Literature

Samdal *et al.* (2010) investigated the relationship between student's perceptions of school environment, their satisfaction with school and perceived academic achievement among students of Finland, Latvia, Norway and Slovakia. The findings of the study concluded that the feeling of school satisfaction about their school environment is the most important perception that determines their academic achievement.

Dhaqane (2016) investigated the satisfaction of students and academic performance in Benadir University and found strong relationship between satisfaction and academic performance of students. Satisfaction acts as a booster for academic achievement and students retention.

Aungand Ye (2016) studied the relationship between the levels of student's satisfaction and their achievement at Kant Kaw education center in Myanmar and revealed positive relationship between the student's satisfaction level and achievement. There are many factors in the school like curriculum material, class size, effective instructions, admission and enrollment procedure etc. that influence the academic achievement of students.

Thompson and Galindo (2017) investigated the school family relationships, school satisfaction and academic achievement of young people and revealed that positive school family relationships and school satisfaction acts as a booster for younger people's better academic achievement.

Kaur (2017) investigated the academic achievement in relation to family environment, school environment, achievement motivation, self-efficacy and life satisfaction and found that students that feel satisfied with their peer groups, teachers, school environment, living environment have strong self-efficacy, showed better performance in their academic records.

Sharma (2019) studied the CBSE board academic achievement of 600 students of 10+1 class studying in schools of CBSE board and Haryana board in relation to their anxiety, school environment and self-efficacy and found the positive relationship between academic achievement and school environment of students. Results also showed that gender, type of school and location of school puts impact on school environment that further affects the academic achievement of students.

Statement of problem

Academic Achievement in relation to School Satisfaction of adolescents.

Research Objectives

The present study has been administered on adolescents to attain the following objective:

1. To study and compare the Academic Achievement of adolescents on the basis of gender and locale.
2. To study and compare the School Satisfaction of adolescents on the basis of gender andlocale.
3. To study the relationship between Academic Achievement and School Satisfaction of Adolescents.

Hypotheses

The following hypotheses have been farmed to achieve the above mentioned objective:

1. There exist no significant difference between Academic Achievement of adolescents on the basis of gender, locale and their interaction.
2. There exist no significant difference between School Satisfaction of adolescents on the basis of gender, locale and their interaction.
3. There exist no significant relationship between Academic Achievement and School Satisfaction of Adolescents.

Operational Definitions

1. **Academic Achievement:** It refers to the scores attained by the respondents in the school examinations of their previous class.
2. **School Satisfaction:** It refers to the sum total of scores attained by respondents in the school satisfaction inventory by Meenakshi Sharma (2019). It determines the school satisfaction on the basis of four areas of satisfaction with students, with syllabi, with teachers and with school plant.

Research Design

The study follows the descriptive survey research design. Stratified random sampling technique was applied to draw the sample of 600 adolescent students from Moga city of Punjab. School Satisfaction Inventory by

Meenakshi Sharma (2019) was used to determine the school satisfaction level of students. Academic achievement was assessed from the school examination of their previous class. The data generated were analyzed by Mean, Standard Deviation, 2x2 ANOVA and Pearson Correlation of Coefficient.

Results and Discussion

Hypothesis 1: There exist no significant difference between Academic Achievement of adolescents on the basis of gender, locale and their interaction.

Mean and SD of different subgroups of 2x2 Analysis of Variance of the score of Academic Achievement of adolescents with respect to Gender and Locale

Variables Gender	Locale		Total
	Rural	Urban	
Male	M= 378.64 SD=49.33/ N=150	M= 420.28 SD=67.82/ N=150	M= 399.46 SD=62.76/ N=300
Female	M= 420.92 SD=52.01/ N=150	M=437.16 SD=70.44/ N=150	M= 429.04 SD=62.34/ N=300
Total	M= 399.78 SD=54.86/ N=300	M= 428.72 SD=69.54/ N=300	M= 414.25 SD=64.23/ N=600

To analyze the variance, the obtained Academic Achievement scores have been subjected to ANOVA with respect to Gender and Locale of the adolescents. The findings are presented in ANOVA summary Table below:

Summary of 2X2 ANOVA on the Academic Achievement Scores of adolescents in relation to Gender and Locale

Sources of Variance	SS	Df	MSS	F-value	p-value	Result
Gender(A)	131246.46	1	131246.46	35.71	.000	Sig at 0.5 level
Locale(B)	125628.54	1	125628.54	34.18	.000	Sig at 0.5 level
Interaction (AXB)	24193.50	1	24193.50	6.58	.011	Sig at 0.5 level
Within	2190402.00	596	3675.171			

Interpretation

Academic Achievement (A- Gender)

From the table it can be concluded that the difference between the mean Academic Achievement scores on the basis of Gender is significant. Mean Academic Achievement score of Female Adolescents is significantly higher than the mean Academic Achievement score of Male Adolescents.

Academic Achievement (B- Locale)

From the table it can be concluded that the difference between the mean Academic Achievement scores on the basis of Locale is significant. The mean Academic Achievement score of Urban adolescents is significantly higher than the mean Academic Achievement score of Rural adolescents.

Academic Achievement (AXB – Gender X Locale)

The ANOVA Summary Table concluded that the interaction effect of Gender and Locale on the Academic Achievement of adolescents is significant. Urban Female adolescents have significantly highest Academic Achievement and Rural Male adolescents have significantly lowest Academic Achievement.Therefore the Hypothesis stating **"*There exists no significant difference in the Academic Achievement of adolescents on the basis of Gender, Locale and their interaction"*** stands rejected.

Hypothesis: 2 There exist no significant difference between School Satisfaction of adolescents on the basis of gender, locale and their interaction.

Mean and SD of different subgroups of 2x2 Analysis of Variance of the score of School Satisfaction of adolescents with respect to Gender and Locale

Variables Gender	Locale		Total
	Rural	Urban	
Male	M= 131.91 SD=16.18/ N=150	M= 132.08 SD=17.42/ N=150	M= 132.00 SD=16.79/ N=300
Female	M= 137.21 SD=15.22/ N=150	M=137.22 SD=10.36/ N=150	M= 137.22 SD=13.00/ N=300
Total	M= 134.56 SD=15.91/ N=300	M= 134.65 SD=14.54/ N=300	M= 134.61 SD=15.23/ N=600

To analyze the variance, the obtained School Satisfaction scores have been subjected to ANOVA with respect to Gender and Locale of the adolescents. The findings are presented in ANOVA summary Table below:

Summary of 2X2 ANOVA on the School Satisfaction Scores of adolescents in relation to Gender and Locale

Sources of Variance	SS	Df	MSS	F-value	p-value	Result
Gender(A)	4087.26	1	4087.26	18.07	.000	Sig at 0.5 level
Locale(B)	1.13	1	1.13	0.005	.944	Not Sig at 0.5 level
Interaction (AXB)	0.960	1	0.960	0.004	.948	Not Sig at 0.5 level
Within	134831.83	596	226.23			

Interpretation

School Satisfaction (A- Gender)

From above table it can be concluded that the difference between the mean School Satisfaction scores on the basis of Gender is significant. The mean School Satisfaction score of Female Adolescents is significantly higher than the mean School Satisfaction score of Male Adolescents.

School Satisfaction (B- Locale)

From ANOVA summary table above it can be concluded that the difference between the mean School Satisfaction scores on the basis of Locale is not significant. The mean School Satisfaction score of Urban adolescents and Rural adolescents is not significantly different indicating that Rural adolescents and Urban adolescents have similar level of School Satisfaction.

School Satisfaction (AXB – Gender X Locale)

The ANOVA Summary Table above depicts that all the subgroups formed through the interaction of Gender and Locale have similar level of School Satisfaction.Therefore the Hypothesis **stating "*There exists no significant difference in the School Satisfactionof adolescents on the basis of Gender, Locale and their interaction"*** stands accepted for Locale and interaction effect but stands rejected for Gender.

Hypothesis 3: There exist no significant relationship between Academic Achievement and School Satisfaction of Adolescents.

Summary of correlation analysis of School Satisfaction with Academic Achievement

Sr. No	Variable	N	Mean	SD	'r' Value	p-value	Result
1	School Satisfaction	600	134.61	15.23	0.81	.000	Sig at 0.5 Level
	Academic Achievement		414.25	64.23			

Interpretation: The table above depicts the correlation analysis of School Satisfaction with Academic Achievement and concludes that there exists a significant positive relationship between School Satisfaction and Academic Achievement of adolescents. The higher level of School satisfaction of adolescent's tends to

increase the Academic Achievements of adolescents and vice versa. In the light of these findings the Hypothesis stating ***"There exists no significant relationship of School Satisfaction with Academic Achievement"*** stands rejected.

Conclusion

The findings of the study demonstrated that female adolescents have better academic achievement as compared to male adolescents. This study is aligned with Rihunlang (2013) who observed that female students perform better in their academics as they are more conscious, hardworking, competitive and studious as compared to male adolescents. In terms of locale, urban adolescents have higher academic achievement scores than rural adolescents. This present study is supported by Boruah (2010) that location of the schools significantly puts influence on academic achievement of students. Because urban parents are more aware, provides more academic opportunities and resources for their education so adolescents get motivated and encouraged to achieve their educational goals (Rashmi, 2019). The interaction effect of Gender and Locale on Academic Achievement showed that Urban Female adolescents have highest academic achievement and Rural Male adolescents have lowest Academic Achievement. The findings of the study also indicate that school satisfaction level of female adolescents is higher than school satisfaction level of male adolescents. This study is in consistent with Okun *et al.* (1990) who reported that girls develops more positive relations with their teachers and classmates, so they feel more satisfied with their schools as compared to boys. In terms of locale, results of the present investigation found no significant difference between urban and rural adolescents on school satisfaction level. The interaction effect of Gender and Locale on School Satisfaction level indicates that all the subgroups have similar level of School Satisfaction. The study also revealed positive relationship between school satisfaction and academic achievement of adolescents. This study is supported by Balkis (2003) who found that students having positive experience with their school feel more satisfied and achieve their educational goals. The feeling of school satisfaction among adolescents enhances the academic achievement, while dissatisfaction with school environment retards the academic achievement. Sound and ideal school environment encourages the satisfaction level of adolescents which in turn puts positive influence on academic achievement of adolescents. As Petruzzellis (2006) described satisfaction is the result of quality of services provided to the students. The provision of school facilities such as laboratory, library, health and transport facilities, drinking facilities, educational technology, well-maintained classrooms with adequate light, color, temperature and ventilation, strengthen the feeling of school satisfaction and academic performance of adolescents. Whereas the lack of these basic amenities develops the feeling of dissatisfaction and therefore hinders the academic achievement of students. These sufficient and adequate facilities promotes school satisfaction and academic performance, while lack of adequate facilities made students frustrated and retards their academic achievement (Komba, 2013). High quality of interpersonal relationship within the school serves as a promoting factor for school satisfaction and academic achievement. Teacher support and peer support enhances the school satisfaction, (Saleh*et al.*2019) and which in turn helps them to accomplish their educational goals (Gaspar D.T.A., 2013). Thus a positive educational school environment enables the child to develop the feelings of school satisfaction that ultimately puts positive influence on academic performance of adolescents.

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ENTREPRENEURSHIP AND ARTIFICIAL INTELLIGENCE: IMPLICATIONS FOR EFFECTIVE TEAM FORMATION

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ABSTRACT

This article explores the relevance of artificial intelligence (AI) and its impact on entrepreneurial team formation. We examine how the advancement in technology will augment and replace tasks associated with effective team formation for new age entrepreneurs. These changes entail new ways of working, and we consider implications for the organizational design of entrepreneurial ventures.

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Introduction about entrepreneurship

Timmons, 78AD, defined entrepreneurship as a practice embedded with three main components namely, taking risk, innovation, and commercialization of the products and services for getting profit. He has been agreed that certain personal qualities, such as the need for realization, a tendency for taking calculated risks, and control locus are being observed in the successful entrepreneurs.

Entrepreneurship is a multifaceted spectacle that cuts across many disciplinary boundaries. Studies falling under the heading of "entrepreneurship" have trailed a wide range of purposes and objectives, asked different questions and adopted different units of analysis, theoretical perspectives and methodologies. This diversity is reflected in many and varied definitions of entrepreneurship: Schumpeter (1934) defined entrepreneurship as "carrying out new combinations." Knight's (1921) definition focused on the ability to predict the future successfully. Leibenstein (1978) argued that firms do not necessarily operate at the outer limit of their production function; therefore, entrepreneurship is the ability to work smarter and harder than your competitor. Kirzner's (1973) concept is closely linked to arbitrage and the ability to correctly anticipate where the next market imperfections and imbalances will be. Cole (1968) defined entrepreneurship as purposeful activity to initiate, maintain, and develop a profit-oriented business. Stevenson, Roberts and Grousbeck (1985) suggested that entrepreneurship is being driven by perception of opportunity, rather than resources currently controlled and Gartner (1985b) defined entrepreneurship as the creation of new organizations. Empirical researchers have argued for some time that this inability to agree upon common definitions has hampered research progress (Gartner, 1985a; Vesper, 1983).

Perception of entrepreneurship as a career

If the SME sector is to prosper, the major stimulus will have to come, not from government, but from a society that values entrepreneurism and where "local communities play an important role in developing an entrepreneurial environment" (Gnyawali and Fogel, 1994, p.49). Entrepreneurial process involves all those functions and activities, (including the entrepreneur's actions), associated with perceiving opportunities and the creation of a business to pursue them. Therefore, one major focus has been on the individual, as Osborne (1987) reported that in the creation of a business, the new venture becomes the extension or the embodiment of the entrepreneur, a concept supported by Wright (1993). Motivation theories, therefore, especially McClelland's (1961) theory of need-achievement, sometimes are used to explain why some individuals are more likely to be entrepreneurs than others (Starr and Fondas, 1992). Previous studies also have indicated that the motivators affecting the decision to start a business include the personal characteristics and goals of the individual (Greenberger and Sexton, 1988; Learned, 1992; Starr and Fondas, 1992). Thus, reasons for an individual to start a business include, among many, the desire to become independent, preference for responsibility in making decisions, and personal gain (Auken, 1999; Boyd and

Gumpert, 1983). Similarly, Starr and Fondas (1992) suggested that an individual's attitudes, belief and abilities have a great influence on the decision to enter into business. Indeed, Herron and Sapienza (1992) felt that the motivation and skills of the entrepreneur would affect the intensity of his/her pre-launch activities. Among Kuratko and Hodgetts's (1995) 17 psychological characteristics most commonly associated with entrepreneurs, five relate to motivation: commitment, perseverance, achievement, drive, and opportunity orientation.

Why entrepreneurs fail?

A diverse team with different skill sets was often cited as being critical to the success of a company. Failure post-mortems often lamented that "I wish we had a CTO from the start," or wished that the startup had "a founder that loved the business aspect of things."

The Standout Jobs team wrote in the company's post-mortem, "The founding team couldn't build an MVP(Minimum Viable Product) on its own. That was a mistake. If the founding team can't put out product on its own (or with a small amount of external help from freelancers) they shouldn't be founding a startup. We could have brought on additional co-founders, who would have been compensated primarily with equity versus cash, but we didn't."

In some cases, the founding team wished they had more checks and balances. As Nouncer's founder wrote, "This brings me back to the underlying problem I didn't have a partner to balance me out and provide sanity checks for business and technology decisions made."

At Zirtual, which was forced to lay off 400 employees overnight after a series of financial mistakes and miscalculations, co-founder and CEO Maren Kate Donovan later admitted that one key mistake was not bringing a CFO onto the board:"If a board had actually been in tune, this would have been caught like six months ago. I blame myself on a lot of this, in not hiring more experienced people, but it wasn't any maliciousness beyond just naivete. In retrospect if we had a senior finance person and a senior ops person it would have been a completely different story."

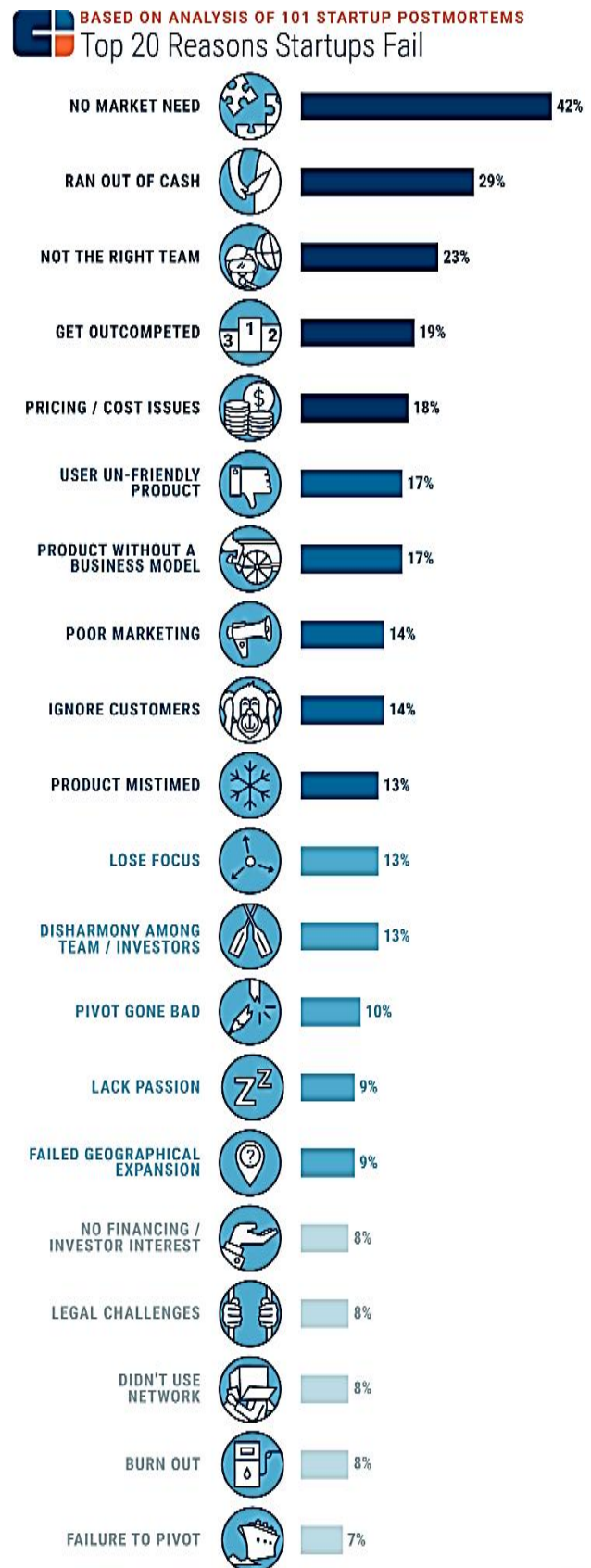Below are top 20 reasons why startups fail based on the study by CB Insights:

Figure 1: Reasons why startup fail

Importance of team in entrepreneurship

Most people conversant with new project formation agree that effective new venture management cannot be reduced to a set of simple rules or practices. The process reveals through a sequence of decisions based on a wide range of knowledge and experience; it also involves an evolving tapestry of human interaction, cooperation, and coordination. Accordingly, people play a critical role in determining the success of new ventures and, by extension, the economic and social benefits they imply. Although the importance of the individuals who create organizations has long been appreciated, scholarship that focuses on the entrepreneurial team is just developing.

Human capital refers to human knowledge and skill that can be converted into valuable economic outputs. Implicitly, a central question asked by human capital theorists is: "What is the set of skills and knowledge that will optimize the performance of this organization?" Knowledge and skills relevant to entrepreneurial team formation include those that have the potential to contribute to the economic output of the firm, such as an individual's education, industry experience, and general management ability. Human capital is like traditional, tangible forms of capital, such as financing or manufacturing plants, in the sense that investments can be made in knowledge and skill that enable the firm to compete more effectively and, thereby, generate superior returns (Becker, 1994; Pfeffer, 1996).

For many years, scholars interested in the human components of entrepreneurship focused on the individual entrepreneur. This focus characterized the early "trait" studies of entrepreneurship (McClelland, 1961) and is also present in much of the more recent work on the role of cognition in entrepreneurship (see Forbes, 1999, for a review). Even many sociological and economic studies of the human components of entrepreneurship have emphasized individuals (e.g., Amit, Glosten, & Muller, 1990; Birley, 1985).

In contrast, recent research reflects a growing interest in the entrepreneurial team, which we define as the group of people involved in the creation and management of a new venture (Cooper & Daily, 1997; Kamm, Shuman, Seeger, & Nurick, 1990). Over the past 30 years, scholars of entrepreneurship have examined the positive role of teams in the entrepreneurial process (Kamm, Shuman, & Seeger, 1990; Timmons, 1975). It is difficult to run startup ventures with limited resources, and hence, in many cases, business ventures are prone to rely on entrepreneurship.

Previous research of entrepreneurial teams have focused on the role of entrepreneurial team characteristics, such as team composition on firm performance (Barney, Busenitz, Fiet, & Moesel, 1996; Eisenhardt & Schoonhoven, 1990; Hmieleski & Ensley, 2007). Scholars who have interests in the formation of entrepreneurial team have usually focused on the role of the founder's leadership or vision in entrepreneurial team (Preller, Breugst, & Patzelt, 2016; Schjoedt et al., 2013), and also examined the role diversity of individuals in team, which is usually measured by demographic characteristics among team members. As the entrepreneurial outcomes are, more or less, attributable to the developed value by founders and team members' mutual expectations through entrepreneurial process, other scholars addressed the issue of cultural characteristics among team members such as shared value and trust (Khan, Breitenecker, Gustafsson, & Schwarz, 2015).

As recent two Meta analyses from to date confirm (Bell, Villado, Lukasik, Belau, & Briggs, 2011; Joshi & Roh, 2009), the role of the context in entrepreneurial team is necessary to consider a better explanation of the team formation and dynamics (Pelled, Eisenhardt, & Xin, 1999). With a line with those suggestions, recent scholars have focused on the conflicts and power plays among team members (Khan, Breitenecker, & Schwarz, 2015; Schoss, Mauer, & Brettel, 2017). Studies have confirmed that this approach is important to consider the overall impact of team dynamic processes such as trust, conflict, and cohesion in a team, not to mention overall performance or emotional outcomes such as satisfaction (Li & Hambrick, 2005; Thatcher, Jehn, & Zanutto, 2003). This is useful for reviewing team dynamics within an entrepreneurial team because there are subgroups within a team and those subgroupings may influence on the performance of an entrepreneurial team. When subgroups are visible, it is easy to trust

opinions among members of small groups (Abrams, Wetherell, Cochrane, Hogg, & Turner, 1990). The coalitions within subgroups are due to the similarities and differences of individual characteristics, thus some scholars are prone to highlight the plurality of division lines. The coalition between subgroups is also a set of members who collectively manage their resources on specific issues (Murnighan & Brass, 1991). Likewise, subgroups within a team can promote active communication and cooperation with members, but differences in heterogeneity between subgroups can produce a negative impact on team atmosphere (e.g., Roach & Sauermann, 2010). It is a really interesting phenomenon yet to be examined, about the influence on the change of formation in entrepreneurial team. For example, when newcomers do retain similarities with existing team members, the distinction between new and old member becomes less important. When an important member such as founder leave and/or influential members such as top talents to join an existing team, the changes in a team's dynamics can be truly significant. Such fundamental changes in team composition deserve to examine but was not fully explored (Lau & Murnigan, 1998). The addition of new members into the established team may introduce the possibility of the restructuring of old composition and may trigger the change of fault line of the existing subgroup's norm. In sum, scholars regard the action and interaction of members in entrepreneurial team did not occur in a vacuum, yet did not clearly address the influences of powerful individuals in entrepreneurial team (e.g., Khan, Breitenecker, Gustafsson, & Schwarz, 2015;). Thus, scholars have started to highlight the conflicts rather than harmony among team members including those of founders and members. A further research is needed to focus on team dynamics capturing beyond the concept of diversity to dynamics with respect to the phenomenon to examine the fault line within teams.

The interest in teams also reflects prevalent insights from practice. Venture capitalists, e.g., consistently mention new venture team quality as an important funding criterion (MacMillan, Siegel, & Narasimha, 1985; Zacharakis & Meyer, 1998). This emphasis makes sense because, while many determinants of new venture performance may be beyond management control (e.g., market conditions and competitor response), the entrepreneurial team is a relatively controllable entity. If well understood, the process of team formation could be shaped to enhance ventures' chances of success. In short, research on entrepreneurial teams represents a constructive and promising development.

Relevance of competency mapping of the team

Indian organizations are also witnessing a change in systems, management cultures and philosophy due to the global alignment of Indian organizations. There is a need for multi skill development. Competency Mapping is a process of identifying key competencies for a company or an organization and the jobs and functions within it. Every well managed organization should have well defined roles and list of competencies required to perform each role effectively. Competency mapping analysis individual's SWOT for better understanding and this helps to improve his career growth. This identifies the gap for improving knowledge to develop. Every industry in the present scenario is trying to achieve high efficiency and effectiveness in order to survive in this cutthroat competition. Competency mapping is one of the most accurate means in identifying the job and behavioral competencies of an individual in an organization. According to Boyatzis (1982): —A capacity that exists in a person that leads to behavior that meets the job demands within parameters of organizational environment, and that, in turn brings about desired results. According to UNIDO (2002): —A Competency is a set of Skills, related knowledge and attributes that allow an individual to successfully perform a task or an activity within a specific function or a job.

Artificial intelligence and business

In business, artificial intelligence has a wide range of uses. In fact, most of us interact with artificial intelligence in some form or another on a daily basis. From the mundane to the breathtaking, artificial intelligence is already disrupting virtually every business process in every industry. As artificial intelligence

technologies flourish, they are becoming an imperious for businesses that want to maintain a competitive edge.Many people still associate artificial intelligence with science fiction dystopias, but that description is diminishing as artificial intelligence develops and becomes more commonplace in our daily lives. Today, artificial intelligence is a household name (and sometimes even a household presence – hi, Alexa!).While artificial intelligence's acceptance in mainstream society is a new phenomenon, it is not a new concept. The modern field of artificial intelligence came into existence in 1956, but it took decades of work to make significant progress toward developing an artificial intelligence system and making it a technological reality.

What is artificial intelligence?

Merriam-Webster's dictionary defines artificial intelligence as "a branch of computer science dealing with the simulation of intelligent behavior in computers" and "the capability of a machine to imitate intelligent human behavior". Before examining how artificial intelligence technologies are impacting the business world, it's important to define the term. "Artificial intelligence" is a broad and general term that refers to any type of computer software that engages in humanlike activities, including learning, planning and problem-solving. Calling specific applications "artificial intelligence" is like calling it technically correct, but it doesn't cover any of the specifics. To understand what type of artificial intelligence is predominant in business, we have to dig deeper.

Artificial intelligence and business today

Rather than serving as a replacement for human intelligence and ingenuity, artificial intelligence is generally seen as a supporting tool. Although artificial intelligence currently has a difficult time completing commonsense tasks in the real world, it is adept at processing and analyzing troves of data far more quickly than a human brain could. Artificial intelligence software can then return with synthesized courses of action and present them to the human user. In this way, humans can use artificial intelligence to help game out possible consequences of each action and streamline the decision-making process.

Artificial intelligence is even an indispensable ally when it comes to looking for holes in computer network defenses, Husain said"You really can't have enough cybersecurity experts to look at these problems, because of scale and increasing complexity," he said. "Artificial intelligence is playing an increasing role here as well."Artificial intelligence is also changing customer relationship management (CRM) systems. Software like Salesforce or Zoho requires heavy human intervention to remain up to date and accurate. But when you apply artificial intelligence to these platforms, a normal CRM system transforms into a self-updating, auto-correcting system that stays on top of your relationship management for you. Another example of artificial intelligence's versatility is within the financial sector. Dr. Hossein Rahnama, founder and CEO of artificial intelligence concierge company Flybits and visiting professor at the Massachusetts Institute of Technology, worked with TD Bank to integrate artificial intelligence into regular banking operations, such as mortgage loans."Using this technology, if you have a mortgage with the bank and it's up for renewal in 90 days or less, if you're walking by a branch, you get a personalized message inviting you to go to the branch and renew purchase," Rahnama said. "If you're looking at a property for sale and you spend more than 10 minutes there, it will send you a possible mortgage offer."We're no longer expecting the user to constantly be on a search box Googling what they need," he added. "The paradigm is shifting as to how the right information finds the right user at the right time."

In the present, AI and robotics technologies has fully automated many of the business, such as finance, HR, manufacturing and etc. Their main advantage is that the process of automation reduces labor and related other cost. There is a huge opportunity for the organizations to have a massive amount of data and information to extract lot of insights of knowledge by using collected data and will useful in data mining and machine learning algorithms. After there is an opportunity for knowledge entrepreneurs, they have to come-up unique mission and vision and strategic plan

for product process (Dirican, 2015). There is no doubt that the high speed of AI & robotics facilitates more innovations and entrepreneurial opportunities and competitive advantage (Hitt et al., 2012).

Importance of AI in entrepreneurship

Accenture believes that AI will be most successful if enterprises create responsible AI strategies and systems that are aligned to five guiding principles: human-centric by design and embedding accountability, fairness, honesty and transparency. In the past five years, startups and large companies have been building up their "artificial intelligence quotient" (AIQ). Money has been flowing into AI innovators, and industry incumbents have been experimenting with AI to reduce costs and improve customer experiences. Now, investment is about to go full throttle. For big companies, AI presents the opportunity for business transformation. For entrepreneurs, it is the asymmetric tool they can use to take on much larger competitors. New research explains what both must do to turn AI investment into AI-driven growth.Funding for AI startups has been growing at a compound annual growth rate of nearly 60 percent since 2010. And the number of patents filed on AI technologies has increased at a 26 percent compound annual growth rate (Fig 2). But impressive as these statistics are, they simply reflect efforts to get the engine moving.
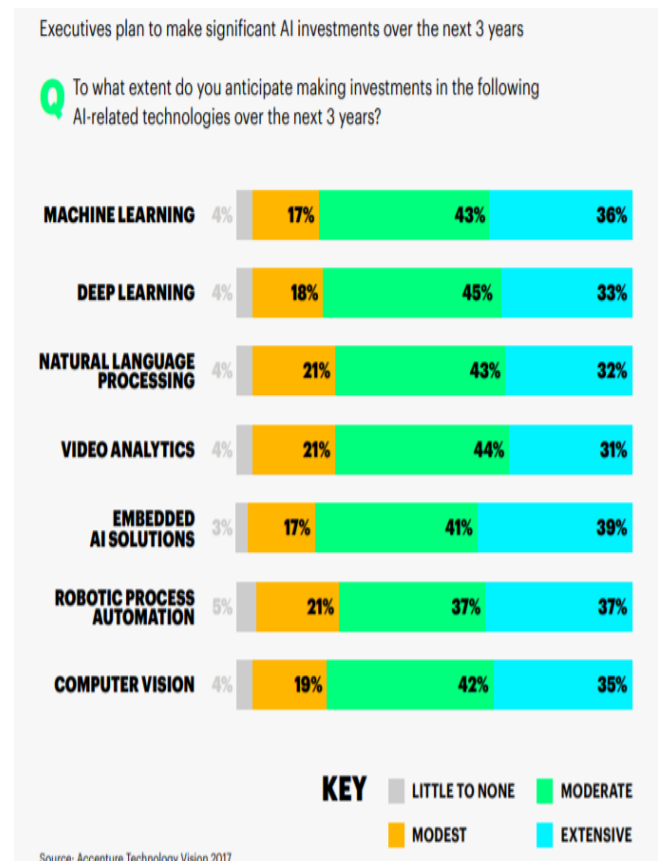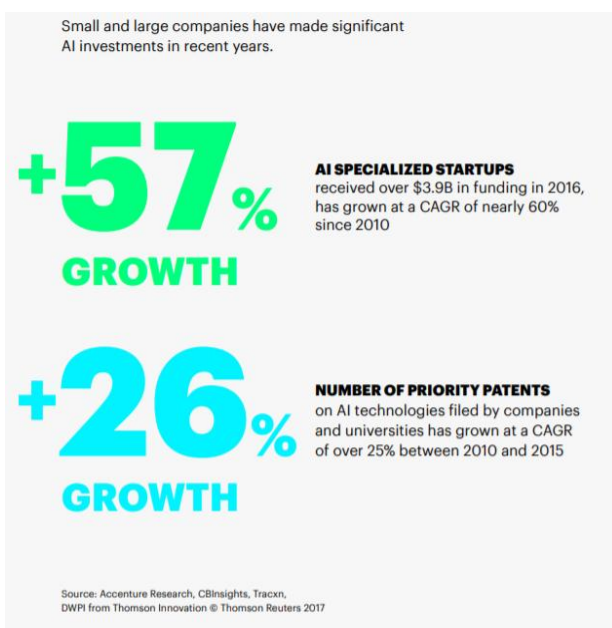

Figure 2: Significant AI Investments in recent years

Companies are no longer content with experimenting, however. In a survey of 5,400 business and IT executives across 31 countries, more than one-third indicated to Accenture that they were set to make extensive investments in each of seven critical AI technologies (Fig 3). They are taking advantage of the exponential growth in valuable data. What these companies are aiming to undertake is a journey that we call "rotating to the new." They are preparing to transform and grow their core business through the adoption of AI. This way they also create the investment capacity they need to develop new AI-driven businesses that will eventually drive their growth. At some point they will have to make the wise pivot, shifting from the core to the new at just the right time and pace.

We believe that AI offers its greatest value by augmenting the work that people do and improving the way they consume and interact with their communities. Success requires a people-first mindset. AI also presents the opportunity for business transformation by

creating intelligent processes in the value chain and intelligent products and services in the market. For these reasons, commitment to developing AIQ and building an intelligent business must come from CEOs. They alone can lead the organizational, cultural and business model changes that AI demands.

Conclusion

Building a successful team isn't just about finding experts, it is about building a team made up of people who fill different but compatible roles. Team members bring with them their diverse experience, knowledge and social connections which benefit from the team, but also people have to have a certain level of overlapping knowledge and perspectives to be able to work together effectively. With the advancements in AI and its tools, the entrepreneurs are able to bring together a group of experts from different fields. However, forming the right team for a new opportunity is vital and depends on understanding the roles required for the opportunity and then finding the right people to fill those roles such as managing the relationship with the client, having a deep knowledge of the product or being able provide an overall technical architecture seeing how all the products can fit and work together. This is where the AI can be a boon for the entrepreneurs. The goal is to find the best expert to complement the current skills of the team while bringing together people from overlapping social networks. As a result, the entrepreneur's decisions become a part of the team formation process which not only increases user satisfaction but also increases the winning potential of the team.

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PRESENT STATUS OF WOMEN ENTREPRENEURSHIP: A BRIEF ANALYSIS

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ABSTRACT

The aim of this study is to analyze the various challenges and opportunities faced by women entrepreneurs at global level and in the various states in India with a special emphasis on the state of Haryana. This paper is based on primary and secondary data along with some personal observations. For the identification of the various challenges and opportunities author has collected responses from various women entrepreneurs based in Haryana through a structured questionnaire. For secondary data various research articles and reports have been reviewed. Findings of the study reveal that maintaining work life balance, availability of finance, family support, lack of information and awareness levels, gender discrimination, lack of self confidence are some of the challenges faced by women entrepreneurs in Haryana. As far as opportunities are concerned, there are various promotional, supportive and training programs run by Central, state and Government agencies for women entrepreneurs. But, majority of the women entrepreneurs have neither availed the benefits nor they are aware of these schemes. Genetically, women are more organized and committed to work; they have specific qualities that guarantee success. Whereas, research on women entrepreneurs is extensive as far as India is concerned, there are comparatively few studies on women entrepreneurship based in Haryana.

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Keywords: Women Entrepreneurship, Challenges, opportunities, Haryana, training programs, promotional schemes.

Introduction

The word "Entrepreneur" is derived from a French word "entreprendre" which means to undertake, to attempt, to adventure or to try (Girard, 1962). E-Webster's New World Dictionary defines the term as the person who aims at earning profits by managing the business by organizing the various resources and undertakes all the risk involved. He is the one who innovate a new idea, explores the opportunities, device various risk management strategies, makes the optimum use of available resources, adds value to the products and ultimately takes the final flight aimed at making maximum profits with minimum inputs (Hayes, 2020). Entrepreneurship is the process of creating a new enterprise with the aim of earning returns, by developing new ideas while undertaking all the risk factors attached (businessjargons.com, 2021). Hence, entrepreneurship may be termed as an economic activity involving creativity and innovation, with a willingness to bear all the uncertainties attached thereto and placing "lust for profits" in the centre of the whole process. As far as economy is concerned, entrepreneurship acts as a catalyst to a developing economy like India by enhancing the productivity, capacity and size of the economy with the help of creativity and competitiveness (Acs et al., 2008; Zanjirchi et al., 2019).

In a developing nation like India, human resource plays the most vital role in uplifting economy to higher levels. Though India is heading towards advanced technology, it is still dominated by labour intensive technology (Sen & Das, 2015). Hence the country must recognise the importance of utilising its human resource to the optimal level. The four factors of production that is: land, labour, capital and entrepreneurship (Fernando, 2021) play an important role in making business profits. Out of these factors entrepreneurship is the most important factor as it has the capacity to manage the other factors and make profits by utilizing them in an optimum manner. In a nutshell, it may be said that if the entrepreneurs in a country are capable and highly skilled the other factors of production can be effectively channelized towards fast economic development. It is a well established fact that economic development is directly proportional to successful entrepreneurship (Unger et al, 2011).

Women Entrepreneurship

A women entrepreneur is defined as a female who starts a business with at least 50% shareholdings in the company and is managing and operating the affairs of the business since one year at least (Buttner & Moore 1997).

Importance and Need for Promoting Women Entrepreneurship

Women entrepreneurship can prove to be a boon for sustained economic development and social progress as it channelizes the female work-force towards capital formation, employment generation, balanced regional development, innovation, better standards of living and so on (Vasan, 2016). Eventually, it would contribute to overall growth of economy and eliminate poverty to a great extent (Okolie et al 2021). Since housekeeping is considered to be a primary role of Indian women, career aspirations demanding long hours make her juggle between work and family. But, entrepreneurship and self employment avenues can facilitate work life balance owing to flexibility in time available to the proprietor (Daymard 2015). In order to achieve its full potential every economy must provide chances for equal participation, be it male or female. It would enable female to make choices that are best for them, their families, as well as their communities. It would witness better economic outcomes at the end (Women, Business and the Law, World Bank, 2020). Women entrepreneurs can prove to be a boon for their families by raising the overall family income and hence the standard of living. It is a source of self employment thus improving the world around them (Kelley, 2017).

Kofi Annan; the Nobel Prize winner for peace rightly highlighted the importance of gender equality by recognizing it more than a goal in itself. In order to meet the challenges of poverty reduction, sustainable development and building good governance, gender equality is a prerequisite.

According to a study conducted by IMF in 2018, promoting female entrepreneurship would raise GDP and reduce unemployment in any economy. Women entrepreneurship has been recognized as an important source of economic growth. In a developing country like India, where unemployment has kept on raising its ugly head since decades, women entrepreneurship is one of the best solutions. It would direct the economy towards self sufficiency and ultimately eliminate poverty to a great extent. As per a survey conducted by Bain and Company in collaboration with Google in 2019, the number of women entrepreneurs has increased to 13.5 to 15.7 million which constitute 20 per cent of all enterprises and provide employment to nearly 22-27 million people. There are many push and pull factors like innovation, creative and technical skills, capabilities, growth opportunities that attract young women to become entrepreneurs (Global Entrepreneurship Research Association, 2016-2017). Effective utilization of resources, income generation and improvement in the standards of living calls for involvement of women in economic activities and entrepreneurial activities (Mahanta 2016). Women entrepreneurship is a way to women empowerment, it makes her financially independent and secure while improving her social status. Besides this, it would raise standard of living of the family and ultimately pave the way to develop the economy (Khan 2017). Though, Indian women have played a significant role in society since ages by managing the assigned traditional role of looking after the family affairs and children, their economic activities and the professional talent remains unexplored.

Status of Women Entrepreneurship in India

Though, the female entrepreneurs have doubled over the past ten years to about 10 million outside the agriculture sector (Daymard, 2015) yet government initiatives to boost self employment and entrepreneurship activities has not encouraged more women to join the entrepreneurship. If position of rural women is studied, where rural jobs have not increased much and women are unable to transit to urban areas for employment (Dixon, 2018), there is need for a boost in entrepreneurial activities and rural entrepreneurship is the only way. **As per economic survey, 2020**, about 60% of Indian women in the productive bracket of 15-59 years is engaged in full time household work. The mentioned records are worrisome for a nation like India with a target to chase a $ 5 trillion-economy goal by 2025, as the data reflects that significant part of the economy's productive workforce is left behind. **As per Women's web survey conducted in 2019** it was noticed that more than 90 percent of companies run by women are microenterprises, and about 91% of business run by women entrepreneurs are self financed. This shows that

though women are willing to enter into new ventures and explore new investment ideas but somewhere, monetary as well as moral support lags behind. Though the number of establishments owned by women entrepreneurs was only 0.664 million i.e. only 10.82% of the total ownership of the enterprises in India these establishments provided employment to 1.098 million persons (7.57%). Hence to balance the industrial ecosystem in the country Government must take steps to encourage more and more women to participate in entrepreneurial activities. Women entrepreneurship is more common in younger age groups in comparison to older age groups (Dhameja et al 2000). It indicates the fact that older women have less risk taking capacity and capability to deal with various problems and challenges attached to a business.

Significance of the present study

The present study would give emphasis on the various challenges and problems faced by women entrepreneurs in the state of Haryana along with the various opportunities available for them. This would assist existing as well as prospecting female entrepreneurs to formulate some strong strategies for growth.

Objectives of the study

1. To study the problems and challenges faced by women entrepreneurs in Haryana
2. To identify the various opportunities available for women entrepreneurs in Haryana.

Research Methodology

Population of study: The universe of study is all women entrepreneurs in Haryana

Sample size: Given the population size of 98,309 women entrepreneurs of Haryana (GOI Annual report 2019-20) and considering 95% confidence level with margin of error 5% and applying the "Sample Size Formula" (***Necessary Sample Size = (Z-score)² X Std Dev*(1-StdDev) / (margin of error)²***) the idle sample size comes out to be 383. But, owing to time constraints the study is based on questionnaires responded by 150 respondents from the districts of Ambala, Kurukshetra, Karnal and Panipat.

Sources of data:
- Primary Data
- Secondary Data

For collecting primary data a structured questionnaire has been drafted consisting of closed ended and open ended questions. Respondents have been selected through random and stratified sampling method.

Secondary data sources mainly cover annual reports of concerned businesses. Besides this, annual reports of National Institute for Entrepreneurship and Small Business Development, MSME annual reports, report of Indian Institute of Entrepreneurship, Indian census reports etc have also been referred. Research papers and Journals relating to similar studies, economic surveys, government sources, and statistical data from official documents and reports etc. have also been taken into account.

Research Hypotheses

H0₁. There are no problems and challenges faced by women entrepreneurs in Haryana.

H0₂. There are no opportunities available for women entrepreneurs in Haryana.

Review of Literature

Tambunan (2009) examines recent developments in the field women entrepreneurship in Asian developing countries.

An exploratory study by Kirkwood (2009) suggests that both women and men appeared similarly motivated by a combination of push and pull factors.

Goyal & Parkash (2011) in their study have explained the concept of women entrepreneur along with the various reasons as to why women become entrepreneurs.

Singh & Raghuvanshi (2012) highlighted future perspectives for female business owners in India.

Kaushik (2013) summarized that women entrepreneur need training, financial support and motivation at all levels be it at family level, society or Government level.

Sharma (2013) outlined some major problems faced by Indian women entrepreneurs, success stories of Indian women entrepreneurs, factors influencing women entrepreneurship and steps taken by the government for upliftment of Indian women entrepreneurs.

Bulsara et al (2014) concluded that Women entrepreneurship must be molded properly with entrepreneurial traits and skills to meet the

changing business trends, growing challenges in global markets and improve competitiveness for sustained growth and development.

Rani & Hashim (2017) pointed out that there is a relationship between various entrepreneurial characteristics such as need for achievement, self confidence, risk-taking, creativity, innovation and entrepreneurial success.

A study by Agarwal & Lenka (2018) reveals that in order to promote women entrepreneurship government of India has launched several policies and development programs.

The main objective of the study by Khokhar (2019) was to discuss the recent trend and progress of women entrepreneurship and to identify its determinants for success.

Aulakh (2019) highlights the various factors that encourage women to become entrepreneurs.

A research by Merluzzi & Burt (2020 outlines the problems faced by women in gender biased society.

Vershinina et al (2020) highlights the various factors that lead to sustainable innovation and firm's growth.

Rosca, et al (2020) summarized that social issues play a major motivating factor among female business women.

Data Analysis and interpretation

As per the primary data collected from one hundred surveyors 52.9% women entrepreneurs were in the age group of 36 to 45 years; 29.4% in 26 to 35 years and 8.8% pertained to 46 to 55 years slab. Only a negligible population belonged to 25 years and below and 55 years above. This shows that most of the women who opt for entrepreneurship are young working population. 85.3% are married and 79.4% women have children hence responsibilities to nurture a child prompts them to take up self employment. As compared to semi-urban areas urban areas witness more percentage (85.3%) of women taking up entrepreneurship. 91.2% women are post graduate that promotes creative thinking, communication skills, analytical skills, technological skills etc. 76.5% have not inherited the production unit that highlights the most prevalent problem in Indian

homes i.e. gender discrimination and preference for the male child. Among the women who took up entrepreneurship as their profession latter in their careers, 61.8% were formerly engaged in service sector and 32.4% were housewives, most of the working women agree that the previous working experience proved helpful for their present venture. Majority of the women entrepreneurs are engaged in micro and small scale industries with local area of operations, only a negligible percentage of women are engaged in large scale or even in medium scale industries spreading their business to international levels. This proves that women entrepreneurs are reluctant to take up risky ventures involving higher investments.

Problems and Challenges faced by Women Entrepreneurs in Haryana

An analysis of 100 respondents has been prepared on the basis of questionnaire including open ended, closed ended questions with likert's five point scale under the study. Based on the analysis and the interpretation of the responses some challenges and problems faced by women entrepreneurs in Haryana have been summarized.

1. The initial problems and obstacles faced at the time of starting up the business

Table 5: Main obstacles and challenges faced at the time of starting the business. (As per responses of women entrepreneurs in Haryana)

Value	Count
No obstacles	12
A question of self confidence (believing in your abilities)	27
Start up finance	27
Lack of information / advice on how to start an enterprise	18
Finding the right contacts for your business venture	36
Awareness/Access to business support	27
Management skills	12
Entrepreneurial skills	18
Combining family and work life	45
Lack of intercultural and language skills for foreign markets	3
o Being a woman/Gender discrimination	9
o Other (please specify):	6
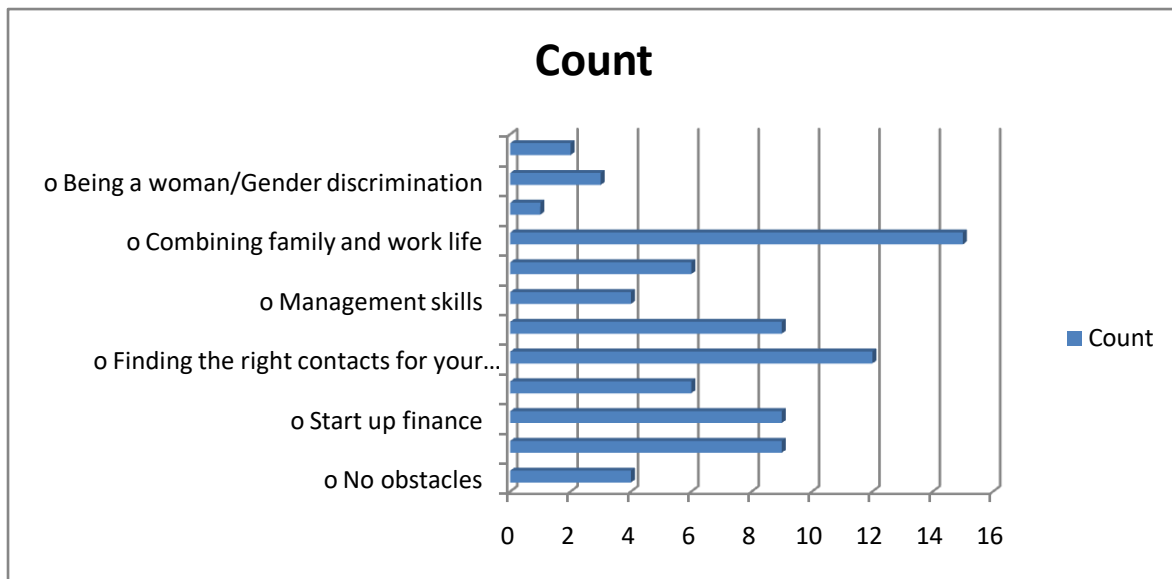
The above table on responses of women entrepreneurs depicts that the foremost obstacle while starting up a new venture is combining the family and work life. Since women in Haryana lacks exposure they are mostly introvert hence, the challenge of finding right contacts for the business venture arise. This also gives rise to lack of self confidence and as a result most of the women entrepreneurs are engaged in tiny and small scale business.

2. Education System and existing organizational structure in Haryana

Table 6. : Responses with respect to education system and organizational structure of Haryana

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Our education system does not encourage entrepreneurship among women	15	21	27	24	15
The existing organizational structures in our country do not support women entrepreneurship	9	30	27	30	9

Table 6 exhibits that as far as education system and organizational structure of Haryana is concerned the views are a mixture of positive and negative experiences. Most of the respondents from developed districts like Gurugram, Panchkula, and Ambala believe that education system and organizational structure support and encourage entrepreneurship among women that totally conflicts the views of women belonging to backward areas like Bhiwani, Jind and Hissar. It may be asserted here that development of an area plays an important role creating a mindset of people and supporting gender equality. For the full entrepreneurial potential to be tapped, the education system and organizational structure especially in backward areas of Haryana needs upliftment.

3. Women Entrepreneurs and Family Problems

Table 7 : Responses of Women Entrepreneurs about family problems

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
As soon as a women becomes self employed family problems arise	3	15	24	48	12
Family members feel that working women avoids family responsibilities	3	21	21	45	12

The responses of women entrepreneurs about family problems reveal that they lack family support. The success of a women entrepreneur largely depends upon the degree of support she gets from her family (Shruti Lathwal, 2011). No matter how far a woman grows in her career, she is not allowed to shirk the core household activities. This is the reason she cannot devote her full potential towards excellence in the field of entrepreneurship.

4. Perception of Men and gender biased society.

Based on the experiences and opinions formed during the course of professional life responses were collected from women entrepreneurs' depicting the perception of men and gender biased society. It was established from the results of the study, that majority of respondents believe that their status has improved in the eyes of the society after creating their own enterprise but success of female entrepreneurship requires a radical change of mentality. Though the subordinates follow the instructions of a women leader, sometimes they find it hard to be managed and controlled by a woman. The perception of men towards women entrepreneurs is sometimes negative.

Opportunities available for women entrepreneurs in Haryana

1. Better educational opportunities and improvement in female literacy rate.

As per Haryana population census 2021 female literacy rate of Haryana is witnessing an upward trend over the years. There are a total of 35 women colleges in Haryana. According to the All-India Survey on Higher Education (AISHE)-2018-19, Haryana has more female than men going for higher education. Educated women are better decision makers with good communication skills. They are innovative and good strategists. Professional and educated women imbibe all the required skills and ability to pursue entrepreneurship as a career.

2. Government support and training programs for women entrepreneurs

The past three decades have seen a tremendous government support for empowering women. Some of the women empowerment initiatives taken up by Indian Government includes: Beti bachao, beti padhao; Mahila E-Haat; working women hostels; Swadhar Greh; STEP; Nari shakti puruskars (Robert; 2019). Besides this there are various schemes for providing financial assistance that includes Annapurna scheme, Stree Shakti Package For Women Entrepreneurs, Cent Kalyani Scheme, Mudra Yojana Scheme, Mahila Udyam Nidhi Scheme, Dena Shakti Scheme, Orient Mahila Vikas Yojana Scheme, Bhartiya Mahila Bank Business Loan, (Aranha 2019) still there is a long way to go for turning the dreams into reality. This has resulted in significant development of women entrepreneurs in India. But as per the responses collected from the women entrepreneurs most of them are either unaware of these schemes and programs or have never attended any.

3. Changes in the mindset of the society as a whole.

Factors like improvement in sex ratio, female literacy ratio, percentage of females going for higher education, increase in the number of working women, nuclear family norms, getting the assistance of house helps, financial independence etc. indicate that our society undergoing a major change in their mindsets. Acceptance for self-reliant women is getting increased year by year. This is a positive sign as far as women entrepreneurship is concerned.

4. Biological determinants

History proves that women are more committed and organized towards their responsibilities and have specific qualities that guarantee success in business. They can manage multiple tasks and can manage work life balance.

Conclusion and Recommendations

To investigate the challenges and opportunities for women entrepreneurs in Haryana an analysis of 100 respondents engaged in women entrepreneurship was made. The results show that family responsibilities, lack of support from peer groups, gender discrimination, orthodox society, difficulty in obtaining finance, present education system are some of the problems and challenges faced by women entrepreneurs. As far as opportunities are concerned our society is undergoing a radical change in their mindset. There are various

promotional, supportive and training programs run by central and state government in support of women entrepreneurship. Though, most of the stakeholders are unaware of the various opportunities existent in the state of Haryana. It is recommended that women aiming to attain success in the field of entrepreneurship must go through the various challenges and opportunities prevalent in the business environment of Haryana. They must also analyse their strengths and weaknesses by performing a SWOT analysis on individual basis.

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CONSUMER BEHAVIOR TOWARDS INDIAN AND FOREIGN BRANDS FOR FMCG: A STUDY IN HARYANA

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ABSTRACT

Consumers' buying behavior is affected by many factors. Consumer behavior includes studies, how people make their buying decisions, where they prefer to buy, what, why they choose to buy and when they buy it. The objective of this study is about the consumer preference on the brands in the market. Study shows the consumers' opinion for brand as a symbol of status and their brand loyalty. A quantitative approach was used and a self-administered questionnaire was used to collect data from three districts of Haryana. It found that 68.6% of the respondents are agreeing that brand as a symbol of status. Study also found that 43.8% respondents selected are brand loyal.

Introduction

Consumer behavior includes studies, how people make their buying decisions , where they prefer to buy , what, why they choose to buy and when they buy it (Kotler, 1994). It is a mixture of elements such as psychology, anthropology, sociology, and economic.   It help to understand the buyer's decision-making process, both in groups as well as individually. It focuses on personality and perception of individual consumers such as psychographics, demographics, and behavioral elements in an effort to understand people's need and desire. According to Blackwell et al (2006) consumer buying behavior is a difficult and dynamic issue which cannot be defined simply and frequently. So, the concept of consumer buying behavior has been defined in different ways by different researchers. Kotler and Armstrong (2006) suggest that there are determinants such as personal, cultural, social, and psychological factors that give a shape to individual's buying behavior. Consumer behavior involves as activities of mental, emotional and physical that assists persons in choosing, buying, selecting and withdrawal of goods and services to satisfy their needs (saleh ardestani, 2003)

Demographic factors are those factors influencing consumer behavior which comprising of age, gender, income, marital status, occupation and education. Demographic factors are essential as consumer belong to similar demographics have their same purchasing patterns (Katiyar & Katiyar, 2014). In India consumers' buying behavior is affected by demographic factors such as age and gender. With women joining the workforce, buying patterns have changed. Women prefer a wider range of brands so that they can compare different brands before making a choice. The young generation are more willing to experiment with different brands and children are now becoming key decision-makers in family purchases (Mukherjee et al. 2012).The purchasing behavior is a core point for customers to know the vision and assess the particular brand. As a result, customers are influenced during the procurement process by internal or external reasons (Gogoi, 2013).So, here is an important term to understand brand for knowing consumer behavior towards brands. American Marketing Association defines Brand as a name, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers. The legal term for brand is trademark. A brand may identify one item, a family of items, or all items of that seller. The booming Indian economy and the vast Indian consumer market is encouraging a range of researchers to study the various socio-cultural dimensions influencing the Indian consumers' behavior (Kopalle et al., 2010).

Review of literature

Muramalla (2013) in this article the most important driving force behind this increased interest in brands is the globalization .In The fast pace of technological development world and the increased speed with which imitations turn up on the market have dramatically shortened product lifecycles. The major

objective of the study is to measure the loyalty of the respondents quantitatively.

Dekimpe et al. (2003) study found that firm's ability to retain customer and maintained brand loyalty is crucial for its smooth run. Loyal customers are typically less price sensitive than others, and a loyal customer base provides firms with a usable time to respond in competitive and complex conditions. In fact, cost of attracting a new customer has been found to be higher by six times than the cost of retaining a current customer.

Patterson (2007) indicates that age and occupation are associated with service loyalty (repurchase intention and loyalty behavior) while gender is not. What is particularly shown that, from the data is more mature age groups (35-54 and over 55 years) display significantly more loyal behavior than their younger counterparts (18-24, and 25-34 years). In addition to that, it was found that older clients hold different motives like social benefits, special treatment and reliability for staying loyal compared to the younger clients.

Gupta (2011) results showed that tendency towards foreign brands had a significant impact on materialistic values among the Indian consumers. Lower income groups have showed significantly greater money-oriented values than the higher income groups. The younger Indian consumers had significantly higher materialistic values than the older age groups. Considerable positive relationships were shown between materialistic values and the buyer behavior traits studied.

Nandamuri and Gowthami (2012) findings indicate that out of the five demographic factors analyze occupation and income emerged as the most strongest determinants, followed by age and education, whereas gender have less impact. Since this research has established empirical evidences in determining the attitude towards brands, consumer goods marketers may formulate their strategies consequently.

Vilčeková, and Sabo (2013) found in their research that gender does not affect consumers' opinions. Men and women do not differ in their decisions regarding domestic and foreign brands. Education level and age groups has significant differences in brand buying behavior. Consumers more than 50 years of age give more care where the products were made and they mostly they prefer to buy domestic products, younger consumers prefer foreign brands. Consumers differ in their behavior and preferences and it is vital for marketers to study these differences based on demography.

Rai (2019) research, three important demographic variables were chosen to investigate their effect on the purchase intention. Age, gender and level of education are taken as independent variables to examine the effect on purchase intention for buying television in Nepalese market. Independent sample t-test showed that there is no significant difference between male and female in purchase intention in buying TV (television). The ANOVA Test showed that there is no significant difference purchase intention in buying television across the age groups. But, ANOVA Test showed that there is significant difference on purchase intention for buying television set in Nepalese market.

Objectives

1. To study the brand loyalty among consumer.
2. To Study the preference of consumer towards Indian and Foreign brands.
3. To Know that brand is a symbol of status or not.
4. To study the affect of most influencer on consumer purchase decision.

Research Methodology

Research Design

Research design is a detailed blue print used to guide the research study towards its objectives. In this study the researcher used descriptive design. It can be either quantitative or qualitative. It can involve collections of quantitative information that can be tabulated along a continuum in numerical form. This study is basically in comparative nature which is between Indian and foreign brands.

Sample technique

The data were selected on the basis of non-random sampling and convenience sampling, which mean that the consumers who were willing to answer the questionnaire were selected.

Data collection

The study is based on primary data as well as secondary data. Primary data was collected through the structured questionnaire from three districts of Haryana. To achieve the said objectives, only (fourteen) questions items of the questionnaire was used .The sample size selected was 121. Secondary data was collected from books, journals, periodicals, articles, internet, etc.

Data Analysis and Interpretation:

Demo-graphics of individuals were analyzed separately to find the exact impact on their purchase towards Indian and foreign brands.

Table no: 1

| Demographic Variable	Number of respondents	Percentage
Age (Years)		
18-25 years	84	69.4%
25-35 years	23	19%
35 &above	14	11.6%
Gender		
Male	42	34.7%
Female	79	65.3%
Educational Qualification		
Up to 10+2	30	24.8%
Up to graduation	39	32.2%
PG- higher education	47	38.8%
Professional	05	4.2%
Marital Status		
Unmarried	85	78.2%
Married	36	29.8%
Working Status		
Working	37	30.6%
Non –Working	84	69.4%

From the above table-1, it is inferred that the majority of gender of the respondents furnishes, 79% respondents are female. Age of the respondents furnishes that 69.4% respondents are between 18-25 years. Educational qualification of the respondents shows that majority (47%) are postgraduate degree holders. Marital status of the respondents has checked and it shows 85% are unmarried respondents. The working status of the respondents shows that 37% are working.

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There are some analyses of questions based on questionnaire:

1. Are you brand loyal customer?

Brand loyalty is a systematic tendency to buy a certain brand or group of brands, which means that brand choice should not follow a zero-order process. A process is zero-order if each brand is chosen by the consumer with a certain possibility which is independent of the consumer's past purchase decisions. Nothing that the consumer did or is exposed to alters the probability to purchase a specific brand (Massy, Montgomery, and Morrison (1970
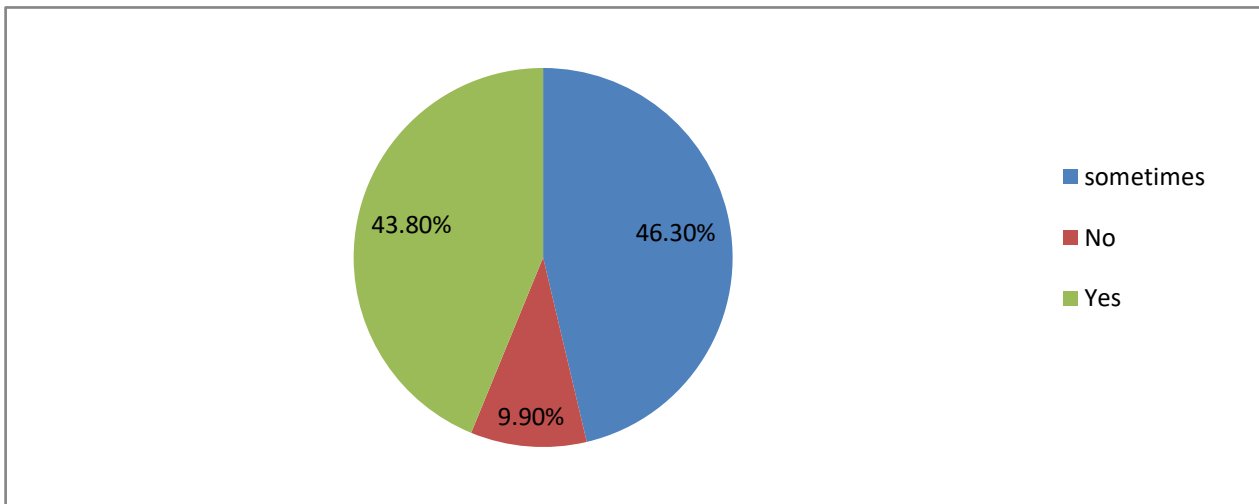
It is understood that 46.3% of the respondents are sometimes brand loyal and only 9.9% of the respondents selected are not brand loyal. 43.8% respondents selected are brand loyal.

Chi square test:

H0: There is no significant association between age and brand loyality

H1: There is significant association between age and brand loyality

Formula: Expected frequency=row total*column /Grand total

If the P-value<.05 then we Reject H0

If the p-value>.05 then we Accept H0

P-value 0.453724 >0.05 so we accept null hypothesis (H0). It means there is no significant association between age and brand loyality.

2. Preference of consumer towards Indian and foreign brands:

Lee, Kumar, & Kim (2010) added that it is also true that the customers prefer the foreign products over the domestic ones due to their supreme quality and esteemed image. Customers also perceived a difference in price of the foreign-owned and local-owned products that affect their decision making power of purchasing a product.
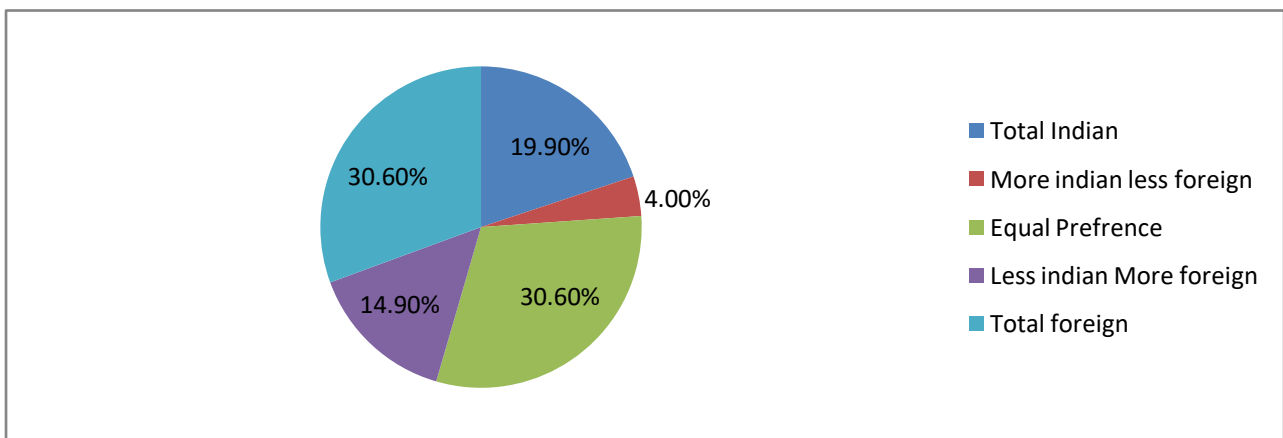
30.6% of the selected respondents prefer both foreign and Indian brands whereas 30.6 % prefer only foreign and a very few of them 4% prefer Indian brands over foreign brands.19.9% of the selected respondents prefer total Indian brands and 14.9% prefer more foreign over Indian brands.

3. Brand as a status symbol:

Nelson and Deshpande (2013) explored in their study global and local brand products have almost the same quality. It is just notified that consumers giving their ongoing preference towards products with global brands due to status symbol that can improve their social status and standard of living.
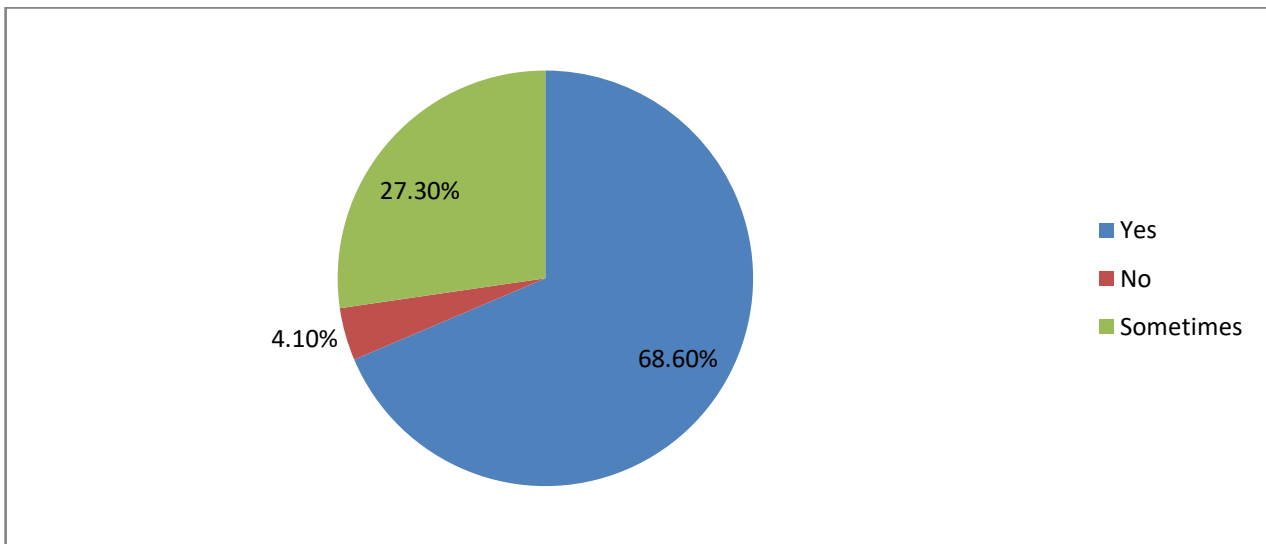
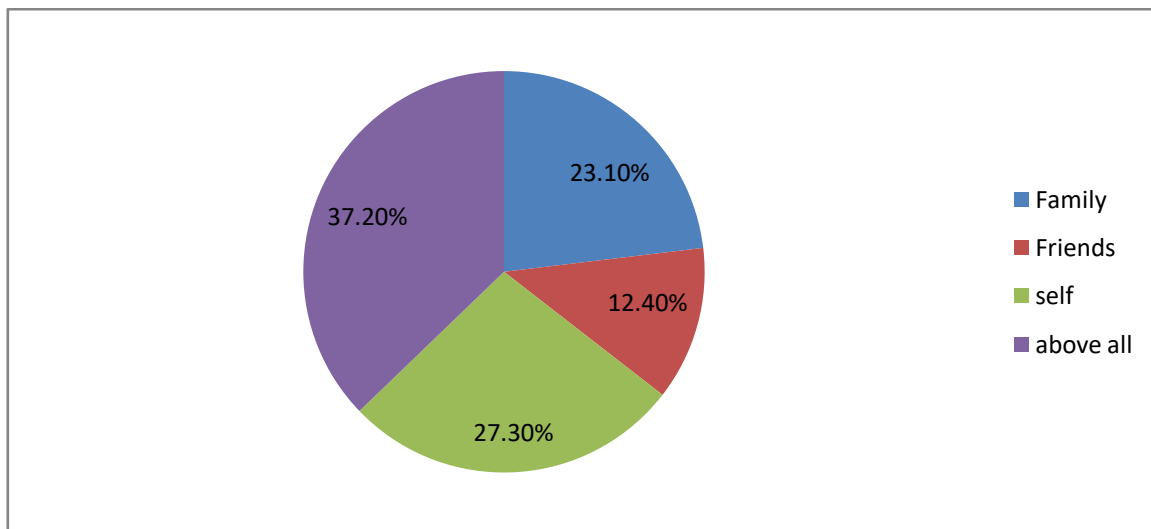It is understood that 68.6% of the respondents are agree that brand as a symbol of status and only 4.10% of the respondents are not agree that brand as a symbol of status and 27.3% respondents selected are agree sometimes that brand as a symbol of status .

4. Highly Impact of people in consumer decision making

Buyer behavior is strongly influenced by the member of a family, self, friends. Therefore, marketers are trying to find the roles and influence of this influencer (Gjjar, 2013).

Most influence the respondents in buying product are family, friends, and self and 27.3 % of them are influenced by only self, 23.1% by family and 12.4 by their friends.

Conclusion

Study found that 43.8% respondents selected are brand loyal, 30.6% of the selected respondents prefer both foreign and Indian brands whereas 30.6 % prefer only foreign and a very few of them 4% prefer Indian brands over foreign brands.19.9% of the selected respondents prefer total Indian brands and 14.9% prefer more foreign over Indian brands. It is also found that 68.6% of the respondents are agreeing that brand as a symbol of status.

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SUSTAINABLE AGRICULTURE USING MACHINE LEARNING:
A STATISTICAL REVIEW

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ABSTRACT

In agriculture, soil fertility, which refers to the built-in capacity of the soil to supply necessary nutrients to plants in satisfactory and adequate proportions for optimal growth, is the key element for determining soil productivity and is one of the most significant aspects related to crop control. Machine learning methods have been employed to classify soil based on the fertility indices and suggesting accurate measures required to improve and preserve soil fertility. Numerous scholarly papers including the utilization of AI for sustainable agriculture have been progressively getting distributed. Thus, to decide the utilization of machine learning to enhance the examination in various agricultural disciplines, a deliberate review is conducted in this investigation. To do the study, eight unique databases are chosen. Incorporation and rejection models are utilized to restrict the exploration. The qualified articles are arranged to rely upon distribution year, writers, sort of articles, research objective, information sources and yields, issue and examination holes, and discoveries and results. At that point, the selected articles are investigated to show the effect of machine learning techniques. The discoveries of this examination show the most utilized machine learning techniques and the most well-known agricultural domain that are preferred by researchers. It additionally shows that there is growth in the utilization of machine learning in soil sciences throughout the long term. These outcomes will help in future studies to focus on the areas which are ignored and to decide different manners by which machine learning techniques could be utilized to accomplish alluring outcomes.

Keywords: Machine Learning; Soil Sciences; Sustainable Agriculture; Crop Prediction; Yield Prediction; NPK Fertilizers

1. Introduction

India is an agrarian country and its primary resource is soil. Soil plays an imperative position in the financial system of the country, as the agriculture sector plays a lead in a large fraction of the Indian economy. Agriculture is the science with the skill of cultivating vegetation as well as livestock and soil is the most important component in the agriculture field for efficient crop yielding. For every human being, the soil is one of the most priceless resources. Soil is the amalgamation of rock debris, minerals, bacteria, and organic materials. India is the land of a variety of soils ranging from fertile alluvial soil to black and red soils. All kinds of soil through their unique physical, chemical, and biological properties benefit different types of crops.

To a large extent, agriculture is dependent relatively on soil quality, but the recent boost in agricultural production is somewhere resulting in the loss of soil quality [1]. In times gone by, where soils were rich in quality and ability to produce adequate crop yields, as well as back then water was enough, either as rainfall or irrigation, civilizations thrived. The flourished civilization and enhanced crop yields have put such an impact that in the past century, world food production increased vividly.

Conversely, to meet the need for food production ill-advised usage of fertilizers and overutilization of soil innate resources has resulted in the shortage of secondary and primary nutrients. The paramount for India's food and nutritional security is improving soil health for improved as well as persistent agricultural production. In continuing to receive large-scale crop production with high quality it is crucial to be well-known about the means that will prevent the eradication of soil supplements and, also, reinstate the essential supplements into the soil [2].

In agriculture, soil fertility, which refers to the built-in capacity of the soil to supply necessary nutrients to plants in satisfactory and adequate proportions for optimal growth, is the key element for determining soil productivity [3] and is one of the most significant aspects related to crop control. The main soil components that control its fertility can be divided into two categories namely; macronutrients and micronutrients [4]. With an adaptation of high-yielding cultivars and intensive cropping practices, the increased demand for soil nutrients is resulting in

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deficiencies of nutrients in crop plants in the whole world [5]. The shortage in soil nutrients is a problem that is frightening worldwide food productions [6]. Furthermore, the use of soils with natural low reserves of nutrients along with natural and anthropogenic factors that limit adequate nutrient availability is adding to the cause of nutrients deficiencies in soil [7]. While considering the future food needs, the current soil nutrient balance is shocking. In the absence of their replenishment, limited native reserves of soil nutrients are shrinking and are getting drained out at a faster rate.

Fertilizers play a crucial role in the production and productivity of any crop. To enhance the crop production on marginal soils with low levels of an essential nutrient, there is an increase in the usage of high analysis fertilizers, and the usage of animal manures, crop residues, and compost have decreased. The use of fertilizer in conjunction with organic manures can bring noticeable change in total nutrient supply to crops [8]. Whereas constant and excessive use of inorganic fertilizers badly influences the production potential and soil health. Due to the uneven and insufficient usage of fertilizers along with the low efficiency of other inputs, the efficiency of chemical fertilizers' overproduction has significantly decreased in recent years. Following, most of the productive soils are on verge of becoming unproductive. The decline in soil health, if not treated appropriately will pose a serious threat to our farming systems in the times to come.

There is a need to manage the Indian soil fertility, in a way that offers sustainable high-level production to produce adequate food for the growing population [9]. The careful identification of the limits of current nutritional deficiencies and monitoring of changes in soil fertility to predict their shortage is required for good quality soil fertility management [10]. To maintain food production at a reasonable level to ensure high productivity, the fertility indices of the soil must be maintained at the initial level consistently by performing sound and best practices in terms of nutrients, water, plants, and energy for soil management [11]. It is necessary to cultivate the soil properly to preserve fertility, achieve a better yield, and protect the environment. To know the accurate soil cultivation process to be followed, soil tests play an efficient role in predicting it properly.

A soil test can be illustrated as a study of a soil sample to discover an additional substance, its composition, and various attributes. As a common rule, soil tests are performed to determine the riches and point out the gaps to be corrected [12]. Therefore, the key factors for achieving high and sustainable production are managing soil fertility at optimal levels and performing soil tests to keep a track of it.

The classification of soil to review the fertility status of an area or region is significant in the context of sustainable agricultural production [13]. In the above-mentioned context, machine learning methods can be used to study and analyze soil nutrients. The results of soil tests can be studied efficiently using a machine learning algorithm to classify soil based on the fertility indices and suggesting accurate measures required to improve and preserve the soil fertility. The analysis of soil nutrients is very useful for the farmer in determining the type of crop to be grown following a particular type of cropping pattern and adding the required amount of fertilizer in a particular soil condition to increase the crop yield and get benefitted [14].

The introduction of machine learning in the agricultural field has made huge remunerations in the research field using the analysis techniques. The machine learning analysis techniques play an important role in any field of science in establishing the fundamental variations by finding the eminent relationship present among the objects and concepts [15]. It furthermore provides necessary information in the course of which research can be processed by following an orderly approach.

Soil classification based on machine learning helps in the careful identification of the confines of existing nutritional levels and their deficiencies. Therefore, extensive research has been conducted in the context of examining the change in scale of soil fertility which will eventually facilitate in predicting the reason behind and the amount of shortage of soil nutrients that occurred or is occurring. Thus, the fundamental point of this paper is to examine the examinations wherein machine learning approaches are utilized in the soil and

predicting the crop yield accordingly along with it also providing fertilizer recommendation if needed depending upon the quality of the soil, through a systematic analysis. Table 1 addresses the rareness of this article, using relative examination with other published survey papers in the agricultural domain. This paper gives top to bottom examination and after-effects of the utilization of machine learning in soil investigation. This research paper gives a definite investigation, covering the entire significant soil analysis domain to the most awesome aspect of our insight.

Table 1: Comparative analysis with other survey articles in the agricultural domain

Article	Year	Technologies measured	Agricultural and Soil Analysis Domains Considered	Existing work Categorization	Reviewed articles detailed analysis
		• Machine Learning	• Predicting Soil Major Nutrients • Predicting Soil Minor Nutrients • Estimating Soil Fertility Indices • Estimating Soil's Physical and Biological parameters • Crop Prediction • Crop Yield Prediction • Fertilization	• Year of publication • Review/ Research article • Objectives of the study • Dataset • Problem Description and Research Gap • Results and findings	• Published articles analysis over the past years • Academic papers distribution: ➤ Type ➤ Database providers ➤ Applied machine learning methods • Distribution of machine learning in context to agricultural domain
[19]	2018	√	×	×	×
[18]	2018	√	×	×	×
[20]	2019	×	×	×	×
[17]	2020	√	×	×	×
This Article		√	√	√	√

1.1 Comparison with related survey articles

Chandan and Thakur [19] studied the traditional methods of soil classification standard penetration test (SPT), cone penetration test (CPT), pressuremeter test (PMT), and vane shear test (VST). This paper also discussed various machine learning based soil classification approaches such as SVM, k-NN, and ANN. Liakos et al. [18] presented a comprehensive review of research dedicated to applications of machine learning in agricultural production systems. This article demonstrated how agriculture will be benefited from machine learning technologies. However, it does exclude a summarization and an inside and out examination of reviewed articles. Voutos et al. [20] introduced a few investigations, concentrating on intelligent agricultural information handling techniques, for improving or potentially acquiring in-depth knowledge into a large number of undertakings inside the agricultural area. The paper examined the smart farming idea. The machine learning techniques were not thought of while leading the thorough review. Sharma et al. [17] presented a systematic literature review based on 93 papers on machine learning applications in agricultural supply chains. However, the current work was not summed up in any of the articles. Additionally, they cover a couple of agricultural and soil examination space and don't give an inside and out exploration of reviewed articles.

1.2 Machine Learning in Soil Sciences: benefits

In improving the soil management practices according to the land potential, accurate prediction of soil properties is essential [21]. The prediction of soil properties leads to a better understanding of the soil ecosystem dynamics and effective soil management practices lead to sustainable agricultural and environmental management [9]. Using machine

learning the classification of soil according to the quality will be easy and efficient. The machine learning applications in soil properties prediction include strategies of developing a decision support system to predict soil quality [22], irrigation requirement in arid and semi-arid regions [23], and improving the smart farming practices [24].

Machine learning and signal processing techniques are used in agriculture techniques to assist decision-support in cropping patterns. Cropping pattern prediction plays a significant role as it supports better crop management and plans the irrigation activities in agriculture [15]. Once the type of crop and cropping pattern in a specific site is predicted, other farm inputs such as nutrients, fertilizers, and equipment requirements could be planned according to the soil and crop needs.

It is necessary to cultivate the soil properly to preserve fertility, achieve the better yield, and protect the environment, and machine learning could make the complex job flexible and automated using a little bit of programming and it will take less time to predict the quality of soil than the humans as the machines work faster and more efficient than the humans. Machine learning algorithms in further implementations would make the hard jobs easier and automated [25].

1.4 Structure of the article

The paper is coordinated (Fig. 1) as follows. Section 2 proposes the system utilized to do this examination. It talks about the data set picked and qualification standards for the determination of papers. In Section 3, we present the investigation and amalgamation of the qualified papers. A conversation of the examination done is talked about in Section 4. At last, we make an inference.
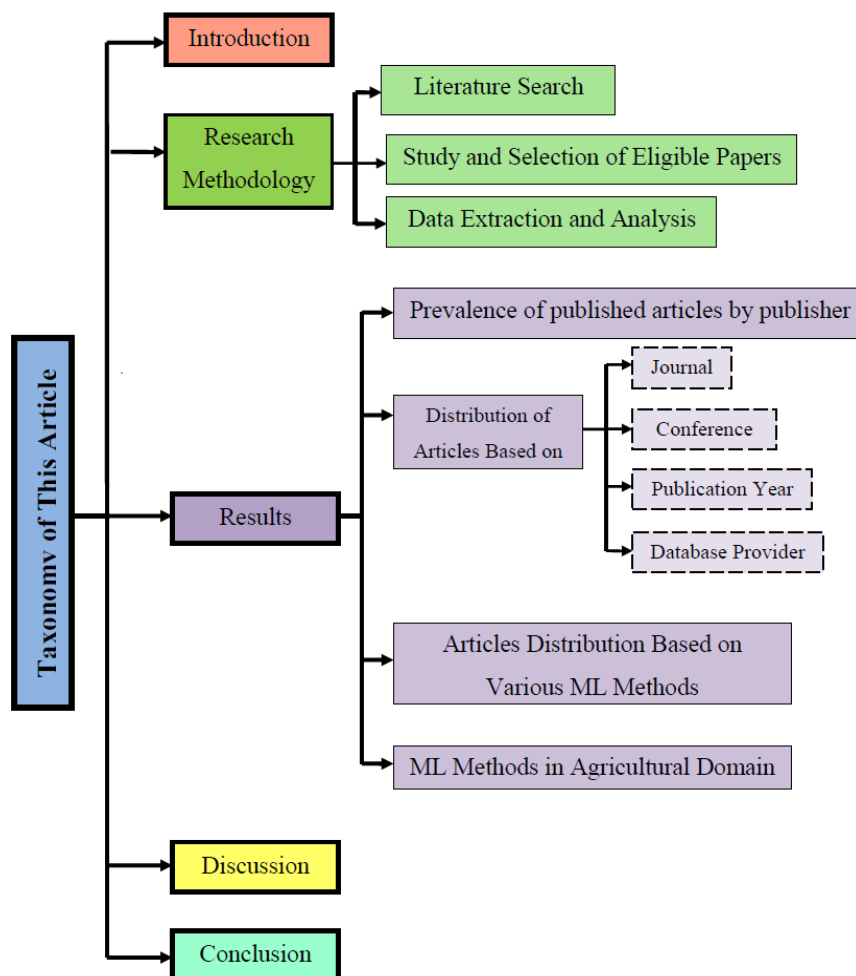

Figure 1: Article nomenclature

Table 2: Abbreviations for machine learning models and algorithms

Abbr.	Full forms
ANN	Artificial Neural Network
CART	Classification and regression trees
CNN	Convolution neural network
CU	Cubist
ELM	Extreme learning machine
GA	Genetic algorithm
k-NN	k-nearest neighbors
LDA	Linear discriminant analysis
LR	Logistic regression
MLR	Multiple Linear Regression
NB	Naive Bayes
PCA	Principal component analysis
PLSR	Partial least squares regressions
RF	Random forest
SPLSR	Sparse partial least squares regression
SVM	Support vector machine
UG-RNN	Deep undirected graph recursive neural network
Vis-NIR	Visible near-infrared
XGBoost	Extreme gradient boosting

The scientific categorization of this article is presented in Fig. 1. Table 2 introduced the abbreviations and their corresponding full forms utilized in this article.

2. Review Methodology

A deliberate and systematic review is a methodology, in which the creator finds important examinations, chooses and researches those investigations, dissects the information, and sums up the discoveries to arrive at exact resolutions [16]. . The review of the past studies relevant to evaluating and predicting the soil nutrients, physical and chemical indicators by investigating the adaptability of a variety of machine learning techniques was deemed necessary to have an insight into the methodological procedures being adopted and the research gap left therein Thus, systematic reviews, just as fieldwork are considered as the best source of information or data [21]. The following section includes literature search, study determination, and qualified papers, and extraction and investigation of information.

2.1 Planning the review

The review of the available literature provides great help in analyzing issues related to the

study. To conduct the systematic review, eight databases were selected in this step, and from these databases relevant and eligible papers were shortlisted.

The selected databases were: IEEE, ERIC, Science Direct, Scopus, Springer Link, Web of Science, Wiley, and Iowa State University Digital Repository. Searched articles were from the year 2017 up to 2020. To find relatable articles phrases and keywords such as "soil fertility," "crop yield prediction using machine learning," "prediction of soil nutrients using machine learning," "fertilizer recommendation," etc. were used. Based on significance and publication date, the articles were classified. Among the selected papers, the recurrence and number of articles distributed by different publishers are shown in Table 3.

Table 3: Published articles distribution based on publisher

Publisher	Article	Percentage
Elsevier	28	49.22
Allerton Press	1	1.75
Edusoft publishing	1	1.75
Nature	2	3.50
Springer	7	12.28
MDPI	2	3.50
WASWAC	1	1.75
Copernicus Publications	1	1.75
Wiley	1	1.75
Lippincott Williams & Wilkins	1	1.75
Public library of science	1	1.75
Agronomy Publications	1	1.75
G -Science Implementation & Publication	1	1.75
IAEME	1	1.75
Inderscience Publisher	1	1.75
Informa PLC	2	3.50
	52	**91.25**

Appropriately, with 49.22% Elsevier had the most noteworthy number of distributions. Springer stood second with 12.28% of distributions. Nature, MDPI, and Informa PLC were positioned third with 3.50% of distributions. In the examination, the other publishers positioned fourth with 1.75% of distributions each.

2.2 Conducting the review

Incorporation and prohibition standards were utilized to choose proper and pertinent articles.

The examination just focuses on soil investigation using machine learning. It prohibits paper utilizing deep learning and articles were screened for depending on their title and dynamic. Just journal and conference papers were thought of. Books, book sections, postulation, reports, review articles, and letters to editors were consequently excluded from our examination.

Characteristics such as language and time were considered for papers to get qualified. Subsequently, we chose papers written distinctly in the English language and the period was from the year 2017 up to 2020. Our examination was centered on a wide range of agricultural areas. However, articles identified with plants and crop diseases were excluded. As per our consideration standards, articles utilizing strategies and procedures that improved the accuracy of soil examination were incorporated.

The selected articles were studied thoroughly in order to extract and investigate the information regarding this study's objective. In this way, to meet our goals, we broke down the articles as per recurrence of articles over the previous years, sort of scholarly papers, as indicated by database providers, and as per machine learning model utilized in those papers.

3. Review Findings

The findings and after-effects of the examination and synthesis of the included articles are discussed in this section. This outcome, which is the result of a systematic study and analysis of the papers, shows the importance of applying machine learning in soil arrangement. The effect of machine learning and its utilization in various agricultural domains is examined in this section.

3.1 The distribution of papers by publication year

Our examination incorporates 57 scholarly papers, meeting our consideration rules. These 57 papers incorporate research papers as well as conference papers. The recurrence of distributed articles is shown in Fig. 2.
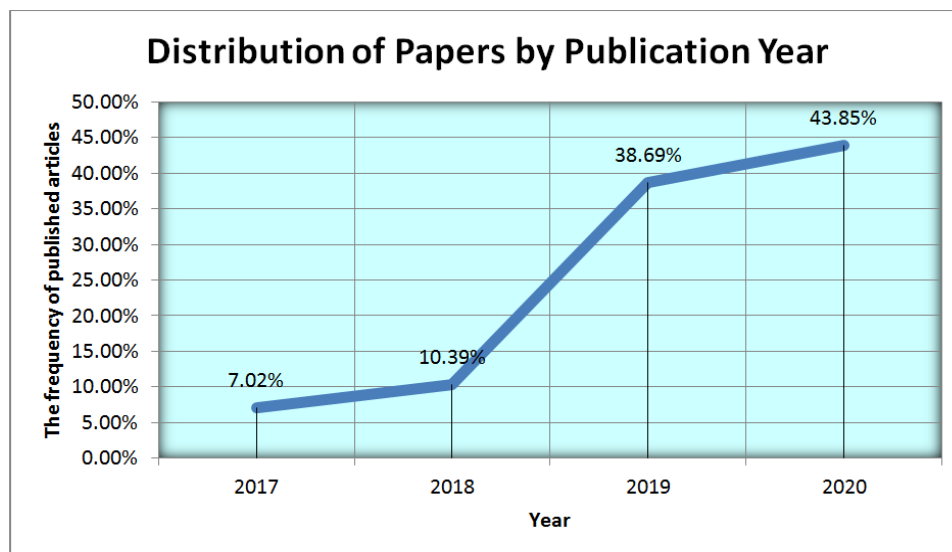
Figure 2: Year-wise publications

The articles included are taken from the year 2017 up to 2020. Since 2017, the graph (Fig. 2) shows a huge ascent in distributed articles. This shows that the exploration for soil classification and crop prediction utilizing machine learning has been on the growing side. As a matter of fact, from the included articles, practically 43.85% were published in the year 2020. Henceforth, it is apparent that analyst's interest is growing towards applying machine learning strategies in the agricultural domain.

3.2 Journal and conference wise distribution

For this systematic review, the number of articles included is 57. Of the total 57 articles, 52 are from various journals and 5 are from different conferences. Fig. 3 addresses the year and type-wise distribution of papers
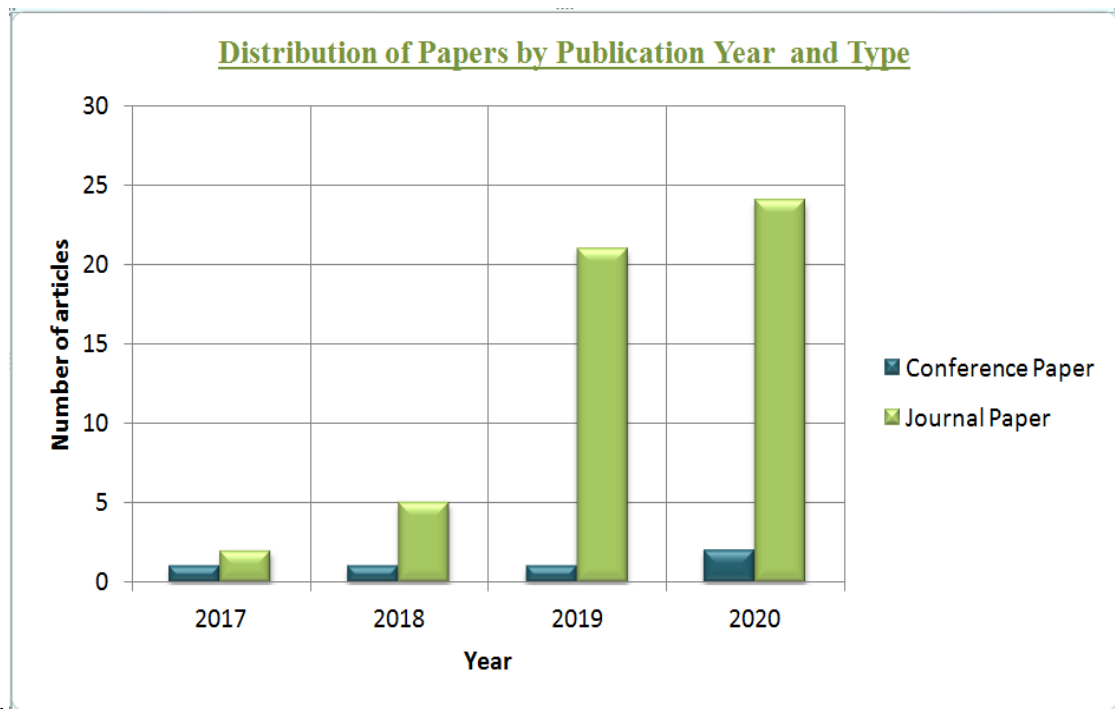
Figure 3: Year and type-wise publication

As described in Fig. 3, the number of journal articles published is more than conference papers, it can be concluded that generally fewer articles have been published in conferences than in journals. Nevertheless, in 2020 a significant growth in conference articles is seen. Qualified articles have been sorted into journals wise and conferences wise. The classification of papers journals wise is addressed in Table 4 and conferences wise in Table 5.

Table 4: Journal wise publications

Name of Journal	No. of Articles	Percentage	Publisher
Computers and electronics in agriculture	2	3.50	Elsevier
Automatic control and computer sciences	1	1.75	Allerton press
Science of the total environment	3	5.26	Elsevier
Geoderma	5	8.97	Elsevier
International research journal of engineering and technology	1	1.75	Edusoft publishing
Information processing in agriculture	1	1.75	Elsevier
Ambio	1	1.75	Springer
Sensors	1	1.75	MDPI
Soil & tillage research	2	3.50	Elsevier
Neurocomputing	1	1.75	Elsevier
Microchemical journal	1	1.75	Elsevier
International soil and water conservation research	1	1.75	Nature
Forest ecosystems	1	1.75	Springer
Remote sensing	1	1.75	MDPI
Soil	1	1.75	Copernicus publications
Land degradation and development	1	1.75	Wiley
International journal for research in applied science & engineering technology	1	1.75	WASWAC
Precision agriculture	1	1.75	Springer
Remote sensing of environment	3	5.26	Elsevier
Scientia horticulturae	1	1.75	Elsevier
Agricultural water management	2	3.50	Elsevier
Agriculture, ecosystems and environment	3	5.26	Elsevier

Agricultural and forest meteorology	1	1.75	Elsevier
Walailak journal	1	1.75	Lippincott Williams & Wilkins
Environmental geochemistry and health	1	1.75	Springer
International journal of recycling of organic waste in agriculture	1	1.75	Springer
Journal of elementology	1	1.75	Public library of science
Agronomy	1	1.75	Agronomy publications
International journal of science and applied technology	1	1.75	G-science implementation & publication
Journal of soils and sediments	1	1.75	Springer
Journal of cleaner production	1	1.75	Elsevier
International journal of mechanical engineering and technology	1	1.75	IAEME
European journal of agronomy	1	1.75	Elsevier
Nutr cycl agroecosyst	1	1.75	Springer
Field crops research	1	1.75	Elsevier
International journal of computer science engineering	1	1.75	Inderscience Publisher
Environmental research	1	1.75	Elsevier
Communications in soil science and plant analysis	1	1.75	Informa PLC
Archives of agronomy and soil science	1	1.75	Informa PLC
Total	**52**	**91.25**	

Table 5: Conference wise publications

Conference Title	No. of Articles	Percentage	Database provider
2019, 5th International Conference on Signal Processing, Computing and Control (ISPCC)	1	1.75	IEEE
2020, International Conference on Electrical and Electronics Engineering (ICE3)	1	1.75	IEEE
2020, 2nd International Conference On Soft Computing For Intelligent Systems	1	1.75	Scopus
2017, 9th International Conference on Ubiquitous and Future Networks (ICUFN)	1	1.75	IEEE
2018, IEEE International Geosciences and Remote Sensing Symposium	1	1.75	IEEE
Total	**5**	**8.75**	

Among the screened papers, practically 91.25% are published in journals, and 8.75% are published in conferences. 'Geoderma' published 5 articles, which was highest with 8.97% concentration. 'Science of the total environment,' 'Remote sensing of environment,' and 'Agriculture, ecosystems and environment' journals published 3 articles being the second highest with a concentration around 5.26% each. 'Computers and electronics in agriculture', 'Soil & tillage research' and 'Agricultural water management' journals published 2 articles being the third highest with a concentration around 3.50% each. All things considered, each journal published 1.75% of articles.

3.3 Distribution of Papers by Database Providers

The papers were selected from 8 databases. These databases and their contribution can be seen in Table 6.

Table 6: Database providers based publications distribution

Database provider	Number of papers	Percentage
IEEE	4	7.02
ERIC	2	3.50
Science Direct	28	49.22
Scopus	7	12.28
Springer Link	7	12.28
Web of Science	6	10.39
Wiley	2	3.50
Iowa State University Digital Repository	1	1.75
Total	**57**	**100**

With 49.22% Science Direct was ranked first. It concentrated on 28 papers. Moreover, Springer Link and Scopus were ranked second with 12.28%. Web of Science was ranked third with 10.39% each. IEEE was ranked fourth with a 7.02% contribution. ERIC and Wiley were ranked fifth with 3.50% and Iowa State University Digital Repository was ranked sixth with 1.75%.

3.4 Classification based on machine learning methods

The basic objective of this investigation is to conduct a statistical review based on machine learning techniques in soil analysis and classification. Likewise, the distribution of different machine learning strategies in the agricultural domain is investigated. From the selected papers, we can see that a good portion of the papers incorporated machine learning to improve the soil analysis, crop prediction, and fertilizer recommendation system. Thus, we sorted selected papers into 16 distinctive machine learning strategies, which are shown in Table 7. Among the researchers, the support vector machine (SVM) has been positioned one with 14.03% and it can be said that the SVM method has a good efficiency in improving the classification process of soil. The random forest (RF) method was ranked second with 12.28%, cubist (CU) was ranked third with 10.39% and partial least square regression (PLSR) ranked fourth with 8.97% contribution. Other methods, which included classification and Regression tree (CART) and multiple linear regression (MLR), ranked fifth with 7.02%. With 5.26%, extreme learning model (ELM), naive bayes classification (NBC), convolutional neural network (CNN), and K-means ranked sixth. Deep neural network (DNN), artificial neural network (ANN), genetic algorithm (GA), fuzzy C-means, and K nearest neighbor (KNN) were ranked seventh

with 3.50%. However, the generalized linear model (GLM) was ranked last at 1.75%. This shows that the machine learning methods ranked at the seventh and eighth positions are least preferred in improving the soil classification and analysis process. We have summed up the appropriation of machine learning techniques by year in Fig. 4.

Table 7: Classification based on machine learning methods

| Machine learning technique	Count	Percentage
Partial least squares regressions (PLSR)	5	8.97
Deep neural network (DNN)	2	3.50
Extreme learning model (ELM)	3	5.26
Support vector machine (SVM)	8	14.03
Cubist (CU)	6	10.39
Random forest (RF)	7	12.28
Classification and Regression tree (CART)	4	7.02
Multiple linear regression (MLR)	4	7.02
Artificial neural network (ANN)	2	3.50
Naive bayes classification (NBC)	3	5.26
Genetic algorithm (GA)	2	3.50
Convolutional neural network (CNN)	3	5.26
Generalized linear model (GLM)	1	1.75
Fuzzy C-means	2	3.50
K-means	3	5.26
K nearest neighbour (KNN)	2	3.50
Total	**57**	**100**
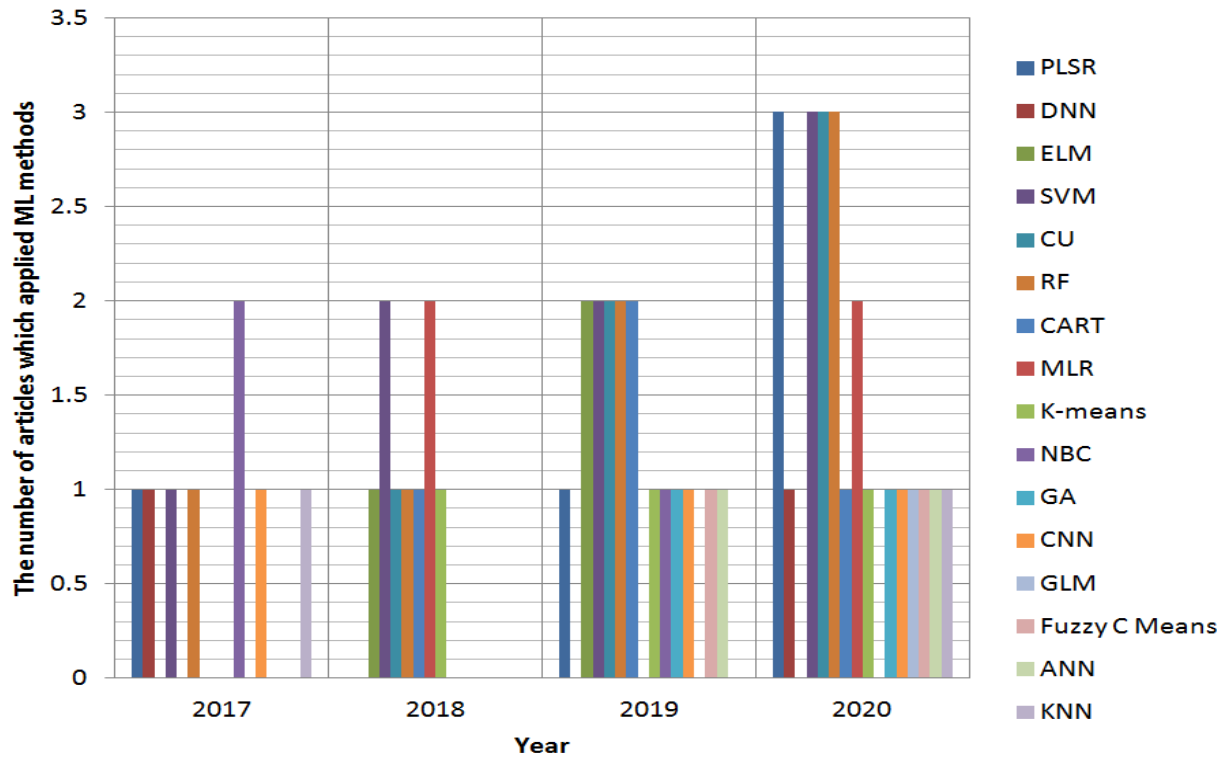
Figure 4: Year-wise classification of articles based on machine learning methods

Considering fig. 4, it will not be wrong to state that the utilization of CU and RF have been expanding throughout the years (1 of every 2018, 2 out of 2019, and 3 out of 2020) in enhancing the accuracy of the machine learning models. Also, the SVM method has shown a good consistency (1 of every 2017, 2 out of 2018 and 2019, and 3 out of 2020) and this helps in concluding that among the researchers, SVM has prominence over the years. Likewise, we notice a positive growth in the utilization of the PLSR technique from 2019.

3.5 Machine learning in the agricultural domain

On the subject of using machine learning in the agricultural domain, we might want to know which areas were more viewed and considered. Moreover, one of the objectives of this research is to find out in which agricultural disciplines were researchers more interested. Therefore, the selected articles in this research were classified by soil analysis, soil classification, crop prediction, crop yield prediction, fertilization, and the execution of machine learning techniques. The articles were analyzed based on agricultural disciplines in order to get a better understanding of the distribution of machine learning for soil analysis and the above-mentioned aspects. Fig. 5 addresses the pie outline for the recurrence of agricultural orders. In light of the target of our examination, 16 agricultural-based sectors were distinguished.
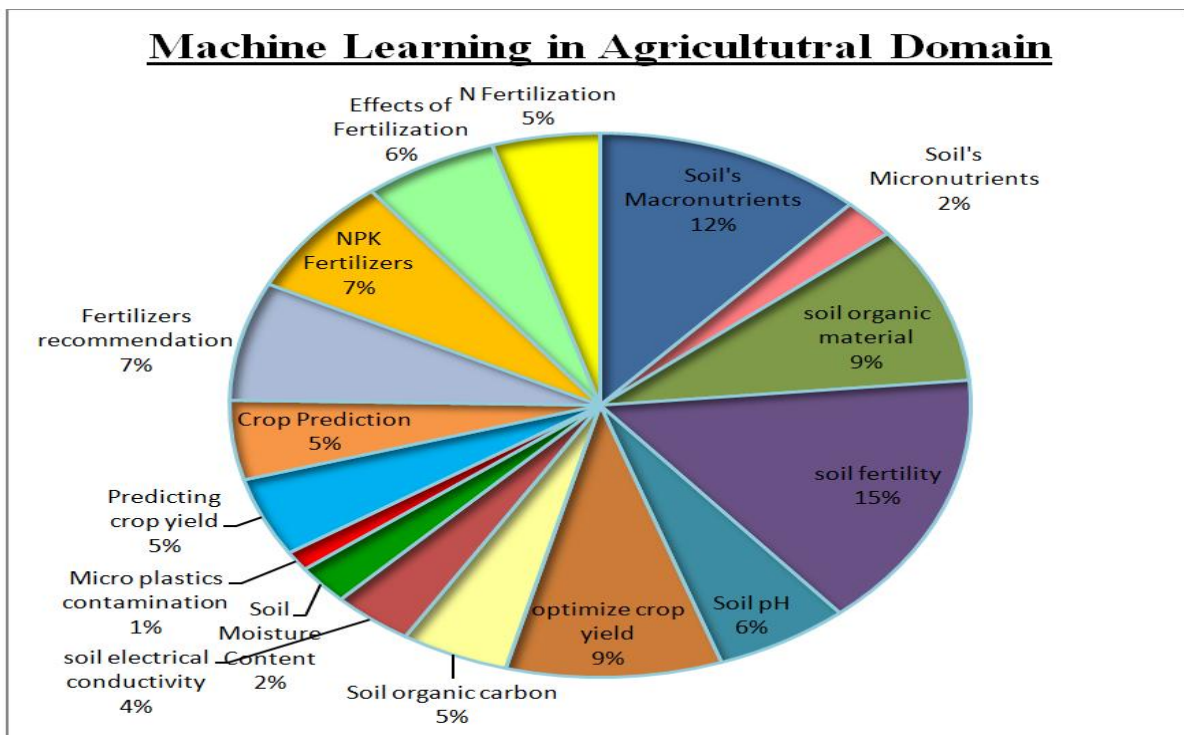
Figure 5: Machine learning in the agricultural domain

From Fig. 5, it is observed that 15% of studies were carried out to study soil fertility, which is the highest. Soil fertility, which refers to the built-in capacity of the soil to supply necessary nutrients to plants in satisfactory and adequate proportions for optimal growth, is the key element for determining soil productivity and is one of the most significant aspects related to crop control. The study of soil macronutrients was ranked second with a contribution of 12% and with a 9% contribution, soil organic material diagnosis was ranked third. NPK fertilizers performance analysis and fertilizers recommendation were ranked fourth with 7%. Effects of fertilization and study of soil alkalinity were ranked fifth with 6%. With a 5%, crop prediction, crop yield prediction, a study of soil organic carbon, and N fertilizers were ranked sixth. The seventh rank was given to soil electrical conductivity, with 4%. Soil moisture content and soil micronutrient diagnosis ranked eighth with 2%. At last, was ranked microplastics contamination in soil with 1%.

4. Discussion

This study was conducted to review the effect of machine learning in the agricultural domain. According to the inference of this study, the published articles that deliberately analyze academic articles utilizing machine learning for soil analysis, crop prediction, yield, and fertilization, were few. Subsequently, the outcomes and analysis of this examination can be considered to survey the effect of machine learning in the agricultural area and its effectiveness in improving the determination. The articles from the year 2017 to 2020 were considered for this study. A total of 57 articles using machine learning methods to enhance soil analysis and other agricultural-based findings, were identified. One of the basic objectives was to figure out the most used machine learning techniques by analysts for analysis, the reason being that this will help in deciding the efficiency of those techniques. To attain this objective, the selected papers were grouped as per the study requirement. Following this grouping, the year-wise characterization of articles was done and from there, it can be concluded that the amount of publications utilizing machine learning has been growing throughout the long term. Through this study, we came across that in 2017, 7.02% of articles were published; on the other hand, 43.87% of articles were published in 2020. This article was written in Feb-2021, so it was not possible to consider articles published in January from this year, as the results obtained by comparing entire year

publications with a single month was not considered efficient.

We recognized 16 different machine learning strategies that were applied in our screened papers. Even though these 16 techniques are generally utilized machine learning strategies for the determination, we limit our results just to soil analysis, crop and yield prediction, and don't sum it up. Based on our analysis, as shown in Fig. 6, it was clear that researchers favored SVM, RF, and CU as compared to other machine learning strategies. Though, there is an expansion in the utilization of regression-based machine learning methods (PLSR, MLR, and CART).
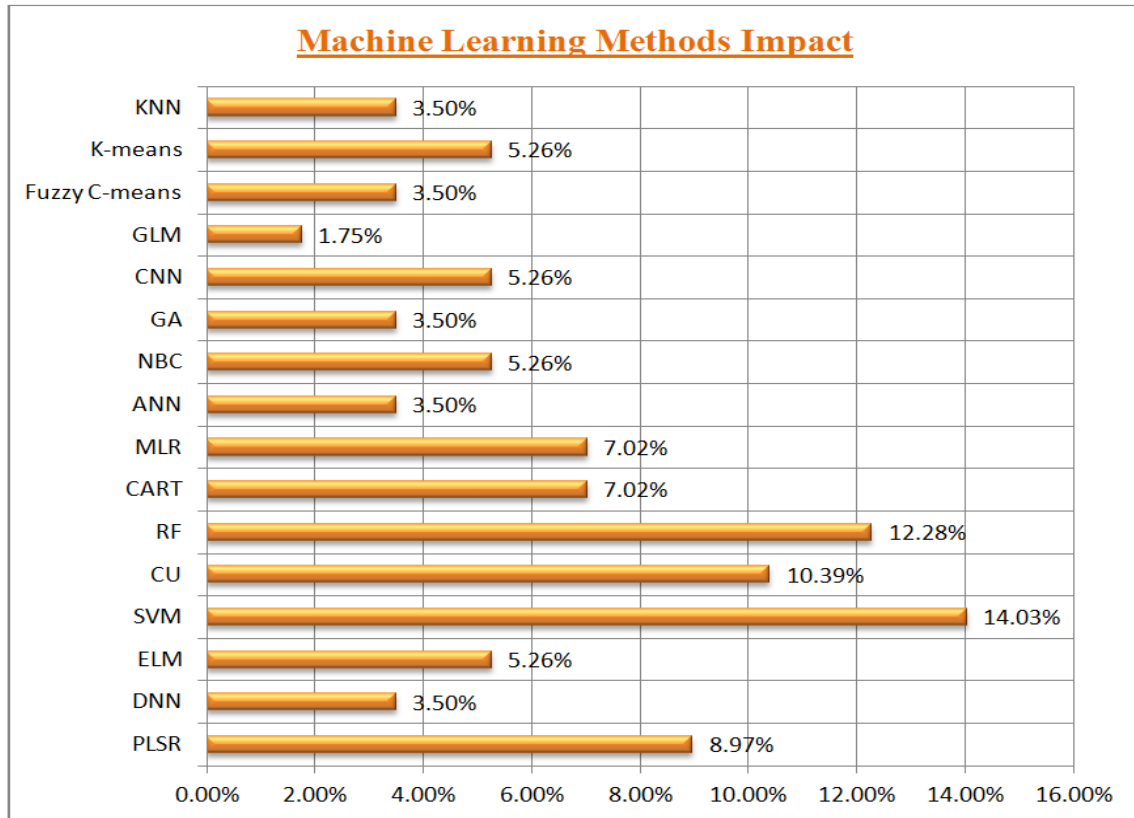

Figure 6: Impact wise classification of machine learning methods

The investigation likewise analyzed the articles from the perspective of agricultural discipline and this proved to be helpful in understanding the fact that which agricultural-based sectors were picked to a great extent. From the results obtained, it was obvious that soil fertility diagnosis had the most noteworthy number of publications. The reason behind this can be that there is a need to manage the soil fertility, in a way that offers sustainable high-level production to produce adequate food for the growing population. Also, we find out that various techniques of machine learning have been applied to soil diagnosis, going exclusively by soil analysis and classification. This shows that the accuracy of soil diagnosis can be efficiently improved with the help of various machine learning methods and algorithms and by applying machine learning in any agricultural discipline we can obtain the best outcomes.

Results obtained by carrying out this statistical review demonstrated that among various soil properties and other agricultural domains, researchers focused on which soil property and other agricultural domains and which get disregarded. The productivity of machine learning strategies in soil analysis, crop prediction, and fertilizer recommendation system were also additionally discovered. Hence, this study could help analysts in carrying out further work in the agricultural sector efficiently.

5. Conclusion

The fundamental objective was to study the ability of machine learning in improving the diagnosis in an agricultural area and to achieve

that the articles utilizing machine learning for soil analysis, crop prediction, and fertilizer recommendation system were reviewed. The articles from the year 2017 to 2020 were recorded and eight data sets namely IEEE, ERIC, Science Direct, Scopus, Springer Link, Web of Science, Wiley, and Iowa State University Digital Repository were recognized. The selected articles were characterized depending on publisher and database and this helped in discovering which databases and publishers distributed the majority of articles concerning machine learning within the agricultural sector. Likewise, the most utilized machine learning strategies were explored and their effect on soil analysis was studied. Subsequently, it can be concluded that analysis of soil nutrients can be done efficiently using machine learning and it is very useful for the farmer in determining the type of crop to be grown following a particular type of cropping pattern and adding the required amount of fertilizer in a particular soil condition to increase the crop yield and get benefitted. We likewise recognized 16 generally utilized machine learning techniques in soil sciences and their adequacy in improving the outcomes. The agricultural disciplines to a large extent using machine learning were also investigated. Diverse machine learning strategies were studied to understand their effectiveness in achieving sustainable agriculture.

Nevertheless, this review has some shortcomings. The very first one is that the duration of this statistical review was fixed length i.e., from the year 2017 to 2020. Also, it must be noted that this study has not included every single article published during the whole time frame. Yet, based on the outcomes of the study, it can be concluded that the recognition and implementation of machine learning are increasing in soil sciences. The second shortcoming of this study is that the articles using deep learning for the analysis are not included. Later on, we can incorporate these procedures to get a summed up view and thought of the effect of every one of these strategies. The third limitation is that this study focused exclusively on soil analysis and the agricultural factors that are exclusively based on soil classification. The articles relating to crop disease or treatment were not included.

In the future, the impact of machine learning in crop disease, as well as plant diseases, can be studied. In addition to that, the researchers can identify and study the relationships between different crops and crop diseases and provide simultaneous analysis benefiting the farmers. Also, the papers written in other languages and articles other than journals and conference papers (which were excluded from this review) can be considered for analysis as these might be helpful. The basic knowledge for future studies could be attained efficiently from this review.

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ANALYSIS OF LEGAL RIGHTS OF WOMEN DURING MEDIEVAL PERIOD

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ABSTRACT

The position of women and the caste system in India of the past are related. In order to redefine the 'caste' one has to abuse the bodies of its women through marital relations and another Value social. As a result, when we find evidence of a growing body of power from the 11th century CE, we also find evidence of a gradual decline in the status of women in society. This point is well taken up by B.R Ambedkar, when he states in his article Castes in India (1916), "endogamy is the only character that is peculiar to caste". The practice of cremating a widow or a widower was common throughout India in the 11th century among the widows of emperors, nobles, and warriors. Other evidence such as Lekapaddhati - a collection of documents from Gujarat - also shows that women can be bought and sold as slaves, and that they are designed to do all kinds of work, including the worst and worst forms. They were also physically and sexually abused. On the other hand, women employed as professional dancers in royal courts and deva-dasi or temple courtesans appear to have been another major class of women.

Introduction

Muslim women practiced *purdah* more rigidly than Hindu women. Sons were regarded lucky, while daughters were deemed unlucky. Our community had many widows due to early marriage. Generally, Mughal women could not remarry. It was widespread among the wealthy. Divorce was uncommon among Hindus, but allowed for Muslim men and women. However, women had considerable power at home and some aided their husbands in their jobs. While women's status was poor throughout the Mughal Empire, there were many notable Hindu and Muslim women of note, like Rani Durgawati of Gondwana, Rani Karmawati, Mira Bai, Tarabai, and others.Nur Jahan, Mumtaz, Chand Bibi, Jahanara, Raushanara, Zeb-un-nisa, and others were prominent Muslim women during the Mughal era. Ancient conception of abortion and family planning.

Islamic law

During the mediaeval period, women's rights were improved by giving them equal rights in marriage, divorce, and birth. It is now considered a nuptial gift held by the woman as part of her personal property. In Islamic law, marriage was seen as a contract, with the women's permission required. Until the contemporary period, married women's property, including land, was held in their own names and did not become the property of their husbands by marriage.

Property Law

Studies on Muslim women's property rights, whether movable or immovable, typically begin with the Muslim law of inheritance, which is natural. In general, it is acknowledged that Islam allows women to inherit from male relatives, that Sharia (Muslim law) allows women to handle their own property, and that marriage does not impact men and women's independent property rights.. But other critics say women earn half of what a male member with an equal degree gets. This critique seems to focus on the norm that a daughter inherits a portion of the family property.Some authors paint a bleak image of Muslim women, as property of their father and brothers before marriage, and afterwards of their husbands. It has also been accepted that this condition of affairs might be at least partially ascribed to the impact of indigenous cultures of Muslim conquered countries beyond Hijaz.The incoming Muslims took with them their old rituals, beliefs, and customs. Social connections between conquerors and conquered sometimes lead to absorption of local and tribal practices without mass conversion. This explains the diversity of Muslim groups' social standards, religious rituals, and behavioral patterns. The Islamic inheritance rules and women's rights were also influenced by the conquered nations' customs, usages, and traditions.

Education Law

Despite religious orthodoxies, societal prejudice, and class/gender bias, Muslim women around the turn of the century emerged as self-aware people motivated to take a larger part in public affairs. All groups, including Muslims, embraced the issue of women's education. The issue was first mentioned in 1896 at the all-male Muslim Educational Congress, and Muslim women continued to advocate for women's education and political participation. In 1906, Sheikh Abdullah and Wahid Jahan Begum founded a ladies' school in Aligarh. It was formed in 1913 by the Begum of Bhopal and in Calcutta by the Purdahnashin Madarsa. Muslim women entered schools for the first time. 'At the Mohammedan co-educational institution in Madras, ladies were compelled to wear their *burqas* (veils), while at Aligarh male instructors sat behind a curtain,' recalls a researcher. The argument over Islam and women's rights dates back to its inception. Prophet Mohammed was born in Mecca in 570 CE, a time of diverse marriage, divorce, and matrilineal customs. When Islam initially established in seventh-century Arabia, it carried over concepts and customs from the previous Judeo-Christian culture. The veil, for example, pervaded nascent Muslim civilizations. This new Islamic regime reinforced women's servitude through matrilineal marriage regulations that endorsed female sexuality control. These laws overtly reinforced patriarchal control of women and female sexuality. Before physical isolation, the idea of female subordination to male authority, polygamy, and the unilateral (male) right to divorce.

Employment Law

Women could enter into contracts, acquire and sell property, suit in court without a man's representation, engage in trade, endow trusts, etc., just like men. The Caliphate's work force was made up of men and women from many ethnic and religious origins. Women worked in the primary, secondary, and tertiary sectors (farmers, construction workers, dyers, spinners, etc). As investors, doctors, nurses, presidents of guilds, brokers, peddlers, lenders, scholars, etc.Muslim women also had a monopoly on various textile-related vocations including spinning, dyeing, and embroidery. Until the Industrial Revolution in the 18th and 19th centuries, female property rights and wage labor were rare in Europe.

Criminal law

A female transgressor gets compensated half as much as a male transgressor. Adultery charges against women require four eyewitnesses, making prosecution difficult. Rape, on the other hand, is an assault accusation that does not require four eyewitnesses like adultery. However, numerous Muslim-majority nations have handled rape as adultery, requiring four eyewitnesses, causing worldwide controversy, less than half as valuable as a man's evidence. "Call in to testify from among your men two witnesses; but if there are not two men, then one man and two women of such as you approve as witnesses."

Divorce law

A man can divorce his wife by saying "I divorce you," or "Talaq," three times in front of her. However, there is a three-month waiting period, and if the wife becomes pregnant during that time, her divorce will not be final until she has delivered.While women have always had the right to file for divorce under Islamic law, they must first establish their case in court, which might include cruelty, lack of provision, desertion, impotence, and other actionable causes. Women might divorce without any of those grounds by returning the mahr (dowry or bride-gift) provided to them by their husbands. If the husband files for divorce, the ex-wife is entitled to the rest or "delayed" share of that mahr.

Marriage law

This is plainly stated in the Quran: "And if you're afraid of dealing fairly with the orphan females, marry two, three, or four. If you are afraid of becoming unjust, marry only one of your right hand's possessions. That you do not gravitate to wrong." According to the Standing Committee of Fatwa, the first wife's approval is not required before marrying another woman.
According to Ibn Qudamah (a Hanbali Muslim Scholar), "the father may give his minor, virgin daughter who has not reached the age of nine in marriage, and there is no difference of

opinion concerning that, if he gives her in marriage to someone who is compatible.". That a parent may offer his minor daughter in marriage if he arranges for her to marry someone compatible, even if she refuses, said Ibn al-Mundhir.

"A previously married woman has greater right over herself than her guardian, and the permission of a virgin should be asked (regarding marriage), and her permission is her silence," the Prophet said "There should be no nikaah (marriage contract) except with a *wali*(guardian)," the Prophet declared. Muslim males can marry Jewish or Christian women, but not vice versa.

Conclusion

This paper conclude that Women had no freedom and were suppressed. Peasant women had to work at home as well as in the fields. Their life was very hard and without love and respect. Among the Hindus, the custom of 'sati' was common in which a widowed woman had to immolate herself on her husband's funeral pyre. However, women belonging to the nobility had some privileges; they could get education at home and enjoyed some freedom. However, there have been women who got the opportunity to play important roles in politics and the administration.

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CAREER MATURITY OF SECONDARY SCHOOL STUDENTS IN RELATION TO THEIR SELF-CONFIDENCE

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ABSTRACT

The present investigation was meant to study the career maturity of secondary school students in relation to their self-confidence. The study consisted of 200 school students of 10th class randomly drawn from two different schools of Ludhiana. Data was collected with the help of Career Maturity Scale by Dr. (Mrs.) Nirmala Gupta and Self-Confidence Inventory by Dr. Rekha Gupta. The data obtained were analysed statistically with the help of Mean, SD, t-ratio and correlation to arrive at the following conclusions: (i) There was significant difference between the Career Maturity making of boys and girls, (ii) There was significant difference between the Self-Confidence of boys and girls (iii) There was significant and positive relationship between Career Maturity making and Self-Confidence of boys (iv) There was significant and positive relationship between Career Maturity making and Self-Confidence of girls (v) There was significant and positive relationship between Career Maturity making and Self-Confidence.

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Keywords: Career Maturity, School Students, Self-Confidence

Introduction

Career maturity is the main occurrence in a individual's life. Individual's prosperity and thusly, fulfillment and joy rely heavily on how precisely he picks his Career. Inappropriate determination of the Career or as often as possible changing the Career is extremely unsafe for mental wellbeing. When we contribute time, cash and exertion in moving along a specific career way it may not be not difficult to change the way. It is notable that people who go with Career Maturity in light of individual interests and capacities, show altogether more elevated levels of occupation fulfillment and are more useful laborers. Students who have gone through far reaching career guiding know in their Career Maturity. Students, who settle on Career Maturity without sufficient and precise directing and direction, are in danger of being affected to pick careers that are not appropriate for them. Decision of a career isn't simply key to one's way of life, but at the same time is an essential part of the physical and profound prosperity of the actual people and their families Osipow, S. H., Walsh, W. B., & Tosi, D. J. (1984).

Career Maturity is a formative cycle that reaches out over the course of life; it includes not a solitary decision but rather a series of decisions. Career Maturity isn't simply a question of choosing an occupation that is great

coordinate with individual's qualities, yet truly the interaction is parcel more convoluted. Great Career arranging incorporates a match between prerequisites for a task, inclination interests, character of the adolescent and assumptions from the parents. Great career arranging prompts great career change. Obviously in the advanced world, pursuing a professional decision is anything but a solitary decision made at once, yet a cycle including numerous decisions and individuals, that consolidate to set a stage for person's career advancement. The course of professional decision-production starts from an early age; it sustains slowly in the youthful age, when a youngster is prepared with the solution to the inquiry, what he needs to be the point at which he grows up, and further go on in a formative structure all through the life expectancy.

Parsons proposed that professional decisions ought to be founded on three wide factors: an unmistakable comprehension of oneself, one's aptitudes, capacities, interests, desire, assets, restrictions and information on their causes; information on the necessities, states of accomplishment, benefits and detriments, remuneration, potential open doors, and possibilities in various professions; genuine thinking on the relations of these two gatherings of realities. These three wide factors of professional decision gave basic rules for people to think about while picking their career

and stressed the significance of people having a comprehension of themselves, their career options and how to involve this data for levelheaded Career Maturity- production. The term Career Maturity making alludes to decision of a career from among a few decisions accessible to the person concerned. In regular utilization, the term career frequently is by all accounts related with up versatility, headway or getting on through a progression of relatedpositions.

Customary perspectives on career frequently partner the term with the callings where an unmistakable series of steps can for the most part be distinguished Super and Hall Decision-production suggests an interaction which happens throughout some undefined time frame. Hypothesis and examination uncover that decision making includes becoming mindful of the need to go with a choice going through a interaction of dealing with that decision (for example gathering data, distinguishing choices, assessing choices, choosing among choices) pursuing a choice and afterward making a move to execute that decision Osipow, S. H., Walsh, W. B., & Tosi, D. J. (1984).

Career Maturity include a decision among word related other options. Which option is picked, relies upon the Career Maturity producer's inclination for different variables or models on the premise of which the individual in question looks at and assesses the potential other options. The huge number of options accessible to the decision creator, the vulnerability concerning future inclinations, and the intricacy associated with joining individual and word related data recommend that a superior comprehension of the manner by which Career Maturity are made and the interaction hidden them is of hypothetical also as useful importance Gati, I., Osipow, S. H., & Givon, M. (1995).

Self-Confidence in an exceptionally broad term implies that the worth credited by the person to himself, the nature of the manner in which he sees himself. Like different parts of the self, it is learnt and works by infracting with huge elements. Self-Confidence is somewhat long-lasting, good or pessimistic inclination about the self that become more certain or pessimistic as an individual experiences achievement or

disappointment in day to day existence. Self-Confidence research looks at how people come to feel as they do about themselves.

Clinicians look to comprehend how Self-Confidence creates and how can be changed negative perspectives on the self whenever they have been laid out. Self-Confidence is a primary substance of character, which puts together way of behaving and, coordinates encounters and discernment based on conviction concerning own self.

Coopersmith, S. (1965) makes sense of Self-Confidence regarding evaluative mentalities towards self. It alludes to a demeanor of endorsement or objection and shows the degree to which a singular believes him to be fruitful, significant and worthy. Self-Confidence is by and large viewed as the evaluative part of the Self idea, a more extensive portrayal of the self that incorporates mental and conduct angles as well as evaluative or full of feeling ones. Self-Confidence enables, invigorates, and persuades to fittingly answer to difficulties and amazing open doors. It rouses people to accomplish and permits them to take joy and pride in their accomplishments. It permits them to encounter fulfillment. Concentrated on the Self-Confidence requirements and he announced that the Self-Confidence is connected with the most common way of turning into a self-confidence individual. As per him, all individuals have a need or craving for a stable, solidly based sense of self-respect or self-regard and they need esteem from themselves and from others.

Need and Significance of the Study

India is quickly creating in advanced education, which has made the general public more intricate than it was before. The quantity of occupations has expanded and furthermore there are numerous occupations inside one career. For example, cultivating which was a basic occupationa long time back is currently a very complex career inside numerous occupations to browse. This incorporates poultry, vegetable cultivating, organic product cultivating and so on. Decision making is a difficult errand which is impacted by a few variables. Likewise it is quite possibly the main decision taken by individual which

influences the entire existence of person. Settling on career choices is a deep rooted process. Everything no doubt revolves around investigating and encountering the universe of work. It is additionally about figuring out capacities, interests, abilities and values. Jullisson EA, Karlsson N & Garling T (1995) showed past decisions impact the decisions individuals make from now on. It stands to reason that when something positive outcomes from a decision, individuals are bound to choose in a comparative way, given a comparable circumstance. This is vital for the degree that future decisions made in view of previous encounters are not really the best decisions. Insightful decision making prepares to a delightful Career Maturity. The more focused you are, the less cumbersome the cycle will be. Self-Confidence is our essential feeling of worth or worth. Self-Confidence assumes a significantpart in the generally decision making interaction of a person. Positive Self-Confidence gives you the boldness to be your individual, put stock in your own qualities, and settle on the ideal choice when the strain is on. Companions can put a great deal of squeeze on young person. They need to be important for swarm. Having a place with a group is a piece of growing up-it assists them with figuring out how to be a companion and find out about themselves' general surroundings. When a individual worth and regard self, it assists them with trying not to pursue a terrible choice, which might influence the remainder of their life. Self-Confidence decides our life. It is how much we observe we regard ourselves.

Objectives

1. To study the Career Maturity making of senior secondary school students.
2. To examine the Self-Confidence of senior secondary school students.
3. To study the relationship between Career Maturity making and Self-Confidence of boys.
4. To study the relationship between Career Maturity making and Self-Confidence of girls.
5. To study the relationship between Career Maturity making and Self-Confidence of totalsample.

Hypotheses

1. There exists no significant difference between boys and girls of Career Maturity making.
2. There exists no significant difference between boys and girls of Self-Confidence.
3. There exists no significant relationship between Career Maturity making and Self-Confidenceof boys.
4. There exists no significant relationship between Career Maturity making and Self-Confidenceof girls.
5. There exists no significant relationship between Career Maturity making and Self-Confidenceof total sample.

Sample

The present study consists of 200 students including boys and girls studying in 10thclass drawn from two Government Senior Secondary schools of Ludhiana. The 100 students comprising of 50 boys and 50 girls each were taken from both the schools. The sample was taken using random sample techniques. The school wise distribution of the sample has been presented in table1.

Table 1 School-Wise Distribution of the Sample

Sr.No.	Name of School	Boys	Girls	Total
1.	Govt. Sen. Sec. School,Shimla Puri Ludhiana	50	50	100
2.	Govt. Sen. Sec. School, Shakti Nagar, Ludhiana	50	50	100

Design

The plan of the current review depended on example of 200 students of Government Senior Secondary schools of Ludhiana. The factors under the study were Career Maturity making and Self- Confidence of senior Secondary school students. Career Maturity making was reliant variable and self-confidence was taken as free factor. In the current review graphic studytechnique for examination was used to be familiar with Career Maturity making and Self-Confidence of senior secondary school students.

Tools Used

1. Career Maturity Scale by Dr. (Mrs.) Nirmala Gupta.
2. Self-Confidence Inventory by Dr. Rekha Gupta.

Analysis, Interpretations And Discussion Of The Results

The statistical strategies, for example, mean, standard deviation, t-test and correlation were utilized in the study. The outcomes are given in the accompanying tables

t-ratio between boys and girls of career maturity of school students

Variable	Boys			Girls			SED	t-value
	N	Mean	SD	N	Mean	SD		
Career Maturity	100	5.26	1.3	100	5.71	1.4	0.25	3.39**

Hypothesis H1

There exists no significance difference between boys and girls of career maturity, is rejected.

The result indicates that girls are more conscious towards career decision making than that of boys.

t-ratio between Boys and Girls of Self-Confidence School Students

Variable	Boys			Girls			SED	t-value
	N	Mean	SD	N	Mean	SD		
Career Maturity	100	75.26	3.3	100	75.71	1.4	0.44	4.99**

Hypothesis H2:

There exists no significant difference between boys and girls of self-confidence, is rejected. Theresult indicates that boys have more self-confidence than that of girls.

Correlation between Career maturity and Self Confidence of Boys

Variables	N	Group	Value of r
Career Maturity & Self-Confidence	100	Boys	0.572**

Hypothesis H3:

There exists no significant relationship between career Maturity & Self-Confidence of boys, is rejected.

Correlation between Career Maturity and Self Confidence of Girls

Variables	N	Group	Value of r
Career Maturity & Self-Confidence	100	Girls	0.272**

Hypothesis H4:

There exists no significant relationship between career maturity and self-confidence of girls, isrejected.

Correlation between Career Maturity and Self Confidence of Total Sample

Variables	N	Group
Career Maturity & Self-Confidence	200	0.752**

Hypothesis H5:

There exists no significant relationship between Self-Confidence and Career Maturity of total sample, is rejected.

Conclusions

Taking everything into account, the connection between self-confidence and career maturity was analyzed furthermore, approved utilizing a primary condition model. The discoveries show that there are huge connections between self-confidence and career maturity. Understudies should fabricate their self-confidence to make them more positive about setting themselves up for their careers. The discoveries show that self-confidence, for

example, parental influence has areas of strength for career maturity among students. This features the significance of parental help and direction for good career maturity among students. Both present and past explores have shown that self-confidence is significant in adolescents improvement. Subsequently, guardians and educator ought to assist with cultivating self-confidence improvement in

adolescents. Considering that self-confidence as it was represented a little change in the career maturity factors under concentrate on examination ought to be done to decide if self-confidence can likewise work as a result variable. The results show that self-confidence plays a huge part to play in adolescents' career advancement.

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COMPARATIVE STUDY OF JOB SATISFACTION AMONG SCHOOL TEACHERS HAVING DIFFERENT STREAMS IN RELATION TO THEIR ORGANIZATIONAL CLIMATE AND MENTAL HEALTH

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ABSTRACT

The present study was conducted to compare the job satisfaction among school teachers having different streams in relation to their organizational climate and mental health in the COVID-19 situation. Prior to COVID-19, most educational institutions in India (schools, colleges, and universities) relied solely on traditional learning methods. However, the COVID-19 pandemic has thrown teachers into an unpredictable situation, in which the lockdown situation has hastened the shift from traditional learning methods to online learning methods. The sample of study comprised of 310 secondary school teachers (140 science stream and 170 Arts stream) selected randomly from two districts of state Punjab, India giving fairly equal representation to gender and locale. Teacher's job satisfaction scale by Madan and Malik (2019) was adapted by the investigator in the COVID-19 situation, organizational climate scale for teachers by Singh (2015) were used to collect data. The result of the study revealed high positive correlation between Job satisfaction and organizational climatefor both science and arts stream school teachers. And the study also revealed positive correlation between Job satisfaction and mental health for both science and arts stream school teachers.

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Keywords- Job Satisfaction, Organizational Climate, Mental Health, School Teachers, Stream

1.   Introduction

In the global community, education has long played a vital role. Many people have stressed education's central role and unique significance in national development. 'Education' is a broad phrase that refers to a variety of topics. It could apply to formal education or the lifetime process of learning by doing. It has been defined as the acquisition of knowledge, attitudes, skills, culture transmission, bringing out and developing one's full potential, discipline, personality shaping, and freedom, among many other things.Education includes all of a person's interactions with the society in which he lives, as well as the social processes through which people are exposed to the effect of a carefully selected and regulated environment in order to attain social competency and optimal individual development.

According to Kothari Commission (1964-66), "The destiny of India is now being shaped in her class-rooms. This we believe is no more rhetoric. In a world based on science and technology, it is education that determines the level of prosperity, welfare and security of the people." According to National Policy of Education (1986), "Education is the investment for national development which depends upon quality citizenship which is provided by quality education and quality of education is the result of quality of teachers." According to Mandela (2013) "Education is the most powerful weapon which one can use to change the world."

COVID-19 has had an impact on schooling. It has an impact on both teachers and students. It completely transforms the teaching model from blackboard to internet. Most educational institutions in India (schools, colleges, and universities) depended primarily on traditional learning methods prior to COVID-19. As a result, the teachers stick to the traditional face-to-face lecture format. However, the COVID-19 pandemic has put teachers in an unpredictably difficult situation, hastening the change from traditional to online learning techniques.

2.   Job Satisfaction

Job satisfaction is a pleasant emotional state that occurs as a result of a positive assessment of one's job, as well as an effective response to and attitude toward one's job. The level of contentment with one's job is referred to as job satisfaction. People who are content in their jobs are considered happier. Job satisfaction is influenced by a number of elements, including the quality of one's supervisory relationship,

the physical setting in which one works, and the level of fulfillment in one's work. Job satisfaction is related to a person's sense of fulfillment or delight at work. Our level of satisfaction is determined by the ratio of what we have to what we want.

Age, gender, pay, length of service, tenure, working conditions, job security, and social standing are all important considerations. Job satisfaction is defined as the degree to which an individual's requirements are met and how that fulfillment is perceived; it is thus a general attribute in an individual. As a result, job satisfaction can be defined in terms of human needs and the environmental sources of these requirements. Job satisfaction is a state of mind that comes from a balanced combination of both positive and bad job experiences. It indicates how well an employee's job expectations and rewards are aligned.

Job satisfaction was mainly classified into two areas-(i) Intrinsic Factors. (ii) Extrinsic Factors. There is other way to classify Job satisfaction also that is – (i) Organizational Factors, (ii) Work Environment Factors, (iii) Work Itself, (iv) Personal Factors.

"Any combination of psychological, physiological, and environmental conditions that causes a person to honestly state I am satisfied with my job," according to (Hoppock, 1935). Job satisfaction, according to Vroom (1964), is described as "individual affective orientations toward current work duties." Job satisfaction, according to Sharma (2019), is the way employees feel about their jobs and different aspects of their jobs.

In the present paper the concept of dimensions of job satisfaction is given by Singh and Sharma (2019).

(A)   Intrinsic Factors : These include all the factors that inherent in the job. These factors are sub-divided into two categories-

(i)   Job - Concrete Statements
(ii)   Job - Abstract Statements

(B) Extrinsic Factors : These include all the factors that are residing outside the job.

These factors are sub-divided into three categories,

(i)   Psycho-Social Aspect
(ii)   Financial Aspect
(iii)   Community/National Growth

3.   Organizational Climate

"Organizational climate" is a combination of two words: "organization" and "climate." Climate refers to a consistent pattern of behavior, attitude, and emotion that characterizes organizational life. Climate is a recurrent pattern of behavior, attitude, and sentiment that characterizes life in the organization. Organization is related with planning and structure (Isaken&Ekvall 2007). The organizational climate is considered a part of the organization's overall environment.It is a leadership function that describes a collection of social interaction patterns among members of any organization. It's the outcome of a complicated interplay of societal, organizational, and human forces. People's perceptions or attitudes toward a corporation are measured by organizational climate. Organizational environment includes things like management or leadership styles, participation in decision-making, perks, personnel regulations, providing adequate working circumstances, and establishing a proper academic career ladder.

3.1 School Organizational Climate

The consequence of different environmental conditions prevailing in a school is termed as the school's organizational climate. It is made up of all the human and physical resources that are made available in a well-organized manner in order to achieve the intended outcomes.' 'The feel,' 'the atmosphere,' 'the environment,' 'the situation prevails,' and 'the tone of the institution' have all been used to describe school organizational climate. School organizational climate has been defined in a variety of ways.

Organizational climate is defined by Halpin and Croft (1963) as an organization's personality. The 'personality' of a school was described in terms of social interactions between teachers and principals, as well as among teaching staff members.

The word "organizational climate" has been defined in a variety of ways, including "the atmosphere," "the environment," "the zeal," "the prevalent condition," and "the tune of the institution."

"School climate is the relatively permanent character of the school environment that is experienced by participants, influences their behavior, and is based on their collective judgments of behavior in schools," according to Hoy (1990).

Open climate

An open climate refers to a working environment in which teachers are able to meet their social demands while also feeling fulfilled in their jobs. The group has a high level of integration and behavior authenticity.

Closed Climate

A high level of disinterest among all members of the organization characterizes a Closed Climate. There is a lack of sincerity in this climate.

4. Mental health

Mental health is a comprehensive term that describes a person's state as a result of his or her mind's mental organization and functioning. "Mental health" is a combination of two words: "mental" and "health." Health refers to a person's physical or mental well-being as well as the absence of disease in general. As a result, mental health is defined as a sound mental state, a pleasant mental state, or the absence of mental illness. Health includes more than simply physical well-being; it also includes a person's inner psychological balance. Mentally healthy people continue to grow, develop, and mature throughout their lives by accepting responsibility and seeking fulfillment without placing too high a personal or social cost on it.

Mental health is essential for keeping a good attitude on life and quickly adaptation to changing situations. The mental health of children is essential for successful learning and total personality development. Mental health is crucial not just in the lives of children, but also in the lives of entire communities. Both personal and society life are affected by mental health.

A mentally healthy person has good physical health, psychological comfort, is intellectually developed, and emotionally controlled, is socially adaptable, has socially approved goals, a sense of satisfaction, is flexible in behavior, is enthusiastic and reasonable, has healthy habits, attitudes, and interests, has a healthy philosophy of life, self-understanding, and understanding of the environment.

According to the World Health Organization (2004), mental health is a condition of well-being in which a person recognizes his or her own abilities, can manage with typical life challenges, work creatively and fruitfully, and contribute to his or her community. Mental health, according to Legg and Felman (2020), encompasses cognitive, behavioral, and emotional well-being. It all comes down to how people think, feel, and act.

5. Review of Literature

Significant positive relationship between job satisfaction and organizational climate was reported by Sofianos (2005); Dhingra (2006); Brown (2008); Castro and Martins (2010); Pangilet. al. (2011); Shahramet. al. (2013) and Niafard and Heidarei (2016).Whereas Natarajan and Dhandapani (2002), Rani and Rani (2014), Bala (2015) reported no signification between job satisfaction and organizational climate.

No significant difference was found in job satisfaction of teachers on the basis of stream Bala (2015); Kavitha and Venkateswaran (2015); Kumar and Rajendran (2016); Sivakumar and Arun (2019 but Rinsangi (2019) found that there is significant difference in job satisfaction of college teachers of Science and Arts stream.

Significant positive relationship between job satisfaction and mental health was reported by Mistry (2010); Maheshbabu (2012);Baro and Panda (2014) and Singh (2015).whereas Nadinloyi, Sadeghi and Hajloo (2013) revealed significant negative relationship between depression and job satisfaction. Babu (2014) conducted a study and revealed that there is no significant correlation between job satisfaction and mental health.

6. Objectives

1. To investigate the significance of relationship between job satisfaction and

organizational climate of Science school teachers.

2. To investigate the significance of relationship between job satisfaction and organizational climate of Arts school teachers.

3. To investigate the significance of relationship between job satisfaction and mental health of science school teachers.

4. To investigate the significance of relationship between job satisfaction and mental health of Arts school teachers.

7. Hypotheses

1. There is no significant relationship between job satisfaction and organizational climate of science school teachers.

2. There is no significant relationship between job satisfaction and organizational climate of Arts school teachers.

3. There is no significant relationship between job satisfaction and mental health of science school teachers.

4. There is no significant relationship between job satisfaction and mental health of Arts school teachers

8. Sample

Three stage random sampling technique used to select sample from the defined population. In the 1st stage two districts will be selected randomly from Punjab state of India. In the 2nd stage 20 schools from each district will be selected randomly from both rural and urban areas. In the 3rd stage 310 teachers having more than 5 year of regular teaching experience will be selected from selected schools giving fairly equal representation to gender and locale.

8.1 Tools

a) Teacher's Job Satisfaction Scale (TJSS) by Madan and Malik (2019) adapted by the investigator in the light of present situation.

b) Organizational Climate Scale for Teachers (OCST) by Singh (2015)

c) Positive Mental Health Inventory (PMHI) by Agashe and Helode (2007).

9. Result

To investigate the significance of relationship of job satisfaction with organizational climate and mental health of science and arts stream school teachers Pearson's coefficient of

correlation was worked out and the values are given in tables 1, 2, 3 and 4 below:

Table 1: Relationship between Job satisfaction and Organizational Climate of science School Teachers (N=140)

Sr. No	Variables	r
1	Job Satisfaction	0.59*
2	Organizational climate	

* Significant at 0.01 level of significance

Table 1 show that the value of correlation between job satisfaction and organizational climate of science school teachers is 0.59 which is significant (p<0.01). Hypothesis 1 which states that "There is no significant relationship between job satisfaction and organizational climate of science school teachers" is thus rejected. This finding is in line with the studies conducted by Sofianos (2005); Dhingra (2006); Brown (2008); Castro and Martins (2010); Pangil et. al. (2011); Shahram et. al. (2013) andNiafard and Heidarei (2016).

Table 2: Relationship between Job satisfaction and Organizational Climate of arts School Teachers (N=170)

Sr. No	Variables	r
1	Job Satisfaction	0.55*
2	Organizational climate	

* Significant at 0.01 level of significance

Table 2 show that the value of correlation between job satisfaction and organizational climate of arts school teachers is 0.55 which is significant (p<0.01). Hypothesis 2 which states that "There is no significant relationship between job satisfaction and organizational climate of arts school teachers" is thus rejected. This finding is in line with the studies conducted by Sofianos (2005); Dhingra (2006); Brown (2008); Castro and Martins (2010); Pangilet. al. (2011); Shahramet. al. (2013) andNiafard and Heidarei (2016)

Table 3: Relationship between Job satisfaction and Mental Health of Science School Teachers (N=140)

Sr. No	Variables	r
1	Job Satisfaction	0.29*
2	Mental Health	

* Significant at 0.01 level of significance

Table 3 show that the value of correlation between job satisfaction and mental health of scienceschool teachers is 0.29 which is significant (p<0.01). Hypothesis 3 which states that "There is no significant relationship between job satisfaction and mental health of science school teachers" is thus rejected. This finding is well supported by the studies conducted by Mistry (2010); Maheshbabu (2012);Baro and Panda (2014) and Singh (2015).

Table 4: Relationship between Job satisfaction and Mental Health of Arts School Teachers (N=170)

Sr. No	Variables	r
1	Job Satisfaction	0.34*
2	Mental Health	

* Significant at 0.01 level of significance

Table 4 show that the value of correlation between job satisfaction and mental health of arts school teachers is 0.34 which is significant (p<0.01). Hypothesis 4 which states that "There is no significant relationship between job satisfaction and mental health of arts school teachers" is thus rejected. This finding is well supported by the studies conducted by Mistry (2010); Maheshbabu (2012);Baro and Panda (2014) and Singh (2015).

10. Conclusion

The present study reveal high positive correlation between job satisfaction and organizational climate for both science and arts stream school teachers. Result of the study also revealed that high positive correlation between job satisfaction and mental healthfor both science and arts stream school teachers. To improve job satisfaction of teachers we need to create good organizational climate in schools and hence with the healthy environment the mental health of teachers are also healthy and drawn better results from school premises. Principals and authorities are advised to appreciate the efforts of teachers in the COVID-19 situation and provide them supportive environment in the schools.

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PLANT IMAGE SEGMENTATION BASED ON FIREFLY ALGORITHM COMBINED WITH K-MEANS CLUSTERING

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ABSTRACT

During the past few decades digital images have become an important part of numerous scientific fields. Digital images used in image analysis tremendous progress in the detection of disease in plants, treatment determination process as well as in monitoring plant leave images. Detection of disease in plants represents one of the active research fields and an algorithm for plant image segmentation was developed with an aim to emphasize four different types of apple plant images: Apple scab, Apple_black_rot, Apple_cedar_Apple rust, Apple_healthy, Images. The proposed image segmentation method is based on the K-means Clustering algorithm whose solution is to improved when combined with firefly algorithm when Otsu's criterion was used as the fitness function. The proposed combined algorithm was tested on commonly used images from Plant Village dataset and the results were compared to other traditional method like LBPH. The method proposed in this paper achieved better segmentation considering standard segmentation quality parameters such as Accuracy, Precision, Recall, F-measure.

Keywords: plant digital images, plant Disease detection, Image segmentation, Clustering, K-means, Optimization, Swarm intelligence, Firefly algorithm

1.   Introduction

India is a growing nation with the second-largest population in the world. The food production grows every day as the population grows, but rising population also leads to a harsh climate, which not only causes global warming but also makes it difficult for roots to take & live as new diseases as well as infections emerge.

Analog images have traditionally been employed in research, but digital methods are now being utilized. Picture processing refers to the computer-assisted processing of a two-dimensional image signal and the application of typical signal processing methodologies to it. An image or an outcome asset of feature or attributes connected to the image can be the outcome of image processing.

Scientific fields that are using digital images are numerous: security, agriculture, astronomy, etc. disease detection represents one of the examples that has been benefiting from advances in digital imaging. Besides digital images that capture visible light, there are numerous other sources that are used for generating a digital image.

The three sections of image processing are picture capture, processing, presentation of the processed output. The first stage in every vision system is to capture the image. It can be obtained through mobile phones, cameras, satellites, a scanner. Images sourced from different image capture methods are processed using a variety of image processing algorithms to extract useful information from the image. As a result, image processing is more accurately characterized as a key to connecting the human visual framework with digital imaging devices. It quickly converts an image into a more relevant entity.

For image segmentation, various techniques were proposed. Some of the most used methods include thresholding, histogram-based methods, clustering- based techniques, region growing methods, edge detection, etc. In this paper we propose a method for plant disease image segmentation based on the clustering algorithm K-means and Firefly algorithm.

Clustering represents an unsupervised machine learning technique that separates data into disjoint clusters where data inside one cluster should be similar according to some metric, while different from data from other clusters. Clustering methods try to determine patterns in the given dataset so the further information can be extracted. Nowadays there are various clustering methods including hierarchical clustering, clustering methods based on the distribution, DBSCAN, k-means, k-median, and many more. One of the most used clustering algorithms, due to its simplicity, is

k-means algorithm that represents an iterative process of a search for the centroids, i.e. cluster centers (Khalaf et al., 2018). Elements of each cluster are determined by their distance to centroids. The closest centroid represents the cluster where the instance belongs. The distance can be defined in numerous ways, usually as Euclidian distance. Each iteration contains two steps, assignments of clusters to instances and centroid update. The new centroids are set to the mean of data inside each cluster.

K-means algorithm is a simple clustering method but with one drawback. Determination of the optimal centroids represents NP-hard optimization problem and the quality of the final solution is determined by the initial position of the centroids. Most common initialization is random initialization, while in some application initial centroids can be determined by using different strategies.

Swarm intelligence algorithms, a class of nature inspired algorithms, were successfully applied to various optimization problems in the past decades. Some of the first swarm intelligence algorithms are particle swarm optimization and ant colony optimization while later numerous other algorithms with various exploration and exploitation techniques were proposed and applied to different continuous optimization problems (Li et al., 2018; Tuba, Tuba & Beko 2016); combinatorial optimization problems (Jothi, 2016; Alihodzic et al. 2019), multiobjective optimization problems (Yang, 2013; Strumberger et al., 2018), etc. They were used for hard optimization problems in medical image processing applications for image registration (Tuba, Tuba & Dolicanin, 2017), bleeding detection (Tuba, Tuba & Jovanovic, 2017), detecting different anomalies (Lahmiri, 2017; Tuba et al. 2017; Jothi, 2016), compression (Tuba et al., 2019), etc.

In this paper we compared classification accuracy parameter by combining K-means and Firefly algorithm with traditional technique LBPH. Plant image segmentation is done with a goal of detecting different anomalies.

The rest of this paper is organized in the following way. A brief review of the clustering based segmentation algorithms is given in Section 2. In Section 3, k-means algorithm

used for image segmentation is described. Firefly algorithm adjusted for the considered problem is described in Section 4. The proposed method was tested on several plant images from plant village dataset and the results were compared to other methods LBPH and SVM from literature. The results and their analysis are presented in Section 5. Conclusion and future research plans are given in Section 6.

2. Related Work

Toda & Okura (2019) Diagnosed Plant Disease using Convolutional Neural Networks. Author finds provide a deeper evaluation of the visualization methods against the CNNs in plant science applications. Our results show that several visualization methods are usable in their original form, indicating that the CNN captures the lesion-specific features of respective diseases. However, several methods have to go through a process of targeted layer optimization to generate an optimum result owing to the differences in the CNN architecture and the datasets. Moreover, based on the layer-wise visualization, we identify an optimal number of feature extraction layers to simplify the CNNs by decreasing the number of network parameters by 75%. Akila & Deepa (2018) explored Plan Leaf Diseases Detection and classification by using Deep learning algorithm. Author proposes a deep-learning-based approach to detect leaf diseases in many different plants using images of plant leaves. Techniques used by author in this work are three main families of detectors: Faster Region-based Convolutional Neural Network (Faster R-CNN), Region-based Fully Convolutional Network (R-FCN), and Single Shot Multibox Detector (SSD). Author Found that the proposed system can effectively identified different types of diseases with the ability to deal with complex scenarios from a plant's area. In this system specialized deep learning models were developed, based on specific convolutional neural networks architectures, for the detection of plant diseases through leaves images of healthy or diseased plants. Author suggests that a detector applied images captured in-place by various camera devices and also collected from various resources. Experimental results and comparisons between

various deep-architectures with feature extractors demonstrated how our deep-learning-based detector is able to successfully recognize different categories of diseases in various plants and also give solution for concern diseases. Mohammed et al. (2018) Examined the Detection and Saliency map Visualization of Plant Diseases using Deep Learning. In this study author tested multiple state-of-the-art Convolutional Neural Network (CNN) architectures using three learning strategies on a public dataset for plant diseases classification. These new architectures outperform the state-of-theart results of plant diseases classification with an accuracy that reached 99.76%. Furthermore, visualization method increases the transparency of deep learning models and gives more insight about the symptoms of plant diseases. Author reported two CNN architectures (AlexNet and GoogleNet). It evaluated the state-of-the-art CNN architectures using a public dataset of plant diseases. The results of this evaluation show clearly that we can improve the accuracy using a new CNN architectures such as inceptionV3 which achieved an accuracy of 99.76 %.In addition to this improvement in accuracy, author investigated in increasing the transparency of deep models based on visualization techniques. In this context, the saliency map method is introduced for localizing the infected regions of the plant after the identification of diseases. Author also shows about visualization method which is a precise and sharp visualization which helps the inexperienced users to understand the diseases. Ferentinos (2018) explored Computers and Electronics in Agriculture using deep learning methodologies, convolutional neural network models were developed to perform plant disease detection and diagnosis using simple leaves images of healthy and diseased plants, models was performed with the use of an open database of 87,848 images, containing 25 different plants in a set of 58 distinct classes of [plant, disease] combinations, including healthy plants. Several model architectures were trained. They conclude the result performance reaching a 99.53% success rate in identifying the corresponding [plant, disease] combination (or healthy plant). they make the model a very useful advisory or early warning tool, and an approach that could be further expanded to support an integrated plant disease identification system to operate in real cultivation conditions. Rangarajan et al. (2018) explored disease classification of Tomato crop using pre-trained deep learning. In this image of tomato leaves (6 diseases and a healthy class) obtained from Plant Village dataset is provided as input to two deep learning-based architectures namely AlexNet and VGG16 net. Total of 13,262 segmented images were available for the chosen diseases and healthy ones from the dataset. The classification accuracy using 13,262 images were 97.29% for VGG16 net and 97.49% for AlexNet. Maximum accuracy is obtained when the number of images is 373 In terms of computational load, AlexNet provides a good accuracy with minimum execution time compared to the deep VGG16 net. Brahimi et al. (2018) explored map Visualization of Plant Diseases using deep learning. Multiple state-of-the-art Convolutional Neural Network (CNN) architectures using three learning strategies on a public dataset for plant diseases classification are been tested in this paper. These new architectures outperform the state-of-the-art results of plant diseases Classification with an accuracy that reached 99.76%, also saliency maps as visualization method to understand and interpret the CNN classification mechanism. Authors give the transparency of deep learning models and saliency maps as visualization method to understand and interpret the CNN classification mechanism. Dataset includes 54323 images of 14 crop species with 38 classes of diseases or healthy plants.

3.   Simulation Results

The proposed algorithm was tested on the platform Intel ® CoreTM i5-9700K CPU at 4GHz,8GB RAM, Windows 10 Professional OS. The proposed algorithm was implemented using Spyder Aanconda (shown in Fig1) Parameters of the firefly algorithm were determined empirically and their values are in Table the results presented by LBPSVM along with the results obtained by our proposed k-means firefly algorithm (KM-FA) are presented. Best results are printed in bold.
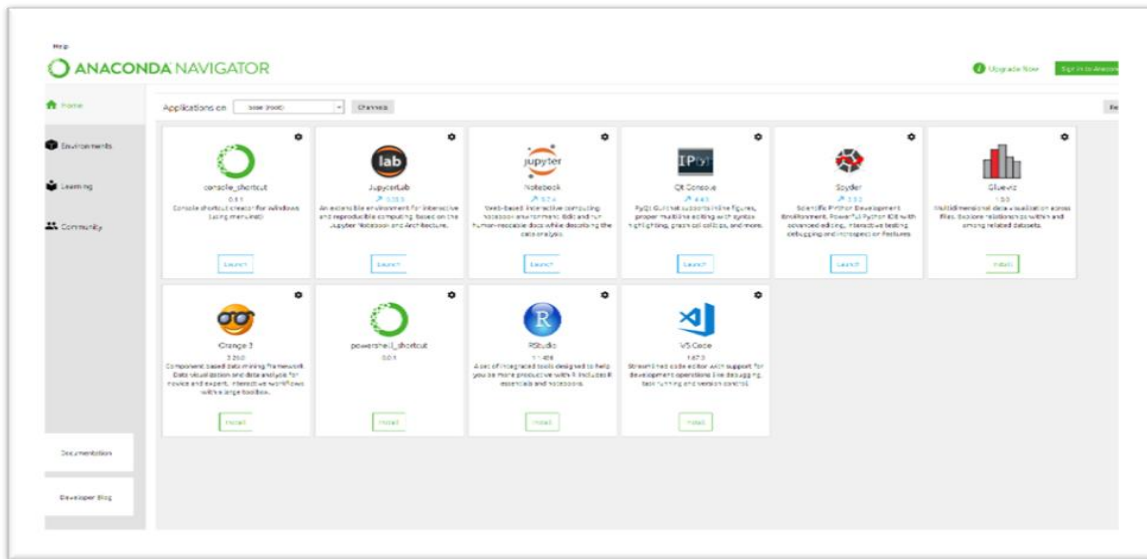
Figure1: Anaconda navigator for using python in Spyder

Table 1. A comparison between the KM-FA method proposed by the authors of this paper

Parameters	K-means	K-means +firefly
Accuracy	88.18%	97.53%
	50.19%	75.44%
	43.71%	55.50%
	74.51%	84.74%
	86.00%	96.40%
Precision	1	1
	1	1
	1	1
	1	1
	1	1
RECALL	0.827176201	0.964769021
	0.486502117	0.753290615
	0.313470124	0.466885655
	0.633000995	0.785606884
	0.801383331	0.949917879
F-measure	0.905414815	0.982068641
	0.654559602	0.859287797
	0.477315956	0.636567211
	0.775261003	0.879932634

Based on the results presented in Table 2, it can be concluded that our proposed K-means combined with -Firefly method achieved better results compared to the method K-means only and all other methods used for comparison, i.e., LBPSVM and LBPNB.

Since different numbers of clusters were used for segmentation, it can be concluded that our proposed KM-FA algorithm achieved good results for both, low and high dimensions of the considered problem. Based on the resulting images, besides numerical results, we can see that each plant image obtained segmentation.

The used images and segmented images obtained by our proposed method are presented in Figure 1

Figure 1. The original and resulting segmented images by the proposed combined KM-FA algorithm
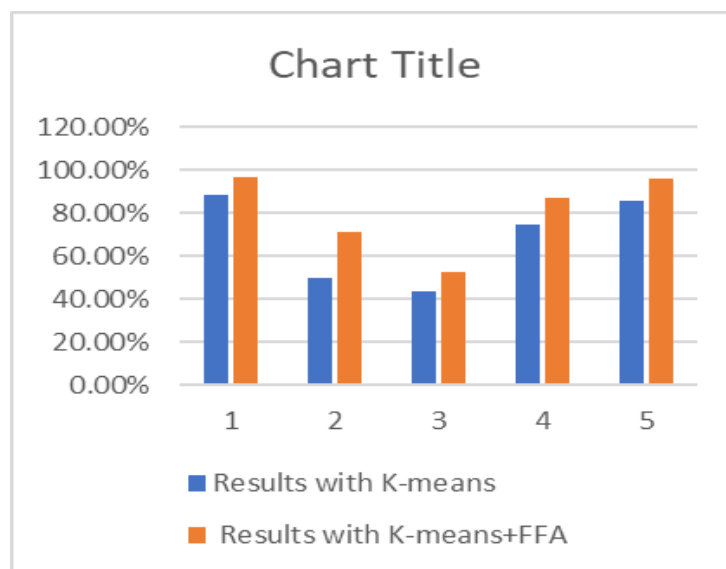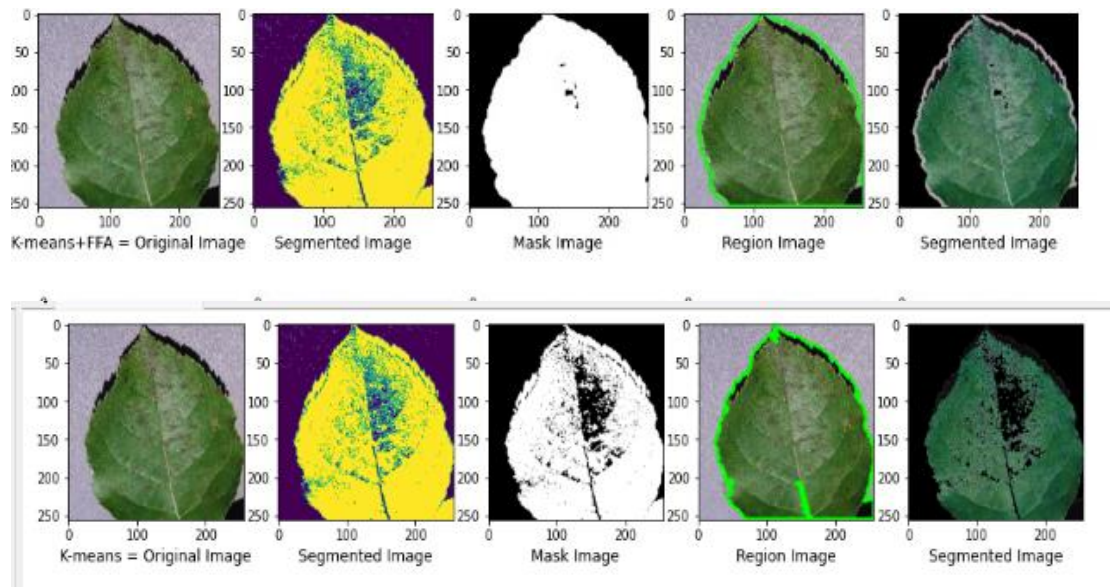
Conclusion

Digital image processing algorithms for plant image analysis to detect disease is highly researched area and the need for more accurate and faster algorithms is large. In this paper we proposed a method for plant image segmentation with the aim of detecting different disease in plants. Plant images are

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segmented by firefly algorithm combined by k-means clustering method in order to emphasize anomalies. The proposed method was tested on standard benchmark images and it obtained better results compared to traditional method. Future function, including spatial information in the segmentation process.

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STUDENTS' INVOLVEMENTS WITH E- LEARNING DURING THE COVID-19 SCHOOL CLOSING: EFFECTS FOR MATHEMATICS EDUCATION IN RURAL AREA OF PUNJAB

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ABSTRACT

Investigation findings display that additional than 59% of the respondents did not have suitable admittance to Information and Communication Technologies (ICT), electricity, and internet services. Maximum of these defendants also held a receiving that mathematics is a subject that is greatest learned with face-to-face interactions between the teacher and students, and among students. These results suggest a essential for the education systems in rural area of Punjab and other comparable circumstances to put up organization that supports the combined and online learning models during and after the COVID-19 pandemic. This paper information the discoveries of a expressive investigation research that explored secondary school students' capabilities with mathematics remote learning during the Corona Virus Disease 2019 (COVID-19) school closing. The study involved 159 students of ages 13 to 26 selected from senior secondary schools in rural area of Punjab using the collection random sampling method. Using a mixed-methods research methodology, quantitative and qualitative data were combination to provide a wide-ranging analysis of the main findings in the perspective of the existing literature, the government's response to COVID-19 school closing, and the challenges supplementary with remote learning during that time

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Introduction

The coronavirus disease 2019 (COVID-19) has been reflected one of the greatest health intimidations to humanity worldwide. As of March 8, 2021, the World Health Organisation (WHO) had verified a accumulative total of 116,521,281 confirmed cases of COVID-19 with 2,589,548 as a cumulative total over 215 countries or territories globally (World Health Organisation, 2021). It all started on December 31, 2019, when the Wuhan Municipal Health Commission in China, reported a collection of cases of pneumonia after which a novel coronavirus was identified. As the disease continuous to spread across the world at an alarming rate it became recognized by WHO as a pandemic on March 11, 2020 (World Health Organisation, 2020). Consequently, various states decided to close schools and universities as one of the procedures to minimalize person-to-person transmission. This closing postured a serious intimidation to educational establishment worldwide. More than 1.6 billion learners, representing nearly 80% of the world's student population in primary and secondary schools were affected by the school closings (UNESCO, 2020). The school closings directed to challenges that included disturbed learning, lack of proper nutrition among some learners, higher drop-out rates, and lowered academic achievement ranks, between others **(Ahedor, 2020; Lancker and Parolin, 2020; Sintema, 2020; UNESCO, 2020).**

The closing of schools stimulated many education systems world-over to adopt remote teaching and learning. According to Ray (2020), remote learning affords an opportunity for students and teachers to remain connected and complicated with the comfortable while working from their homes. In the situation of this study, all arrangements of learning that students' knowledgeable during the COVID-19 school closing are mentioned to as remote learning opportunities. From the rural areas of Punjab their experience, these include students' self-study using both electronic and hard copy learning materials, online learning (e.g., the smart revision, and e-learning portals, social media, etc.), lessons broadcasted by radio or television, and private tuitions provided by teachers. However, it had been predicted that remote teaching and learning had added to the challenge of learning mathematics, a subject supposed to be difficult by many learners at the secondary level of education in Punjab. As a result, it became important to explore secondary school students' of rural areas and their experiences with mathematics remote learning during the COVID-19 school closure.

Contribution to the Literature on E learning of Mathematical Challenges

Virtual learning in an endemic is an additional determination (Basilaia & Kvavadze, 2020; Bauerlein, 2008; Laprairie & Hinson, 2006; Taha et al., 2020). The preparation of online learning is positively material because it can be used everywhere and anytime (Bourne et al., 2005; Means, 2010; Nakamura et al., 2018; Özyurt et al., 2013). However, do not adjacent your eyes that the application of online learning promotions its difficulties

(Hung & Chou, 2015; Smart & Cappel, 2006; Van Bruggen, 2005). Consequently, refined education that has unsatisfactory or no thoughtful of e-learning or e-learning possessions assistances complications, principally, when presenters nonexistence statistics of how to use online propositions (Kim & Bonk, 2006; Zaharah & Kirilova, 2020). Implementation of online learning in higher education does have recompenses and shortcomings. The advantages of online learning are that it is elastic and can be comprehensively used, while the drawback is that it is very approaching to do plagiarism perceives, internet suggestion strong point, and approaches that sustenance (Arkorful & Abaidoo, 2015; Irfan, 2015).

Since COVID19 Pandemic occurred in Indonesia, research on COVID-19 began to be carried out. In the ground of mathematical exhibiting, countless specialists forecast when the pandemic reaches its highest when it ends, and the programme model of the spread of viruses (Kim et al., 2020; Ndaïrou et al., 2020; Nuraini et al., 2020; Peirlinck et al., 2020; Rahimi & Abadi, 2020; Resmawan & Yahya, 2020; Soewono, 2020; Tang et al., 2020). Whereas in learning mathematics in schools, research on obstacles in the use of e-learning that occurred in schools (Mailizar et al., 2020; Mulesnga & Marbán, 2020). Much research on barriers caused by the application of online learning in nonpandemic situations (Ali & Magalhaes, 2008; Beetham & Sharpe, 2007; Eady & Lockyer, 2013; Karasavvidis

While research on barriers to the use of online learning during the pandemic is still not widely done. Mailizar et al. (2020) introduced investigation on obstacles to the practice of e-learning in Indonesia, but the contributors complicated were mathematics teachers. This research was directed in Indonesia at the time of the Pandemic period and absorbed to discovery obtainable the obstacles that ascend subsequently the application of online learning in mathematics learning in Higher Education. Most of the studies directed did not focus on learning mathematics in tertiary establishments (Ali et al., 2018; Donnelly & McSweeney, 2008; Kabilan & Khan, 2012).

The conclusions from this study will help development our sympathetic of the difficulties to e-learning integration among the COVID-19 pandemic in the background of emerging countries at the tertiary level. Therefore, this learning complements appreciated understandings to the e-learning literature and make available important propositions for enlightening e-learning performs. To succeed this goal line, this education seeks to response enquiries

Challenges

1) for teachers and students for mathematics learning during COVID-19

Since from the March 2020 all schools are closed due to Pandemic. Suddenly everything was stuck. In this cries education suffered very much. Teachers and students suffered a lot. In Punjab especially in the Govt schools E Learning adoption quite difficult. The following challenges has been faced by teachers and students both in the learning of Mathematics.

Challenges for the teachers in rural Schools.
In the rural area of Punjab teachers faced the challenges regarding mathematics teaching on remote learning. When interviewed was taken from the teachers of Govt Schools its observed that there are many challenges faced by teachers that is

a)   Challenges of Technology in rural area
b)   difficulties accessing learning
c)   Lack of mathematics textbooks and other learning materials
d)   Lack of someone to explain certain mathematical concepts
e)   Lack of internet access
f)   Lack of ICT gadgets like smartphones, computers, etc.

Framework of the learning

Punjab and many other regions worldwide have perceived incredible surprises resulting from the COVID-19 encouraged disaster. Since its commencement in rural area of Punjab , the COVID-19 pandemic was predicted to degenerate the problematic of students' little accomplishment stages specially in STEM subjects (Sintema, 2020). The first two positive cases of COVID-19 in rural area were publicized on March 18, 2020, by the Minister of Health during the regular informs on the COVID-19 condition in the country. This declaration was headed by a media statement a day previous in which the government through the Minister of Health ordered the closure of all schools and universities by March 20, 2020, in a suggestion to aggressive the spread of the disease. The increasing total of COVID-19 positive cases in Punjab had risen to 82,655 with 78,721 recoveries and 1,132 deaths as of March 9, 2021 (Worldometer, 2021).change this line.

At the commencement of school conclusions, this epidemic repeated us of the essential for substitute mathematics teaching performs separate the laboratory situation. The COVID-19 pandemic compulsory an instantaneous adjustment to alternative inaccessible learning method. In unification with the Ministry of General Education (MOGE), an communicating e-learning portal) in corporation.

The e-learning portal can be retrieved at while smart revision is accessible. Admittance to these platforms has been completed free of responsibility during the existing COVID-19 outbreak period. The national e-learning portal congregations countless teaching and learning materials including e-books, links for focused services, and a virtual library that can be useful to both teachers and students. The smart revision portal, on the other hand, hosts Punjab educational System past examination papers alongside sample answers and revision tips for classes 8, 9, 10,11,and 12. And for higher study. .

Existence conscious that a superior quantity of the school-going children did not have admittance to these stages, MOGE had also affianced numerous native radio positions in distribution these educations. This was correspondingly completed as part of the procedures for accomplishing one of the maximum determined Sustainable Development Goals (SDGs) – "Inclusive and equitable quality education". The Ministry of General Education had also joined with UNICEF on the production of enlightening constituents for beginners. Particular teachers especially those from urban area schools had been collaborating with parents to form Whatsapp collections finished which they could spread available to the students by generous them assignments, providing response, and attendance to individual learners' requirements. It was expected that a successful implementation of the measures highlighted above was bound to yield optimistic consequences not only for the contemporary condition but similarly for the future

With this background, it was essential to commence an experiential examination whose purpose was to find out students' experiences with remote learning of mathematics during the COVID-19 school closure.

This study was guided by three research questions:

H1: What is the significant difference of the male and female students to access mathematics lessons during the COVID- 19 school closure in selected secondary schools of rural area of Punjab

H2. There is significant difference for benefits were associated with the mathematical learning options that were used by secondary school students during the COVID-19 school closure in Punjab.

H3 there is no Significant difference between the challenges did students face with mathematics E- learning during the COVID-19 school closure

Answering these questions provided insights into what ought to be done to improve mathematics E- learning in times of the COVID-19 outbreak and beyond.

Method

Research design

A expressive examination research strategy was working. This strategy was suitable for the training because it empowered the researchers to assemble both qualitative and quantitative data at after deprived of nearby or protracted

communication with defendants in obedience to COVID-19 community isolation procedures. It was supplementary supposed that this enterprise would empower the researchers to get comprehensive interpretations from respondents regarding their experiences with mathematics remote learning during the COVID-19 school closing. Statistics to discourse the research queries were composed from September 2021, to December 2021. This was soon after the constitutional instruction to re-open schools at all levels of education, with much emphasis on strict adherence
to COVID-19 precautionary procedures as specified by the World Health Organization and the country's Ministry of Health

Study participants

A collection accidental selection method was used to excellent the research contributors from the board population involving grade 8,9,10 and grade 11and 12 students from community secondary schools. To confirm that both the urban and rural students were included in the sample,
Collection sampling was the maximum suitable for the study. Fraenkel et al. (2006, p. 95) also acceptable that this category of specimen is one of the easiest to instrument in schools, and it consumes less time. Constructed on the evidence attained from the district education office, these schools were characterized into two collections of their environmental position (urban versus rural area)

Tools: A semi-structured opinion poll, connecting both closed-ended and open-ended questions was controlled to the defendants. The questionnaire was the only statistics gathering implement used as it was considered suitable for circumventing researchers' close and/or continued contact with respondents for severe obedience to the "social distancing" COVID-19 precautionary quantity. The preparation of the questionnaire substances was completed in line with the prevailing literature on projections of mathematics education through the COVID-19 pandemic (Bakker and Wagner, 2020; Engelbrecht et al., 2020a, 2020b; Olivier, 2020). For occurrence, the above-cited studies had elevated selected apprehensions around online lesson distribution, the accompanying assistances as well as the

experiments that might rise outstanding to the nonexistence of ICT facilities in some surroundings. The preparation of questionnaire substances for this training was also stimulated by the government's answer to COVID-19 school closure and the projected experiments accompanying with E- Learning in Punjab. Prior to the central statistics assembly, a current questionnaire was directed to the specialists for authentication. These specialists included 2 Ph.D. students in mathematics education, 2 master's students in mathematics education, 6 college/university presenters in mathematics and science schooling, and 5 secondary school teachers of mathematics. These validators were nominated since of their enormous involvement with mathematics education research, and/or their enormous involvement with the country secondary school mathematics programmer. They were requested to observation on the superiority of the encompassed substances in relations of abundance, significance, clearness, and consistency.

Subsequently receiving feedback from these validators, their proposals and explanations were investigated and the concluding questionnaire was advanced. The questionnaire covered three sections namely, demographic information, students' access to mathematics learning throughout the COVID-19 school closure, and the experiments accompanying with the obtainable mathematics learning options throughout that time. After questionnaire modification, statistics assembly in all the experimented schools/classrooms originated. The questionnaire and the accompanying statistics groups are responsively obtainable at https://doi.org/10.17632/mb8sdf576c.1.

Ethical considerations

Research theories were maintained at completely segments of the education. First of all, authorization from the district instruction activity was compulsory and organized. Formerly distributing the questionnaires to the students, the head teacher or deputy head teacher for every underwriting school had to distribute statistics on the appropriate period to contribute with designated students, while succeeding to COVID-19 protecting processes.

Formerly administration the questionnaires to the students, the strength of mind of the study was progressive to them and they were free to contribute or not. In addition that, no name of the school, name of a class, or name of a respondent has been exposed in any publication exclusive of for the name of the district/city where the research was directed

H1: The result significant difference of the male and female students to access mathematics lessons during the COVID- 19 school closure in selected secondary schools of rural area of Punjab.

The result show in following table

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
one	Female	45	2.1778	.93636	.13958
	Male	58	2.3448	1.11688	.14665
two	Female	45	2.2667	1.23215	.18368
	Male	58	2.4483	1.12659	.14793
three	Female	45	2.4222	1.19637	.17835
	Male	58	1.9483	.82552	.10840
four	Female	45	3.3556	1.20897	.18022
	Male	58	3.3966	1.10723	.14539
six	Female	45	2.9333	1.15601	.17233
	Male	58	3.6207	1.16721	.15326
seven	Female	45	3.9333	.68755	.10249
	Male	58	3.8276	.62514	.08209
eight	Female	45	2.9111	1.14460	.17063
	Male	58	2.7586	1.06475	.13981
Nine	Female	45	3.0444	1.27841	.19057
	Male	58	2.7414	1.25041	.16419
Ten	Female	45	2.9111	1.23991	.18483
	Male	58	2.8103	1.23483	.16214
twelve	Female	45	2.5778	1.17722	.17549
	Male	58	2.6207	1.19689	.15716
thirteen	Female	45	3.1111	1.38535	.20652
	Male	58	3.3103	1.04641	.13740
fifteen	Female	45	2.3556	1.09036	.16254
	Male	58	2.2759	1.12067	.14715
sixteen	Female	45	2.4667	1.12006	.16697
	Male	58	2.7414	1.00106	.13145

Outcomes of H1: The result significant difference of the male and female students to access mathematics lessons during the COVID-19 school closure in selected secondary schools of rural area of Punjab. After calculated the standard error mean from the male and female students all value are less than 0.5 at 5% level of significance therefore we can say that there is significant difference between the access of the mathematics learning during COVID-19 between the male and female students in the rural areas of the Punjab
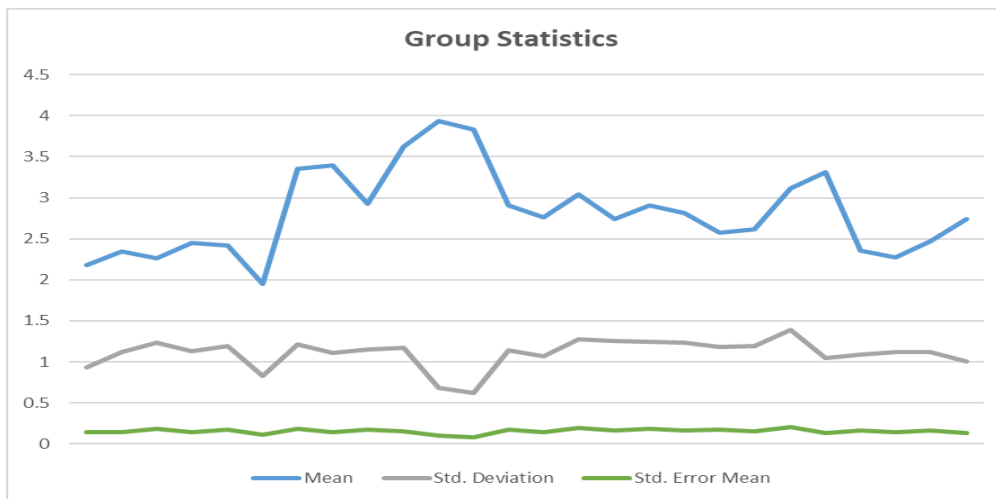
H2: There is significant difference for benefits were associated with the mathematical learning options that were used by secondary school students during the COVID-19 school closure in Punjab.

Independent Samples Test

Outcomes of the H2: There is significant difference for benefits were associated with the mathematical learning options that were used by secondary school students during the COVID-19 school closure in Punjab. After applying the t-test for the equal means two tailed and also apply f-test variance is 1.175 and with t- test at 95)% level of significance there is no significant difference between the benefits of mathematical learning during COVID-19 by senior secondary students of the Punjab but when we applied the t-test for two tailed there is significant difference for mathematical E-Learning for senior secondary students

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
one	Equal variances assumed	1.175	.281	-.807	101	.422	-.16705	.20702	-.57771	.24361
	Equal variances not assumed			-.825	100.358	.411	-.16705	.20246	-.56871	.23461
two	Equal variances assumed	.168	.683	-.779	101	.438	-.18161	.23317	-.64415	.28094
	Equal variances not assumed			-.770	90.273	.443	-.18161	.23584	-.65013	.28691
three	Equal variances assumed	8.862	.004	2.376	101	.019	.47395	.19946	.07827	.86962
	Equal variances not assumed			2.271	74.649	.026	.47395	.20870	.05816	.88974
four	Equal variances assumed	.484	.488	-.179	101	.858	-.04100	.22898	-.49523	.41324
	Equal variances not assumed			-.177	90.361	.860	-.04100	.23155	-.50099	.41900
six	Equal variances assumed	.056	.814	-2.977	101	.004	-.68736	.23090	-1.14541	-.22930
	Equal variances not assumed			-2.980	95.171	.004	-.68736	.23062	-1.14519	-.22953

Table title: t-test for Equality of Means / Levene's Test for Equality of Variances

|		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	Lower	Upper
seven	Equal variances assumed	.022	.881	.815	101	.417	.10575	.12973	-.15161	.36310
	Equal variances not assumed			.805	89.973	.423	.10575	.13131	-.15513	.36662
eight	Equal variances assumed	.263	.609	.698	101	.487	.15249	.21857	-.28109	.58607
	Equal variances not assumed			.691	91.187	.491	.15249	.22059	-.28567	.59065
Nine	Equal variances assumed	.227	.635	1.208	101	.230	.30307	.25084	-.19453	.80066
	Equal variances not assumed			1.205	93.707	.231	.30307	.25155	-.19641	.80254
Ten	Equal variances assumed	.015	.902	.410	101	.683	.10077	.24574	-.38672	.58826
	Equal variances not assumed			.410	94.552	.683	.10077	.24587	-.38738	.58892
twelve	Equal variances assumed	.184	.669	-.182	101	.856	-.04291	.23607	-.51122	.42539
	Equal variances not assumed			-.182	95.474	.856	-.04291	.23558	-.51056	.42474
thirteen	Equal variances assumed	9.501	.003	-.832	101	.408	-.19923	.23954	-.67443	.27596
	Equal variances not assumed			-.803	79.544	.424	-.19923	.24805	-.69291	.29444
fifteen	Equal variances assumed	.180	.673	.362	101	.718	.07969	.22002	-.35677	.51616
	Equal variances not assumed			.363	95.935	.717	.07969	.21926	-.35553	.51492
sixteen	Equal variances assumed	1.354	.247	-1.311	101	.193	-.27471	.20949	-.69029	.14086
	Equal variances not assumed			-1.293	89.039	.199	-.27471	.21250	-.69695	.14752
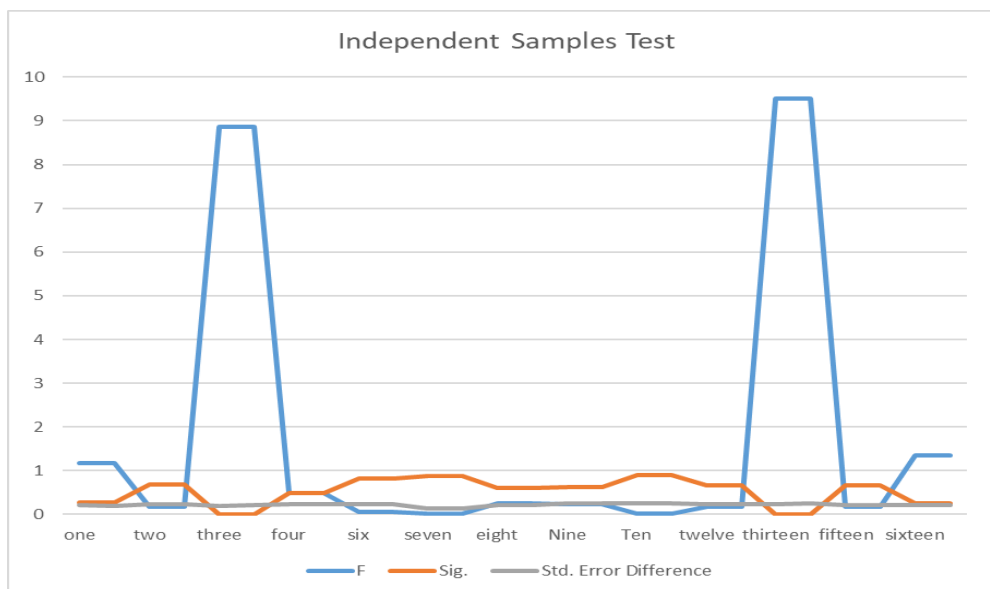
H3 The result of there is no Significant difference between the challenges did students face with mathematics E- learning during the COVID-19 school closure shown in the table 3

ANOVA				Sum of Squares	df	Mean Square	F	Sig.
two	Between Groups	(Combined)		1.165	4	.291	.206	.935
		Linear Term	Unweighted	.658	1	.658	.465	.497
			Weighted	.664	1	.664	.468	.495
			Deviation	.501	3	.167	.118	.949
	Within Groups			138.816	98	1.416		
	Total			139.981	102			
three	Between Groups	(Combined)		1.625	4	.406	.376	.825
		Linear Term	Unweighted	.368	1	.368	.340	.561
			Weighted	.027	1	.027	.025	.874
			Deviation	1.598	3	.533	.493	.688
	Within Groups			105.889	98	1.081		
	Total			107.515	102			
four	Between Groups	(Combined)		3.651	4	.913	.685	.604
		Linear Term	Unweighted	.001	1	.001	.000	.983
			Weighted	.772	1	.772	.580	.448
			Deviation	2.879	3	.960	.720	.542
	Within Groups			130.582	98	1.332		
	Total			134.233	102			
six	Between Groups	(Combined)		1.477	4	.369	.246	.911
		Linear Term	Unweighted	.275	1	.275	.183	.670
			Weighted	.028	1	.028	.019	.891
			Deviation	1.449	3	.483	.322	.809
	Within Groups			146.950	98	1.499		
	Total			148.427	102			
seven	Between Groups	(Combined)		.283	4	.071	.161	.958
		Linear Term	Unweighted	.013	1	.013	.029	.866
			Weighted	.034	1	.034	.077	.781
			Deviation	.249	3	.083	.189	.904
	Within Groups			43.077	98	.440		
	Total			43.359	102			
eight	Between Groups	(Combined)		7.935	4	1.984	1.692	.158
		Linear Term	Unweighted	5.931	1	5.931	5.058	.027
			Weighted	1.794	1	1.794	1.530	.219
			Deviation	6.141	3	2.047	1.746	.163
	Within Groups			114.919	98	1.173		
	Total			122.854	102			
Nine	Between Groups	(Combined)		4.565	4	1.141	.704	.591
		Linear Term	Unweighted	4.317	1	4.317	2.664	.106
			Weighted	2.758	1	2.758	1.702	.195
			Deviation	1.807	3	.602	.372	.774
	Within Groups			158.794	98	1.620		
	Total			163.359	102			
Ten	Between Groups	(Combined)		23.564	4	5.891	4.399	.003
		Linear Term	Unweighted	7.016	1	7.016	5.238	.024
			Weighted	.558	1	.558	.417	.520
			Deviation	23.006	3	7.669	5.726	.001
	Within Groups			131.251	98	1.339		
	Total			154.816	102			
twelve	Between Groups	(Combined)		13.960	4	3.490	2.657	.037
		Linear Term	Unweighted	6.571	1	6.571	5.002	.028
			Weighted	1.354	1	1.354	1.031	.313
			Deviation	12.606	3	4.202	3.199	.027
	Within Groups			128.720	98	1.313		
	Total			142.680	102			
thirteen	Between Groups	(Combined)		13.453	4	3.363	2.452	.051
		Linear Term	Unweighted	.113	1	.113	.082	.775
			Weighted	.067	1	.067	.049	.826

				Deviation	13.386	3	4.462	3.253	.025
	Within Groups				134.411	98	1.372		
	Total				147.864	102			
fifteen	Between Groups	(Combined)			5.337	4	1.334	1.101	.360
		Linear Term	Unweighted		.061	1	.061	.051	.822
			Weighted		.965	1	.965	.796	.374
			Deviation		4.373	3	1.458	1.203	.313
	Within Groups				118.721	98	1.211		
	Total				124.058	102			
sixteen	Between Groups	(Combined)			.540	4	.135	.116	.976
		Linear Term	Unweighted		.067	1	.067	.058	.810
			Weighted		.000	1	.000	.000	.992
			Deviation		.540	3	.180	.155	.926
	Within Groups				113.693	98	1.160		
	Total				114.233	102			

Outcomes of H3: After applying the two way ANOVA it is conclude that there is no significant value which is less than 5% level of significance. Students views are different to their personal views some students are faced that mathematical E learning is quite difficult to understand as compare to the face to face Mathematical E Learning but in the rural areas specially students can faced the difficulty to access the E learning tools for the Mathematics. Students can faced the challenges to understand the mathematical E learning as compare to the face to face learning in rural area of Punjab.
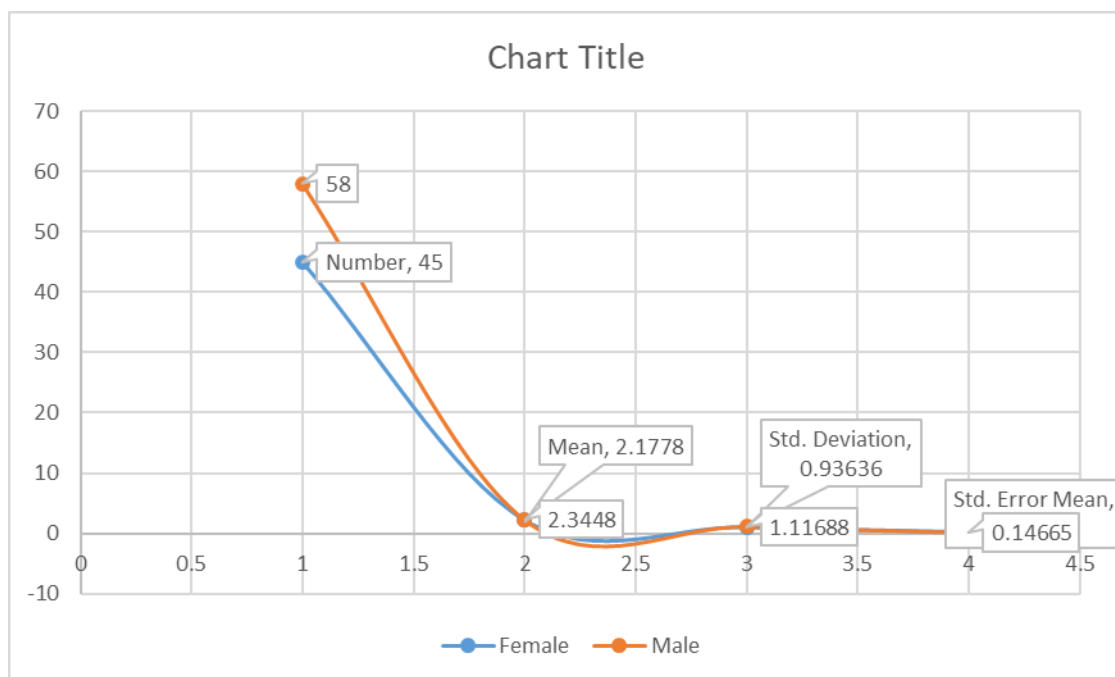
Study limitations

Unique main restriction of this education is that the questionnaire was the individual research implement used. Although an enlightenment to this organizational restriction has been given, it be sufficient to argument out that not all the compulsory statistics strength have been assembled as some reactions needed some follow-up questions concluded interviews or other forms of statistics assortment. Additional restriction of the study was that only one constituency was complicated .This methodological restriction makes it challenging to simplify the research conclusions to supplementary circumstances specifically those that are completely rural. Given these restrictions, it is commended that impending studies on this subject should increase the number of research applicants by accumulative

the number of districts and secondary schools. Miscellaneous procedures studies may provide further understandings that strength have not been arrested in the contemporary learning. There is also a requirement for upcoming educations to make available further understandings on how ICT can encourage the training of mathematics during and after the COVID-19 virus.

Conclusion

Unique of the important discoveries of this study is that although peri-urban students practiced more complications in recovering isolated learning throughout the COVID-19 school conclusion, urban students correspondingly practiced some experimentations counting nonexistence of admittance to ICT facilities, asymmetrical quantity of electricity, and nonexistence of inspiration to learn deprived of physical communication with the teacher and corresponding students and their nonexistence of self-possession. There is, therefore, a essential for secondary schools, with the assistance of the government and supplementary shareholders to encourage the establishing of e-learning facilities nationwide. It is correspondingly significant to note that the proposals specified in this paper are just the slant of the iceberg. There is a essential for concentrated determinations between the teachers, the Zambia Association for Mathematics Education (ZAME), MOGE, ECZ, parents, and other stakeholders to confirm that all school-going children are providing with value mathematics education throughout and subsequently the COVID-19 pandemic. To certify that methodical and supportable explanations are providing, all influences that disturb admittance to education throughout a emergency like the COVID-19 pandemic should be discovered empirically and recognized to deliver a foundation for additional arrangements, in policy, system, and training. Since unique of the significant conclusions of this training discusses to the students' requirement on the teacher, they should be stimulated to learn mathematics on their individual concluded numerous stages such as the ones that have been emphasized in this paper.

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BONE AGE ESTIMATION MODEL USING HOURGLASS MODEL

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ABSTRACT

During the era of growth, the form and size of the bones change dramatically. Bone growth diagnosis using X-ray imaging has long been standard practise in the medical field. X-ray imaging of the hand has long been preferred because of its increased bone count and reduced radiation requirements. Atlases of photo of the hand bone areas where aging-related metamorphoses are most prominent have traditionally been used to estimate bone age. Tanner and Whitehouse's and Greulich and Pyle's are two well-known examples. The subject's hand area images are manually compared to a collection of equivalent images in the atlases as part of the procedure. Automated estimation of bone age from hand images is desirable, as it would allow for more efficient estimates in terms of time and personnel cost, as well as quantitative and objective judgments. Many applications have shown that the deep learning technique is a viable one. In this paper, we have designed a bone age estimation model based on hourglass model. Besides that, pre-processing of the image is done using median filter and region of interest (ROI) find using the hybrid combination of whale and cat swarm optimization algorithm. The simulation evaluation is done on RSNA dataset and three performance parameters such as mean square error, mean absolute error, and mean absolute percentage error are determined. The result shows that the proposed model provides superior results over ridgenet model.

Keywords: *Bone Age Estimation, Cat Swarm Optimization, Deep Learning, Hourglass Model, RSNA Hand X-ray Images, Whale Optimization.*

1. Introduction

When a person lives a long period, their bones endure a great deal of form change. These shifts are more pronounced during times of rapid expansion. Forearms are attached to hands using ulna and radius bones, which together include 30 bone pieces in total (Fig. 1).
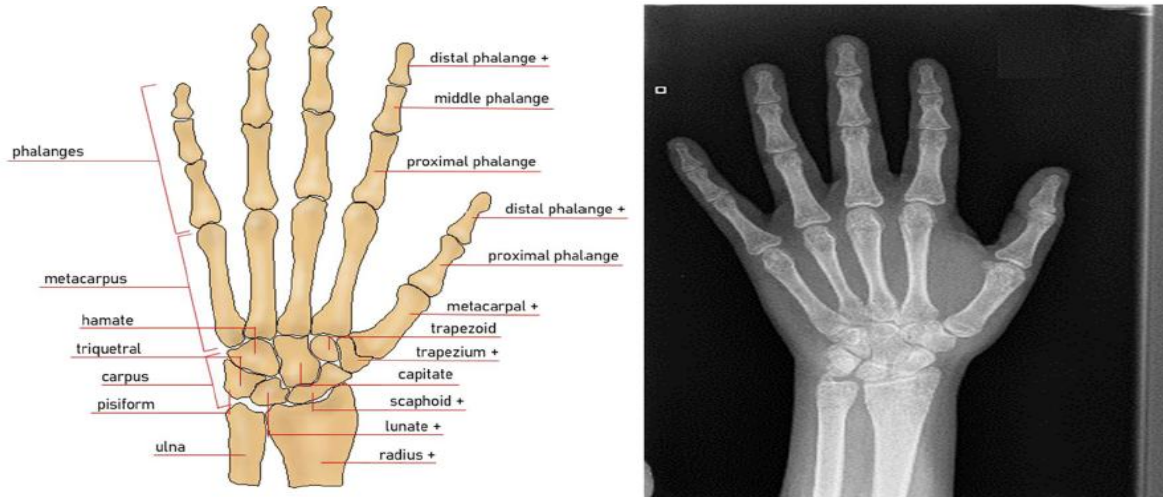

Figure 1 Sample of Skeletal Anatomy [3] and X-ray Hand Image [4]

The hand is an excellent body component for X-ray imaging due to its high bone count in a compact volume and low radiation requirements. Greulich and Pyle [1] took advantage of this feature. At the same time, they built an X-ray hand atlas that shows which parts of the hand are more noticeable as we get older and how they change over time. Tanner and Whitehouse then developed a more detailed atlas of images depicting bone morphological alterations throughout time [2]. There are examples of hand bone scans from various eras in Figure 2.
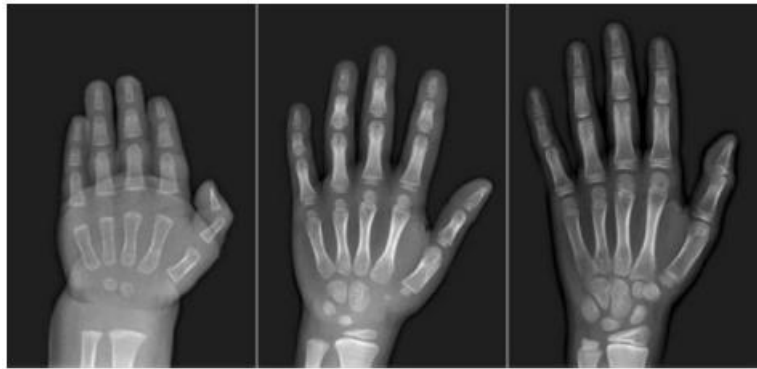
Figure 2 Hand bones at different ages

Bone morphological changes caused by age are most often seen as an increase in size. While infancy, diaphyses comprise the majority of bone tissue. There are several changes that occur as we become older, such as the ossification of epiphyseal cartilage. Certain people's development may be significantly delayed or accelerated compared to the average person's. Children and adolescents who are underweight relative to their age peers may be eligible for specific therapy for growth stimulation and the elimination of pathological reasons including endocrine abnormalities. If growth norms are to be assessed objectively, a precise diagnosis is required.

The comparison of a patient's images to a referenced atlas image demands a great deal of time and effort on the part of the clinician. The process is also subjective, with various individuals interpreting it differently based on their own personal encounters and training route ideas. Visual similarity-cued individual judgements make it difficult to quantify diagnostic outcomes. Atlas-based manual estimate has another drawback: it may not be as accurate [5-6].

Images may be automatically inferred using machine learning algorithms, which establish a map from inputs and outputs. The machine learning approach provides advantages such as automated and computerised processing, quantitative assessments of resemblance, etc. Clinical settings benefit from a reduced need for human involvement, which lowers labour costs and increases efficiency. Machine learning was used to develop BoneXpert, which was first released in 2009 [7-8].In the literature, various machine learning algorithms are deployed for bone age estimation. The most popular methods are deep learning [9-14],

residual attention-based network [15], ridge network [16], convolutional neural network [17].

The main contribution of this paper is to design a bone age estimation model. To achieve this goal, initially, region of interest (ROI) found in the input image by hybrid combination of bio-inspired algorithms such as whale optimization and cat swarm optimization based on the objective function. K-Mean clustering algorithm is used as objective function in the bio-inspired algorithm. Besides that, median filtering is applied for remove the noise in the input image. After that, hourglass model is utilized for bone age estimation. The hourglass model is trained using ROI images and bone age estimation is done. The simulation evaluation of the proposed model is done on the RSNA images. Subjective and objective analysis is done for it. The result shows that the proposed model shows superior results over the existing model such as Ridgenet.

The rest of the paper is organized as follows. Section 2 provides an overview of the algorithms utilized by the proposed model. The proposed model is illustrated in Section 3. The simulated evaluation of the proposed model and comparison with existing models are shown in Section 4. In Section 5, the conclusion has been drawn.

2. Related Work

To further comprehend the proposed model, we have covered the hourglass model and pre-processing algorithms in this section.

2.1 Hourglass Model

The hourglass's design was inspired by the necessity to record data at every size. Identifying characteristics such as faces and

hands relies on local evidence, but a final position estimation needs a complete grasp of the body [18]. The position of a person's limbs and the connection between their neighbouring joints are a few of the numerous indicators that are most easily discernible at various zoom levels. The hourglass is a basic, simplistic design that has the ability to collect all of this information and combine them into pixel-based forecasts. Effective feature processing and consolidation across different sizes must be provided by some mechanism in the network. Some systems employ different pipelines that analyse the image separately at several resolutions and aggregate features later on in network [19, 20]. At 4x4 pixels, the network achieves its lowest resolution, enabling smaller spatial filters to be integrated that compare characteristics throughout the full image area.

In the hourglass, the following is how it works: Very low-resolution features are processed using convolutional and max pooling layers. The network takes a branch at each max pooling phase and performs further convolutions at the resolution that it had before it was pooled. In order to up sample and combine features across scales, the network starts at the lowest resolution and works its way up in a top-down fashion. A approach developed by Tompson et al. [19] is used to combine data from two neighbouring spatial resolutions by first performing closest neighbour upsampling on the lower resolution and then adding the two sets of features together elementwise after that. Every layer that is present on the way down has an equal number of layers present on the way up, according to the hourglass' symmetric topology. Final predictions are made by applying two successive rounds of 1x1 convolutions on the output resolution of the network. For each heatmap, the network generates a collection of heatmaps showing the chance that a joint will be present at every pixel. (Excluding final 1x1 layers) Figure 3 depicts the whole module in detail.
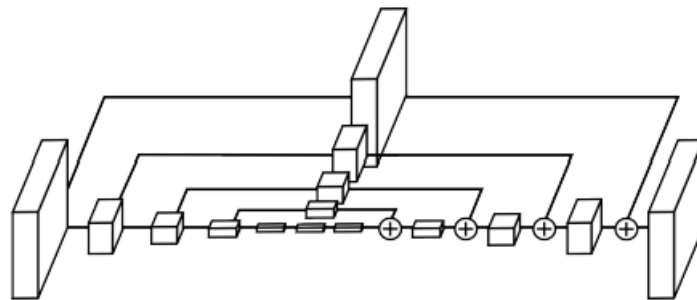

Figure 3 A single "hourglass" module is depicted. Each box in the diagram represents a residual module [18]

2.2 Pre-Processing Algorithms

In the pre-processing, initially, median filter is applied to reduce noise. Further, region of interest is determined by hybrid the two optimization algorithms such as whale optimization and cat swarm optimization (CSO). The detailed description of these algorithms is given in Mirjalili, S. and Lewis, A [21] and Ahmed et al. [22].

3. Proposed Model

The proposed model is successfully estimate bone age from the X-ray image. The flowchart of the proposed model is shown in Figure 4. Initially, RSNA X-ray hand image is read.

After that, pre-processing of the image is done to determine the region of interest (ROI) in the input image. Therefore, input image is filtered using median filtered. Next, hybridization of two bio-inspired algorithms (whale optimization and cat swarm optimization) is done to determine region of interest (ROI) based on the objective function. The objective function is based on K-mean clustering algorithm. Further, hourglass model is trained using ROI images and bone age estimation is done. In the last, performance analysis of the proposed model is done using subjective and objective analysis. In the subjective analysis, based on the visual analysis, the proposed model is evaluated whereas in objective

analysis, various parameters such as MAE, RMSE, and RMSPE are calculated and compared with the existing Ridgenet model.
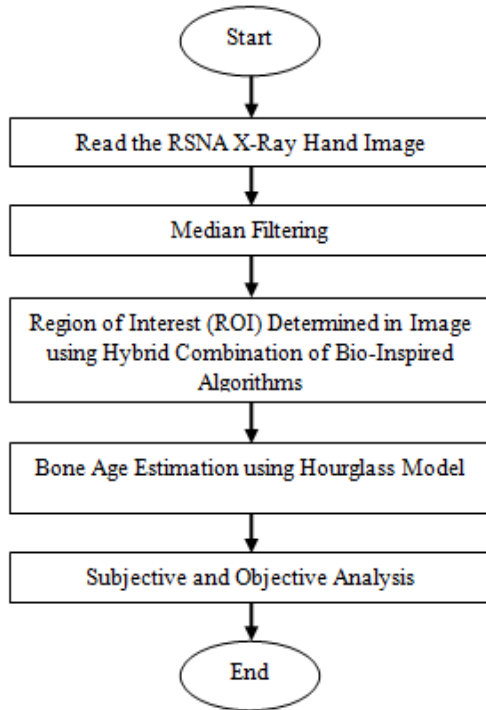

Figure 4 Proposed Model for Bone Age Estimation

4. Simulation Evaluation

The simulation evaluation of the proposed model is done on the standard dataset images provided by RSNA hand X-ray Images [4]. Further, MATLAB software is used for simulation purposes. The simulation setup configuration of the proposed model is shown in Table 1.

Table 1 Simulation Setup Configuration

Parameters	Value
Max Epochs	20
Initial Learn Rate	0.1
Learn Rate Drop Factor	0.1
Learn Rate Drop Period	15
No of Layer	50
Min. Batch Size	256
Input Layer	64 x 64

Next, the subjective and objective analysis of the proposed model is to evaluate its performance over the existing models.

4.1 Subjective Analysis

In the subjective analysis, predicted bone ages are shown for proposed model in Figure 5
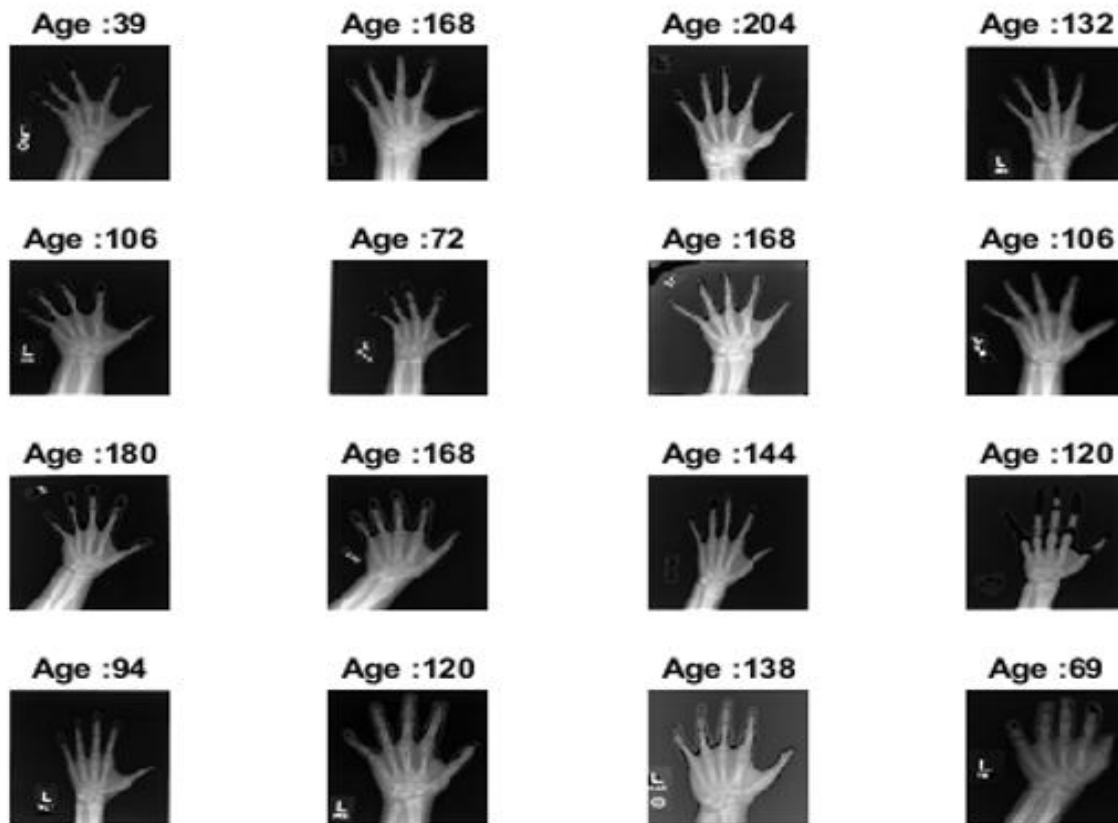

Figure 5 Subjective Analysis of the Proposed Model

4.2 Objective Analysis

Mean Absolute Error (MAE), Root Mean Square Error (RMSE), and Root Mean Squared Percentage Error (RMSPE) parameters are measured in the objective analysis [16].

- Mean Absolute Error (MAE): MAE is calculated using Eq. (1).

$$MAE = \frac{1}{N}\sum_{m=1}^{N}|X_m - X'_m| \quad (1)$$

In Eq. (1), N denotes the total number of samples in the test set. X_m, X'_m denotes the actual and model's predicted values. Table 2 shows the comparative analysis of the proposed model with the existing model based on the MAE parameter. The result shows that the proposed model achieves lowest MAE value for different options (both and male) as compared to the Ridgenet model, as shown in Figure 6.

Table 2 Comparative Analysis based on MAE Parameter

Models	Both	Male
Ridgenet [16]	6.2	5.8
Proposed Model	0.49091	0.75524
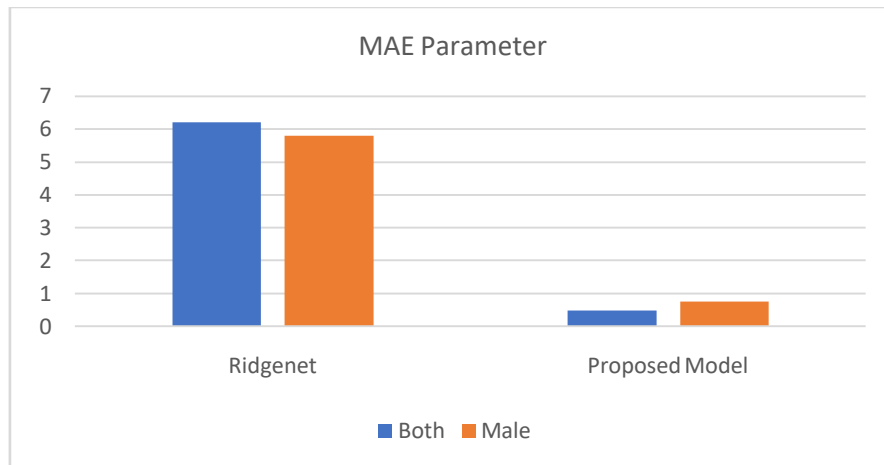
Figure 6 Comparative Analysis based on MAE Parameter

- Root Mean Square Error (RMSE): RMSE is calculated using Eq. (2).

$$RMSE = \sqrt{\frac{1}{N}\sum_{m=1}^{N}(X_m - X'_m)^2} \quad (2)$$

In Eq. (2), N denotes the total number of samples in the test set. X_m, X'_m denotes the actual and model's predicted values. Table 3 shows the comparative analysis of the proposed model with the existing model based on the RMSE parameter. The result shows that the proposed model achieves lowest RMSE value for different options (both, male, and female) as compared to the Ridgenet model, as shown in Figure 7.

Table 3 Comparative Analysis based on RMSE Parameter

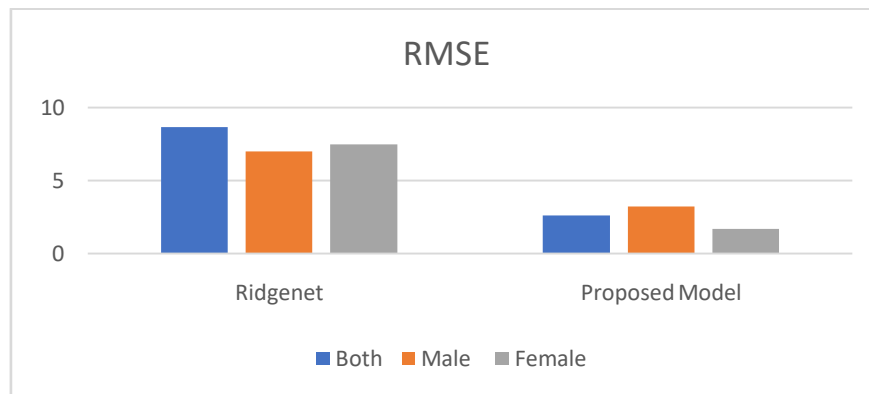| Models	Both	Male	Female
Ridgenet [16]	8.7	7	7.49
Proposed Model	2.5858	3.2108	1.6617

Figure 7 Comparative Analysis based on RMSE Parameter

- Root Mean Squared Percentage Error (RMSPE): RMSPE is calculated using Eq. (3).

$$RMSPE = \sqrt{\frac{1}{N}\sum_{m=1}^{N}\left(\frac{X_m - X'_m}{X_m}\right)^2} \quad (3)$$

In Eq. (3), N denotes the total number of samples in the test set. X_m, X'_m denotes the actual and model's predicted values. Table .

4 shows the comparative analysis of the proposed model with the existing model based on the RMSPE parameter. The result shows that the proposed model achieves lowest RMSPE value for different options (male and female) as compared to the Ridgenet model, as shown in Figure 8

Table 4 Comparative Analysis based on RMSPE Parameter

Models	Both	Male	Female
Ridgenet [16]	2.71	0.94002	0.38376
Proposed Model	3.08	0.73206	0.24772
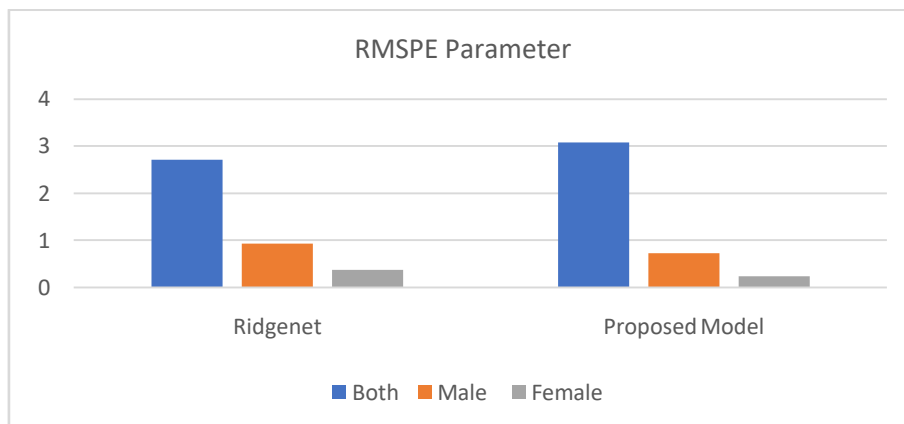
Figure 8 Comparative Analysis based on RMSPE Parameter

5. Conclusion

In this paper, a bone estimation model is designed based on hourglass model. Besides that, pre-processing of the image is done to determine the region of interest (ROI). To achieve this goal, initially, images are filtered using median filter to remove noise. After that, ROI find in the image using hybrid combination of bio-inspired algorithms (whale optimization and cat swarm optimization). The simulation evaluation is performed on the standard dataset images (RNSA X-Ray Hand Images) and subjective and objective analysis is performed for it. In the subjective analysis, different stages of bone age estimation model images are shown whereas in objective analysis, performance parameters such as MAE, RMSE, and RMSPE are calculated for it. The result shows that the proposed model achieves the lowest value of these parameters over the existing model such as Ridgenet

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IMPORTANCE OF FINGER PRINTS EXAMINATION IN THE ADMINISTRATION OF JUSTICE

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ABSTRACT

Criminal Judicial System is now at the cross roads in our country. Many witnesses turn hostile in court which causes criminals get away from the hands of law. Forensic Science is a branch of science which helps in identifying the suspect in a criminal case. This gives the information like when, how, where the crime occurred and the modus operandi used by the accused for committing a crime. As the findings of forensic investigation is credible, reliable it is being used widely in the criminal judicial system. Fingerprinting is the one of the techniques used in Forensic Science to identify the accused. Fingerprint analysis has been used for more than a century for tracing and convicting of the accused. As the science developed, the method of using fingerprinting techniques also has been changed. The manual system of fingerprinting has been replaced by Computer technology. This modern technology has proved to be accurate and relevant. This article reviews the present status of using fingerprinting in our country and to find out the method of using technology to help the fingerprint identification and to speed up the process of solving crimes.

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Keywords: Criminal Judicial System, Forensic Science, Fingerprinting techniques.

Introduction

Thousands of years before the birth of Christ, finger prints were used on pottery to indicate the maker and the brand of the pottery. However, scientifically, it was considered as the identity of the accused by the crime investigators for more than a century. All human beings are born with a characteristic set of ridges on the fingertips. The ridges, which are rich in sweat pores, form a pattern that remains fixed for life. The study of fingerprint for the purpose of identification is called Dactylography.

Criminals were identified through fingerprints was the first and most important breakthrough in investigation of crime cases using scientific technology. Initially, the judiciary as well as public took time to accept utility of fingerprint to identify the criminals as a scientific aid but now it is recognized throughout the world. Fingerprints have been used as the gold standard for identification of criminals for more than a century. The basic concept of using fingerprint as evidence is that no person can be committed a crime without the assistance of hands, the prime body part of a persons. Moreover, fingerprints are of permanent nature and they do not change throughout the life of an individual. Whenever a criminal commits any offence, he uses his hands which leave marks on the crime scene or on any object, which come contact with his hands. These impressions become evidence for identification of a person involved in crime.

Importance Of Study

Fingerprint is one of the oldest but most interesting human abilities of recognition. The law enforcing agencies accepted the fingerprint as a valid sign of identity in early 20th Century. The Technology using finger identification system used in various application where the identification and authentication of human being required, It is widely used in law, crime, defence, banking, communication etc. However, in Criminal Judicial system, the finger print is used as a tool for identifying the accused involved in a criminal case. The victims of criminal offences seek justice through the courts by filing cases against the offenders for awarding punishment to the culprits. In the court, the State is required to prove the offences committed by criminals through the Public Prosecutor by producing adequate evidences. The investigating agencies depend upon medical and scientific evidence to prove the guilty of the offenders. The medical and scientific evidences have an important role to identify the accused and to prove his guilt. As these evidences are corroborative pieces of evidence, these scientific evidences cannot be easily rejected by the courts.

The first case held in 1882 in which the accused was convicted based on fingerprint examination. An Argentinian widow wanted to

re-marry, but she had two children live with her. Her proposed husband wanted to marry her, but she was not allowed to bring the children with her. Finally, she decided to get rid of the children by murdering them. She murdered her children and made hue and cry and stated that somebody had murdered her children. Bit bloodstained fingerprint on the door revealed the truth and she was convicted for murder.[i]

Objective Of The Study

The main aim for the study on the importance of fingerprinting in criminal investigation is conducted keeping the mind of the following objectives:

- To study the importance of fingerprinting in administration of justice
- To see the relevancy and admissibility of Scientific evidences in criminal investigation.
- To see the hurdles in the investigation of criminal cases.
- To find out loopholes in the criminal justice system for conducting investigations of criminal offence.

Research Methodology

The study conducted is based on the doctrinal research method. This will include text books, statutes, reports, legal journals and medical journals, reports from various commissions, newspapers, website etc.

Fingerprinting Meaning

The meaning of fingerprints in Cambridge English Dictionary is "The pattern of curved lines on the end of a finger or thumb that is different in every person or a mark left by this pattern. The term fingerprint also meant that "the reproduction of the ridge formation on the surface of the outer or nail joint of the finger in any manner whatsoever: whether it be represented in ink, in blood or by greasy substance which is emitted by the sweat glands, through the outlets which are situated in the summit or top of these ridges; whether it be photographic reproduction, impressed in clay, wax putty or whether it be on a paper, woodwork, glass or silverware etc."[ii]

Eventhough a person does not dip his fingertips in ink or in grease or in anything, the fingertips leave fingerprints. Through the tiny pores of the skin, sweat and body oils constantly goes out and these materials coat the ridge and line of the fingerprints. Whenever a person touches something, the friction of the skin contacts with the object, the material present on the skin transferred to the object, the materials present on the skin transferred to the object leaving impression of ridges and lines of fingers[iii]

Composition Of Fingerprints

The fingerprints actually refer to oil, perspiration and other residue left behind by person's friction ridge skin after they have touched something. Friction ridge skin is characterized by hills called ridges and valleys called furrows. These ridges and furrows form three basic finger print patterns. They are arches, loops and whorls. In additions to this, there are many tiny variations and irregularities within the ridges, they are termed as minutia and ridge characteristics. These ridge characteristics results in individually between the fingers themselves. No two prints never have been found same.[iv]

Ancient History

In Northwest China, an earthenware estimated about 6000 years was discovered at an archeological site and found that friction ridge impressions on it. It is not ascertained so far whether the print deposited on it by specific intent or accidentally. However, these prints are now considered as the oldest friction ridge skin impression[v]. From this, it is believed that friction ridge impressions used as a means of identification for the first time by the Chinese. During the Qin through Eastern Han Dynasty (the period from 221 B.C to 220 A.D) in China, clay seal was used, which is considered as the best example of individualization friction ridges. Bamboo slips or pages rolled with string bindings were used as documents, the strings were sealed with clay. Impression of the name of author on one side of the seal in the form of stamp and other side was impressed the fingerprint of the author. The seal was affixed to prevent tampering of the document before reaching the intended reader. The fingerprint and the name of the author

gave the document the authenticity.[vi] In AD 105, after invention of paper by the Chinese, it was a standard practice in China using impression of palmprint, phalangeal marks or finger prints on documents made for contract purpose. The practice of using friction ridge skin impression on land contracts, wills and army roasters continued in China during Tang Dynasty (A D 617 - 907)also. These practices were also used for trading with other nations.[vii]

The use of friction ridge skin was also used in Japan and a domestic law for this was enacted in AD 702. As per the law, if husband cannot write, he can hire another man to write the document, name of husband and sign with his own finger had to be affixed on it. The use of prints on important documents was also adopted in India from Chinese, but it was generally used for royalty.

In Europe, the use of friction ridge skin was described in paper entitled "Philosophical transactions of the Royal Society of London" published by Dr. Nehemiah Grew in 1864 Later, Marcello Malpighi, the Italian physiologist published "Concerning the External Tactile Organs" in which structure of friction ridge skin, function and its form were discussed. The study of friction ridge skin had been continued for years, but uniqueness of the skin was recognized in Europe in 1788 after the publication of a book entitled, "Anatomical Copper plates with appropriate explanations" by J.C.A Mayer, a German Doctor and anatomist.[viii]

In 1823, Dr. Johannes. E. Purkinje, Professor, University of Breaslau in Germany submitted his thesis entitled "commentary on the physiological examination of the organs of Vision and Cutaneous system'. He classified finger print patterns into nine categories and named each of the category.[ix] In 1856, Hermen Welcker of Germany, the first man who made scientific study of his own fingerprint and published a paper on it. After a period of 41 years, he published another print of proving that the lines of palms and fingers are persistent.[x]

The study of fingerprinting in the United States is beginning with echoes of Sherlock Holmes by Sir. Arthur Canon Doyle Life of Missisipi written by Mark Twain. In 1883, Fingerprinting was used for identification of murderer. Similarly, in and another book, Puddin Head Wilson narrates the debate of fingerprinting in a court room. But in real life, during the period 1902 to 1905, the fingerprinting was used for identification in New York Civil Service Commission, the Newyork Prison Service, in the U S Army etc. In 1905, Bureau of Criminal Identification in Washington DC was formed to provide central collection of fingerprint cards. In 1924, FBI identification Division was formed.[xi]

It was one of the important case of People Vs Jennings reported in 1910. Mr. Clarence Hiller, one night in September 1910, was shot dead by his wife Thomas Jennings. When the police arrived at the spot, they found that Hiller was injured and carrying a loaded revolver. The fingerprint were taken from the scene and compared. It was found that the four fingerprints recovered from the scene of crime was belonged to Jennings. She was tried and convicted. The conviction in lower court was challenged by Jennings in Supreme Court, but the court found that she had been convicted on the basis of scientific evidence. This was established the admissibility of fingerprint evidence in court for first time in USA. Technological advance in all over the world have impacted forensic science beyond the concept of identify and characterize the evidence by physical and chemical examination. Computerization of fingerprint data has provided a more effective tool for identification of individuals from materials left at the scene of crime. With the advancement of computerization, the fingerprint identification was authenticated in the Integrated Automated Fingerprint Identification System (IAFIS). This system is used for storing, comparing and exchanging of fingerprint data in a faster and more accurate manner in a digital form. It is located in and operated by the Criminal Justice Information Service (CJIS) in Clarksburg, West Virginia[xii].

IAFIS provided three major services to its customers

i) It is a repository of criminal history information, fingerprints, criminal subjects photographs, information regarding military and civilian federal employees.

ii)   It provides positive identification of individuals based on fingerprint submission.

iii)   It provides tentative identification of individuals based on descriptive information such as name, date of birth, distinctive body markings and identification number.

However, the primary function of IAFIS is to provide the FBI a fully automated fingerprint identification and criminal history reporting system. IAFIS in full operation was inaugurated by Louis Freeh, the FBI Director on 10th August 1999.

Various States as well as several federal agencies submitted their electronic fingerprint images. To accommodate these states and these agencies, the FBI made contact with Lockheed Martin information services for card scanning. But even with this detour, the agencies felt shorter turnaround times of fingerprint comparisons than prevailing experienced. Due to this, IAFIS again included Lockheed Martin, Science Application International and Litton PRC. These three segments together formed IAFIS at a cost of 64 million USD. This system is maintained and operated by a division Clarksburg, West Virginia. This was the greatest leap in the history of fingerprinting for reducing the amount of time required for fingerprint comparison[xiii].

National Automated Fingerprint System in Australia was started in 1986. In 2001, a new identification system was developed under Crim Tac. This system is having ANSI/NIST standards, it allows Australian agencies to exchange data of fingerprint with the FBI and Interpol.

In UK, the association of Chief Police Officers (APCO) had suggested for the automated fingerprints in 1987. Subsequently in 2001, Police Information Technology Organization under Biometric Working group introduced a system nationally and provided service to all in England and Wales. But in 2004, a computer virus brought down the system which caused unable to run national checks between England and Wales. To overcome this, the organization signed a contract with

Northdrop Grumman Corporation for bringing in identity with the retirement of the national AFIS. This automated fingerprint recognition services used in Scotland, England and Wales since 1991. Later, the case of ***Daubert V Merril Dow Pharmaceuticals*** replaced the standard admissibility precedents in ***Fyre***case. The Daubert challenged the fingerprint evidence during trial, but the court accepted the fingerprint as reliable evidence.[xiv]

History Of Indian Forensic Science Use Of Finger0rint As A Tool

It is believed that fingerprinting began in India long before its use in criminal judicial system. The two Vedic literature of India were "The laws of Manu" and in the "Vasishtha Rules". 'The Laws of Manu' is the translated form of 'Manusmriti' which is one of the most important and authoritative of Hindu Book. Until the modern times, the people who practiced Hinduism followed the rules of Manusmriti for adjudicating civil and criminal cases. It is around 3000 BC, "SarirakaShasthra" was published an Indian Sanskrit Text which described body knowledge of hand in the early days of humankind. In ancient India, some texts called Naadi written by Agastya Rishi described that how they predicted the past, present and future life of a human based on thumb impressions. This ancient system were called Naadi astrology.[1] Another text Samudra Shasthra, like modern fingerprint patterns, also described 12 different fingerprint patterns. This book also dealt with the future prediction of a person.[xv]

During medieval period, in the Mughal period, it was a common practice among rulers was to sign the routine documents and put their handprints on official documents. The documents were called *farman.*The farman were written in Persian with typical ornamental elegance and addressees were mentioned with a hyperbolic range of praises.

In India, William Herschel, the Collector of the Hoogly in Bengal found that markings

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[1]   Saumitra Basu, The History of Forensic Science in India, (2021) p.141.

of fingertip of a person remain unchanged during his life time. He applied his knowledge of a system of registration of thumb impression of native contractors to safeguard the interest of the Government. He also extended this system to prison for identifying convicted criminals.

In 1891, Edward Richard Henry was appointed as the Inspector General of Police in Bengal. He introduced the thumb impressions in the records slips containing anthropometric data of criminals to avoid wrong identification. Henry along with a few selected Police Officers viz Khar Bahadur Azizul Hug and Rai Behadur Hem Chandra Bose for the classification of fingerprints. They also evolved a mathematical formula for sorting fingerprint slips and also extended system of sub-classification a telegraphic code for fingerprint impression. With the recommendation of Henry, the Government replaced anthropometric data by fingerprints for identification of the habitual offenders and thus in 1897, the first fingerprint bureau in the world was established at Calcutta.

Features Of Finger Prints[xvi]

Because of the following features, the fingerprints as evidence are very important today.

1. Unique: The fingers have papillary ridges and such ridges form patterns. These ridge pattern of each finger has individuality of its own, but vary from one person to another. At the same time ridge patterns are different in the same individual on each finger. As the same pattern of fingerprint cannot be repeated, it is used in the investigation of criminal cases to identify the criminals.

2. Permanent: The fingerprints of a person never change throughout his life. The ridges appear during the third or fourth month of pregnancy and they remain even after death of the person unless the epidermal skin is destroyed due to various reasons such as fire, putrefaction or is eaten by any creatures or insects. Due to this permanence of fingerprints, an individual can be identified even after many years.

3. Universal: Every individual carry medium of identification like finger and toe digits, palmer surfaces of the hands and friction ridges on the feet. But the fingers have intricate pattern which allows easier individualization and classification. A criminal use his hands for committing a crime and he leaves finger marks on the object in the crime scene. Hence, there are fair chances of fingerprints in all types of crime.

4. Imitable: The fingerprint of a person cannot be imitated. Successful imitation of fingerprint has not been reported so far. As the fingerprint of a person cannot be imitated, no individual can deny his or her fingerprints in any circumstances.

5. Classifiable: The fingerprints can be classified easily and therefore millions of fingerprint records of persons can be classified and retrieved easily. The use of computers for classification and search made easy and therefore the popularity of fingerprinting becomes beyond our imagination.

6. Availability in Crime Scene: As the criminals committing crimes with the use of their hands, they leave marks at the scene and therefore, it is easy for investigating agencies to trace the offenders.

Manual Finger Print

Forensic fingerprint has been used for criminal identification for more than a century. Fingerprint analysis commences with the latent or prints obtained from scene of crime. The fingerprint analyst collects the deposited print from crime scene and compares with that of suspect. Through the comparison process, the right suspect is identified. The principle of comparison is that there are no two people's fingerprints which are price the same and therefore any latent print found at the crime scene which matches that of suspects is a conclusive proof.[xvii]

Single Digit System

When a criminal leaves a complete set of fingerprints at the crime scene, it is impossible to establish the identity of individual from these prints by a search of ten fingerprint record files. It is not easy to establish the search from the record files. Therefore, need of classification system which could permit the

identification of chance print. Battley had developed a new classification systemusing single fingerprints. This is known as Single Digit System. In the Single Digit System, single prints are collected in ten separate collections and numbered I to X. The first five are from right hand and rest five from left hand. The single digit fingerprint files of convicted criminals are maintained. On conviction of an accused, two extra finger print slips are prepared and sent to Single Digit Record Officer for maintaining and classification.[xviii]

Manual Fingerprint Analysis - Problems To Be Solved.

In manual fingerprint analysis, as the database increases, it becomes difficult to find out a suspect from a pool of suspects. Studies in this regard conducted realized that physical finger print identification and comparison showing lack of consistency in analyzing prints. Some individuals do not have much quality of their fingerprint due to their occupational work Similarly, people who are using chemicals as part of their work can also cause the poor quality of fingerprint which can have the challenges to identify their prints manually.[xix]

Computerised/Automated Fingerprint ClassificatiON

"Automated fingerprint recognition system" (AFRS) are used for identifying crime scene suspects. The computerized finger print examination does not depend upon patterns. AFRS which are based on the fingerprint ridge abnormalities like minutia points which are the ending of the ridge bifurcations. This process of identification is accurate and more efficient than the physical comparison of the fingerprints of the suspects.

Legal Aspects

Previously, it was contented that if an accused is forced to give his fingerprint against his will was considered as to be a witness against himself. This is against the Constitution. Article 20(3) of the Constitution provides, "no person, accused of any offence, shall be compelled to be a witness against himself". Many cases were rejected by the High Courts on the plea that taking fingerprints against the will of the accused. Finally, a bench of Supreme Court considered the matter and decided that taking fingerprints against his will of the accused is not considered as against the Constitution.[xx]

Conclusions And Suggestions

The manual system of fingerprint identification system is still remaining in our Police Stations. This system is very hard but it is not possible to be replaced. This is because, the digitalized processes like Automated fingerprint recognition system which ends up distorting system of fingerprint and thus leading to misidentification. However, new technological system like Advanced fingerprint identification technology (AFIT) are very efficient and having accuracy. Hence, this technology solves the problem caused by the traditional method of fingerprint identification system.A compulsory database of fingerprints should be created at Central and State level which will help speedy criminal investigation and help to trace the accused in speedy manner.

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DETECTING FAKE NEWS USING MACHINE LEARNING AND CONTENT LEVEL FEATURES

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ABSTRACT

Fake news is a complicated topic having economic and social consequences. Individuals and entities that are targeted may lose their validity and reliability, as well as their brand reputation may suffer as a result. Furthermore, the complexity issue is exacerbated by human language of false news difficult to fix with computational remedies that are presently available the fight against false information is ongoing multidisciplinary activity that will necessitate quick development, and research of tools targeted at analyzing and prevent the spread of incorrect information. This research looks into how machine learning (ML) may be used to detect bogus news. We demonstrate how such features can produce good results using a feature set that includes text architecture, and readability. In this experimentation, researcher chooses six ML algorithms: Random Forest (RF), AdaBoost (AB), Support Vector Machine (SVM), Decision Tree (DT), XGBoost (XGB), and K-Nearest Neighbor (KNN). To quantify, the confusion matrix model as well as other performance metrics of classifier is used, in the experiment's structure, researcher demonstrate that the Support Vector Machine classifier offered the best overall results.

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Keywords: Text analysis, Machine Learning (ML), Natural Language Processing (NLP)

I. Introduction

The number of people who consume digital media has grown tremendously like gadgets high-speed internet has progressed. As per the digital global report 2020, there were 4.75 billion digital content users in 2020, with 301 million social media members [1]. The globe has become a global village as a result of digitization. Individuals are now only a click away from global information as a result of this innovation. Despite its many benefits, this change has created certain difficulties. One of the issues that the digital community is dealing with is fake news. Fake news is widespread marketing that transmits false information such as Snapchat, Facebook and Twitter to influence public opinion. For news social media can serve two purposes: this can be used to keep the community informed concerning breaking news or, on either hand, it can be used to distribute misleading information. Furthermore, rapid-access, but quick delivery of information and news, as well as a way to keep up with what's going on across the world. Furthermore, because of the internet's ease "false news" can spread quickly. Because of its effect on the 2016 US Presidential election, fake news became a hot topic in society during the last three years [2]. According to reports, humans' capacity to detect fraud without additional support is only 54% [3]. As a result, an automation process to detect bogus and true news is required, although some research has been done, The suggested study aims to reduce fake news by classifying material and assisting individuals in determining whether a news source is believable . The goal of this research is to see how well various machine learning (ML) techniques perform when it comes to detecting fake news. The paper is organized into 7 parts of following section: Section 1 *Introduction*. Section 2 Related works and *Backgrounds*. Section 3 *Experimental Designs*. Section 4 *Results*. In Section 5 Discussions. And in Section. 6 *Conclusions And Future Work*.

II. Related Work

The LIAR dataset and kaggle [4] used in one of the first experiments on identification of fake news and fully automated fact-checking with over a thousand sample dataset from politifact.com. Pants fire, false, barely true, partially accurate, mostly true, and truthful was among the six classifications assigned to the statements. Some other study evaluated datasets, including the LIAR datasets, a false or genuine news dataset [5], created by gathering fake and true news online [6]. Using lexical, and sentiment with term frequency , the study compared different traditional machine learning (ML) models such as K nearest neighbor (KNN),LR, Naïve Bayes (NB), AdaBoost (AB), decision tree(DT), and SVM. Several

CNN models were also utilized with the model, including LSTM, NN, Bi-LSTM, CNN, convolution HAN, character level C-LSTM and hierarchical attention network (HAN).Researcher discovered that quantity of the given dataset has a major impact on the performance of the LSTM model. With such combined text dataset, Naïve Bayes characteristics yielded the best result roughly 0.91 accuracy. The CNN model, on either hand, excelled the LIAR dataset in such a research by [4]. The CNN model, on either hand, was found to become the second-best for all datasets in a research by [6]. With 0.62, F1-score and 0.751 accuracy, the NB model performed best on the LIAR dataset. The dataset Char-level-LSTM performed best for the fake news, with 0.92 F1-score and 0.91accuracy.On the merged corpus dataset, LSTM-based models generated the best results, with both C-LSTM and Bi-LSTM producing accuracy of 0.91 and F1-score of 0.92. In using method (Vanilla RNN, Gated Recurrent Unit (GRU)), long short-term memory (LSTMs) and on the LIAR dataset to identify bogus news. Researchers compared and examined the findings with those of Wang [4]. Despite the fact that the findings were comparable, GRU (0.317) outperformed some other models. Nonetheless, they discovered that CNN is superior to Wang's findings in terms of movement and results. The researchers in [7] also utilized the LSTM model on the LIAR dataset. They discovered that use of the presenter improves the algorithm efficiency. The model had a precision of 0.510. Furthermore, employing two slap swarm optimization (SSO), grey wolf optimization, andMeta - heuristics, the study by [8] future approach to solve the challenge of fake news detection. The researchers used three different datasets for their experiments: LIAR Benchmark, Random Political News, and Buzz Feed Political News. The grey wolf optimization (GWO) algorithm outperformed, SSO and other algorithms, according to the results.GWO has the highest accuracy across all datasets, and also the best precision and F1-score in two of the three. Furthermore, the SSO performed better than all the methods in two in three datasets. The researchers used CNN and self multithread attention (SMHA) methodologies to assess the accuracy of news

depending . The studies were carried out using a publicly available dataset obtained from fakenews.mit.edu. The study used 6-fold cross-validation in two tests, and the results indicated that the model provided efficient results in fake news detection with a recall of 0.91 and a precision of 0.91. Furthermore, they compared their findings to earlier research and demonstrated our proposed technique of using self-multithread attention with the CNN produced outstanding results. In furthermore, the authors in [10] established an exploratory system based on the expectancy theory and also using and and graphic indicators of data during the 2016 US Presidential election, the majority of which have already been shown to influence the benefits of internet information. The study looked into how ML methods may employ cognitive, visual, affective, and social signals in news items, as well as the targeted human communal, to automatically detect bogus news. A BuzzFeed dataset of Posts on facebook was used in the study. They developed a number of ML techniques that are suitable for binary classification. The classifiers were learned with the identical features set and were named extreme gradient boosting (XGB). SVM, random forest (RF), DT, and LR, The study had the maximum accuracy of 0.82 and a recall of around 0.91.To use the LIAR and PolitiFact datasets, a research developed a hybrid technique that included semantics, natural language processing (NLP), and deep learning. The study assessed the performance of multinomial LR, SVM, DT, stochastic gradient boosting (SGD), and Nave Bayes (MNB), as well as other standard ML models. The study investigated the performance of certain traditional ML models such as multinomial SVM, DT, DL models, LR, Nave Bayes (MNB), and such as CapsNet, CNN, Bi-LSTMGRU, Basic LSTM, and stochastic gradient boosting (SGD). Using the LIAR dataset, the study discovered that CapsNet surpassed other model with just an accuracy of 0.751. The addition of semantic characteristics to the LIAR dataset, including such named entity recognition (NER) attitudes, improved the classification model's performance. Another study examined the performance of the ML and DL models and showed that SVM and Bi-LSTM had equal efficiency with just an

accuracy of 0.710 using the LIAR dataset [12].Bi-LSTM, on the other hand, required a significant amount of training time. Using two datasets, LIAR and ISOT dataset, a recent study applied an ensemble-based ML strategy for the classification of fake news [13]. RF, DT, and additional tree classifiers were utilized in the ensemble model. Testing accuracy was 46.25 percent in this study. Despite numerous research on the detection of fake news, there is still potential for advancement and investigation. In this paper, we seek to construct an ensemble-based ML model for

false news classification that outperforms prior studies that used the LIAR dataset.

III. Background

In this part, summary of the issues with false news and the role that machine learning (ML) can perform in detecting it.

A. The Global Outbreak of Fake News
Facebook having 3.4 million users, whereas Twitter has 260
billion, as per [2].

Table 1: Using the LIAR dataset, compare the proposed model to the baseline studies

Reference	Accuracy	Year	Techniques
[3]	.30	2018	CNN, NLP
[4]	.310	2017	Hybrid CNN, NLP
[7]	.510	2017	LSTM
[6]	.70	2019	Nave Bayes
[12]	.710	2020	SVM
[11]	.751	2020	Caps Net
[13	.531	2021	RF
Current Study	.901		Deep learning(ensemple)

In the case of United States, there are 17 billion Facebook members and 9 billion Twitters [3]. The image shows that social site has a broad user according, making vulnerable to the spread of bogus online news articles. According to a new analysis [4], news organizations play important role in supplying material on social site, with 77 percent of the 8.9 million tweets examined containing a reference to at most one news organization. Furthermore, news organizations account for 46% of most linked-to sites [4]. Another survey conducted after the 2017 US election found that 65% of American adult false news [5] creates uncertainty, and 25% of Americans acknowledged to purposefully or accidentally disseminating fake news. Based on the evidence obtainable, it is clear that news organization sway an important role in the dissemination of information. The spread of fake news has a number of consequences, one of which is individual confusion. Technology makes it easier to

establish professional and profitable false news websites that rely on advertising for revenue [6]. In the case of fake news, this resulted in a plethora of professionally - designed fake news websites with the goal of disseminating false information while also potentially earning cash through numerous advertising networks. As during 2017 US Presidential Elections, Veils, a small Macedonian town, gained notoriety for the wrong reasons: local adolescents created 200 pro-Trump fake news site. It's adolescents behind several phoney news websites, received $17,000 in advertising revenue via Google AdSense [7]. Two probable incentives for creating false news, according to [8], are ad revenue from tales that go popular on social media and to promote principles that the writer says in Fake news has had a long history in South Africa. Many United Statesbeliefs and ideals have shifted as a result of political disputes, revealed in a report issued by leaked emails exposing shady activities. The Gupta

Family hired the US-based PR firm BellPottinger to disseminate a misleading image that his allies are victims of 'white monopoly capital,' according to Wasserman [9]. To refute the claims leveled on Jacob Zuma and the Gupta family, several Twitter accounts were formed [9].After examining the origins of similar tweets, it was discovered that they came from the Gupta family's media organizations, as well as a political opposition party, Black First Land First . Increased ethnic hatred in the country, and also mistrust in the administration, can be seen as a result of this case of false information. It is clear that high-profile companies, such as Bell Potting, may be persuaded into disseminating misleading information that benefits only the originator. The final price is passed onto the consumer, specifically the newscaster, with uncertainty and distrust among many consequences.

B. Fake News Fight Against Fake News

Several fact-checking websites, including such Snopes,
PolitiFact, and FactCheck, have risen in popularity recently. These fact-checking organizations feature teams of reporters and authors who evaluate the trustworthiness of various online stories as well as assertions politicians make. [10] Pointed out that, even though the proliferation of fact-checking organizations, their quality varies. There are numerous fact-checking websites; nonetheless, these web pages have been accused of prejudice [10]. Zimdar [11], a Merrimack College student, produced an 11-category list of bogus news websites. Zimdar[11] also offers advice on how to evaluate news sources including websites. [10] slammed the list, claiming that the labeling system is only useful for people who share their political .Users of the My Broadband Forums in United Stateshad turned to developing and maintaining a list of news site, wherein forum members recommend new fake news sites. A forum moderator must authorize any changes towards the list of false news websites [12].

C. Fake News Detection Using Automation and ML

Group of fake news also proved how ML tools may aid in the identifier of false information over the years. Today, different dataset has indeed for the purpose of detecting fake news

[13] , fake news dataset comprised[14], later was followed, which published data comprised of very small thing. There are numerous other datasets that can be used to identify fake news. [15] particularly in comparison the enhance ML models on a dataset that included false and true news from Open Sources [16,17] , websites keep a dataset for use in computerized fake news revealing research [15][18], created ClaimBuster, an upcoming project that verifies politically driven statements using NLP techniques and supervised learning based on ClaimBuster can assist to identify false statements made by competing companies and experts verify documents [18] [19] Carried out an experiment where several ML classification methods were tested for their ability to detect fake news. The highly accurate levels of different ML models tested [19] are just one of many high points.ML models in most machine learning frameworks include several hyper-parameters that can impact the performance of a particular classifier. Due to the complexities of these parameters, methods exist to aid in the selecting the optimal parameters for an especially made. The procedures of choosing the best set of parameters that yields ideal performance over a given classifier is known as hyperparameter selection. Randomized SearchCV[21] and GridSearchCV[20] are two excitable searching techniques available in the SciKit Learn library [22] employ a predefined set of hyper parameters, including the total count of estimation methods to be used for the bagging classifiers, AdaBoost, and Random Forest [14] uses the grid search strategy to maximize Logistic Regression and Support Vector Machine parameters. Several authors identify considerations that may indicate how an editorial is fake news.[23] identified two markers that can be used to determine how an article is true or false. The author discusses headline/body incoherence, which occurs when the headline and brain of a newspaper story do not match. When the skin is built with unconfirmed facts, the title might display itself with a factual article [23].The researchers also note that questionable news stories an article has been truthful when in fact it is not [23][24] Theories that the researchers of false feedback generally write containing inconsistencies or
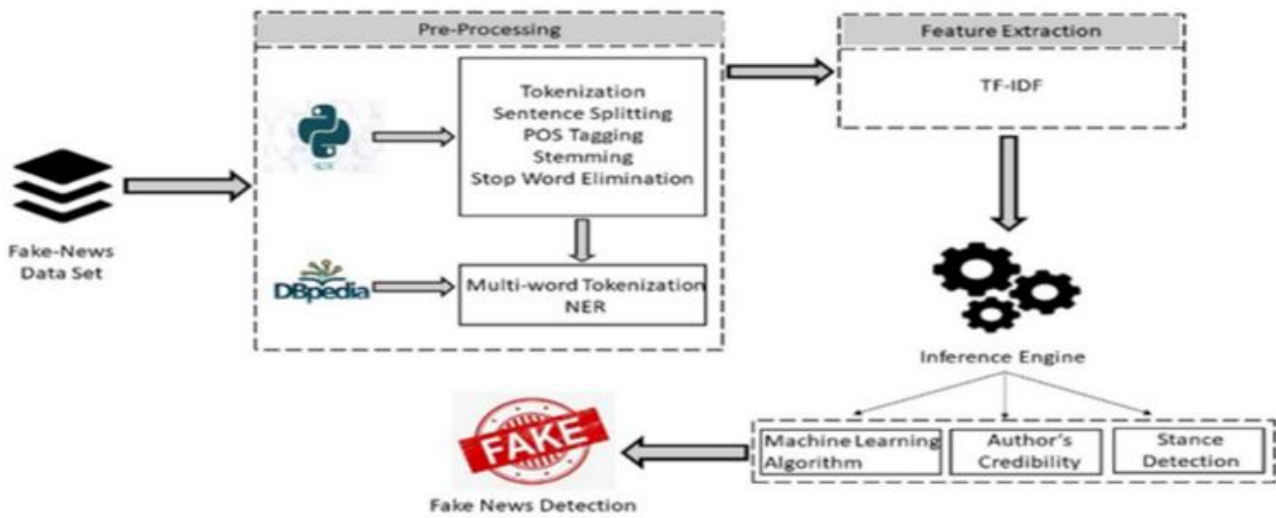
neglected to note some facets that other factual articles mention.

IV. Experimental Design

The experiment proposed in this chapter seeks to validate the

efficacy of automated spam detection utilizing NLP techniques and machine learning.Provided the complexities of human language, the issue of computer controlled spam detection is not simple, again for task of detecting fake news, we use the dataset created by [25] and six ML algorithms. In the experiment, papers are classified as either fake news, we features extracted that define the components and framework of articles using basic pre methods. Finally, we employ the Confusion Matrix model that rely on the confusion matrix Receiver Operating Characteristics (ROC), F1-Score, results, notably, precision, recall, and accuracy score. We use cross validation on each of chosen algorithms against by the [25] dataset to verify the credibility of the findings in table III. For ML, we use the Python SciKit-Learn Library [26], and for pre-processing, we use the Python NLTK package [27].

A. Tooling and Data Sets
Researcher use fake news dataset for this experiment [25]. The Kaggle-hosted dataset is made up of two parts datasets; each false information dataset containing 24561 fake news

sites news items, as well as an actual news dataset probably contains 30217 real news items articles. The sets of data include published articles between both the years of between 2016 and 2019. A subset of data[16] was used to Doc2Vec model of the Fake News Corpus, written by [17], is chosen[28] initiate the Doc2Vec model based on the Speech corpus, that also necessitates two deployments, namely Paragraph and Title ,PV-DM (Vector Distributed Memory) and in a Bag were distributed (PV-DBOW).Every paragraph in the Doc2Vec architectural of a different vector, but every paragraph is allotted a vector. To estimate a next word in a particular context [28]. Computational constraints, the first 14000 online news items from each news article classification in the [16] dataset are chosen. There are 140000 news articles in the resulting news dataset. Rows with incomplete data, particularly missing paragraph bodies, have been removed. Before training a ML algorithm on the data, the fake and real news datasets are combined and randomized shuffled. Figure 1 depicts a text file of fake news articles.The label cloud selects the top 4000 phrases from the vocabulary items of false news. The TfIdfVectorizer [29] from SciKit was used to compute a TF-IDF score to measure the significance of phrases in both false news datasets.

Figure .1: Word cloud for such top 4000 words in the [24] false information dataset, through based Scikit Learn's TfIdf Vectorizer [28] tool to estimate word significance

B. Pre-Processing
In Figure 2 depicts the data pre-processing approach used [25] is known as False Information Dataset, and is known as Fake News Dataset [16]. To practice the Doc2Vec model, the FakeNewsCorpus [16] dataset is

used. As section of the data pre-processing methods for datasets , we use special character removal and end declaration removal. The process that removes common words which do not add value to a paragraph is known as stop word removal.

Figure 2. In the study, a feature extraction and data cleaning flow was used.

(1) Content-Specific Features

Next pre-processing methods, we utilize [30]'s tasks as a mention for possible factors that accurately describe the components of a news piece. As features, we existing condition that article headline , total punctuation in the article headline , a count of part - of - speech tags in publications . Other features taken into account have included the Form Token ratio. The following equation [31] is used to determine Token ratio:

$$\text{Token ratio} = \frac{M_t}{M_w} \tag{1}$$

Where, M_t=Number of unique words   and M_w =the number of words in each document.

Researchers also calculate similarity measure, which calculates an accumulated cosine matching score in between specified article title but each sentence in the article body. The integration of cosine similarity as a metric is evidenced by [30], who includes the metric for determining title of the article and paragraph body similarity. When C and Dwas indeed

vectors, the similarity measure calculation is as follows: [32]:

$$\text{Cosine\_sin} = \sin(A, B) = \frac{C.D}{\|C\|.\|D\|} \tag{2}$$

In furthermore, three text comprehension metrics are included as features, where it investigates the legibility of articles by investigating the academic achievement necessary for understanding the text. As reading metrics, we use the Flesh Kincaid Grade Level Index [33], the Automated Readability Index [33], and the Gunning Fog Index [33]. The conclusion to also in corporate such metrics into the feature set has using the work of [35], who investigates fake news identification using text reading metrics. To calculating reading comprehension metrics, we just use py-readability-metrics [34] package.

Table 2 depicts all of the content-based features appropriate for the study.

Find_features	Name
Text_FGI	GunningFogIndex
Text_article	Index of Automated Readability
Text_fake	Flesch Kincaid Grade Level Index
Token ratio	Type-Tokenratioforanarticle'sbody
Cosine_sin	CosineSimilarityscoreforanarti-cle'stitleandbody

Accumulative Features

The procedures of choosing the best set of parameters that yields ideal performance over a given classifier is known as hyperparameter selection. RandomizedSearchCV and GridSearchCV are two excitable searching techniques available in the SciKit Learn library employ a predefined set of hyper parameters, including the total count of estimation methods to be used for the bagging classifiers ,AdaBoost, and Random Forest [14] uses the grid search strategy to maximize Logistic Regression and Support Vector Machine parameters.Several authors identify considerations that may indicate how an editorial is fake news.[23] identified two markers that can be used to determine how an article is true or false. The author discusses headline/body incoherence, which occurs when the headline and brain of a newspaper story do not match. When the skin is built with unconfirmed facts, the title might display itself with a factual article [23].The researchers also note that questionable news stories an article has been truthful when in fact it is not [23][24] Theories that the researchers of false feedback generally write containing inconsistencies or neglected to note some facets that other factual articles mention.

(2) Doc2vec: Document Illustrations

By using Doc2Vec model, in the dataset to transform text data into integer data. To use a subsection of online news items gathered by [16], we train a Doc2vec model. The model's parameter setup is as continues to follow: the window shape parameters are set to 9. The research project with sentiment classification [28] motivated the judgment to use this configuration. The research's chosen IMDB dataset contains 200 345 any picture.

C. The First Feature Set

Table 2 demonstrates 53 features extracted from corpora using [25] real news and fake data sets; such representation sentence structure and composition. The vectors produced by the Doc2Vec model have been got to add to the feature set, resulting in a 453 vector feature set in each sample .Utilizing equations 3, 4, and 5, py-readability-metrics

[35] determines the features text_article, text_fake, and token ratio from table I:

$$\text{Text\_article} = 5.71.x_1 + .567.x_2 - 22.24 \qquad (3)$$

$$\text{Text\_FGI} = .5(x_2 + 110.x_3) \qquad (4)$$

$$\text{Text\_fake} = (.5.x_4 + 13.4.x_5) - 15.02 \qquad (5)$$

Where $x1$=The number of letters in each word, $x2$=The words of each sentence,$x3$=Each word has multiple syllables, $x4$=Average words per sentence and $x5$=Average syllables per word.

D. Algorithms For Machine Learning

Table II depicts our selection of six ML algorithms Decision Tree as DT, K-Nearest Neighbour is abbreviated as KNN , Support Vector Machine as SVM, XGBoost as XGB, Random Forest as RF, and AdaBoost as AB . The matrix generated by giving out the aforementioned dataset is fed into the aforementioned ML method. We divided the dataset into train-test splits of 70% and 30% of the articles.

(1) Configuration of a ML Classifier: The chosenII emphasises ML configuration. The GridSearchCV hyper parameter selection criteria is used.Researchers can choose the optimum solution for the six machines.In this experiment, learning algorithms were chosen. The optionThe set of parameters to innovate with was determined by parameter choices from the society of fake news researchershave put to use Table 3, shows the parameter sets that were used tofind the most efficient classifiers setups Because of the high the computational burden of deciding the best set of the grid search is conducted over a threefold cross with hyper parameters Setup for validation.

V. Results

The matrix of confusion matrix that would be based on calculate the performance of a particular model. F-measure, recall, precision, and Accuracy are examples of such metrics. The test dataset (30% of articles) is used. Methods for data dimensionality reduction and standardization were not. Table 4.

TABLE 3: Explored in Hyper Parameter Selection Procedure

Classifier	BestConfig.	Configuration	Accuracy
KNN	n neighbors: 5,algorithm: ball tree	nneighbors:[2,3,4,5,6,7, 8, 9, 10], 'algorithm':['balltree','kdtree','brute']	**91.12**
RF	'n estimators:':10, 'max depth': 7	'n estimators':[2, 5, 7, 10], 'max depth': [0, 1, 3, 5, 7]	**98.13**
SVM	kernel: linear C: 0.1	'kernel':['linear', 'rbf'], 'C': [0.001,0.01, 0.1, 1,10, 100, 1000],	**99.65**
AB	'algorithm':'SAMME.R', 'n estimators':150	'n estimators':[20, 50,100, 150], 'algorithm':['SAMME','SAMME.R']	**99.39**
XGB	'n estimators:':100, 'max depth': 5	'n estimators': [7, 10,50, 100], 'max depth':[1, 3, 5, 7]	**99.10**

Summarizes the findings achieved with every the hyper-parameter configurations and classifier chosen Table 5 contains the findings of the confusion matrix at every classifier. The confusion matrix offers four metrics for find the performance of a particular classifier: False Negatives (FN), True Negatives (TN), False Positives (FP), and True Positives (TP). Eventually, in Table V, researchers present the results of a cross validation technique applied to the selected ML algorithms. XGBoost as XGB , in table 5, Decision Tree as DT,K-Nearest Neighbor as KNN, Support Vector Machine as SVM , Random Forest as RN, and AdaBoost is denoted as AB.

VI. Discussion

The outcomes described in Section III demonstrate that promising results can be obtained by combining features which define the components and in section framework with document vectors to show each document. Researchers choose to the doc2vec model that describes every document based on analysis made by many authors about using traditional methods and simple of representing documents (bag of words, TF-IDF, and so on); of that kind methods do not preserve the meaning and relationship of words.When it came to precision, the RF classifier came out on top with a score of 99.6 percent.

Table 4: Accuracy, Recall, Roc Performance, Precision, F-Measure And Results

Classifier	Accuracy	Precision	F-Measure	ROC	Recall
DT	95.5%	96.0%	96.3%	95.2%	96.4%
SVM	99.6%	99.4%	99.6%	99.4%	99.6%
AB	99.4%	99.4%	99.4%	99.4%	99.4%
RF	99.1%	99.6%	99.1%	99.9%	99.1%
XGB	99.1%	99.7%	99.1%	99.1%	99.1%
KNN	92.2%	97.4%	99.1%	92.5%	87.5%

Table 5. Classifier Of Confusion Matrix:

Classifier	TP	TN	FN	FP
KNN	**4145** **46.5%**	**4235** **46.9%**	**700** **8.2%**	**200** **2.3%**
SVM	**4768** **53.2%**	**4358** **48.5%**	**30** **.5%**	**31** **.6%**
XGB	**4702** **52.3%**	**4334** **48.6%**	**68** **.8%**	**45** **.6%**
RF	**4744** **52.5%**	**4345** **48.6%**	**50** **.6%**	**43** **.6%**
AB	**4713** **52.34%**	**4400** **48.9%**	**37** **.5%**	**31** **.4%**
DT	**4567** **51.6%**	**4123** **45.34%**	**225** **3.55**	**230** **3.6%**

Table 6. Cross Validation Results Expressed as a Percentage:

	1	2	3	4	5	6	7	8	9	10
SVM	**99.7**	**99.7**	**99.7**	**99.7**	**99.7**	**99.7**	**99.7**	**99.7**	**99.4**	**99.8**
XGB	**99.1**	**99.0**	**99.0**	**99.0**	**98.9**	**99.3**	**99.0**	**99.0**	**99.4**	**99.0**
DT	**96.4**	**96.1**	**96.4**	**96.6**	**96.6**	**96.3**	**95.9**	**95.5**	**96.5**	**95.7**
AB	**99.4**	**99.6**	**99.7**	**99.5**	**99.0**	**99.5**	**99.6**	**99.5**	**99.7**	**99.8**
KNN	**92.2**	**92.5**	**99.7**	**91.6**	**93.0**	**92.5**	**92.9**	**92.8**	**99.7**	**99.6**
RF	**99.0**	**99.1**	**98.9**	**99.8**	**99.2**	**99.3**	**99.4**	**99.1**	**99.0**	**99.2**

When it came to precision, the RF classifier came out on top with a score of 99.4 percent. When accuracy is taken into account, SVM comes out on top the highest score of 99.6 percent SVM had the highest recall. The final result was 99.6 percent. SVM produced the best results for F-Measure at a rate of 99.4 percent Receiving Operational Characteristics (ROC),The best result was obtained by the RF classifier, which scored 99.9 percent. When, we find the SVM by collating all of the metrics. In Table 4.The classifier achieves good result of 99.36%. Following an examination we discover the SVM classifier among the findings published in Table 5.has a low error rate of 0.3 percent (or less) when incorrectly classifying articles FN received 0.4 percent (or 30 articles) and FP received 0.4 percent (or 31 articles). Furthermore, the SVM classifier produces the highest, real articles, with 53.2% percent (or 4768) of articles classified as True Positive. At 4713 52.34 percent (or 4713) of articles, the AdaBoost Classifier (AB) achieved the most accurate true negative classification result. Finally, in table 6, researcher show that the accurate results acquired at each fold for every

classification model are comparable to other results. Moreover, the results of the k-fold cross validation process are not significantly different from the results of Table 4, leading agency to the results shown in Table 4.

VII. Conclusion And Future Work

The results demonstrate that employing features which best characterize the organization of article bodies to detect false news might give positive results. Moreover, research work illustrates that tools may be created to assist fact-checkers and online news readers in identifying potentially false news. Although prior research on false news identification has used variables that define individuals, user interactions and articles on a given item, this study shows that focusing solely on the text of an article might offer good results. The study's future work will include application of deep learning algorithms for detecting bogus news. Several researchers in this field have achieved encouraging findings utilizing ML approaches, which, for most situations, outperform classical ML technique of performance.

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EFFECTS OF AEROBIC TRAINING, RESISTANCE TRAINING AND CONCURRENT TRAINING PROGRAMMES ON VITAL CAPACITY AND LEAN BODY MASS AMONG UNIVERSITY BASKETBALL PLAYERS

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ABSTRACT

The purpose of the study was to find out the effect of aerobic training, resistance training and concurrent training programmes on vital capacity and lean body mass among university basketball players. The study will be confined with 60 women basketball players studying Affiliated Colleges of Kurukshetra University, Kurukshetra. Their age ranged between 18 to 25 years. The subjects considered are all regularly participating in the games and sports. The subjects were divided into four equal groups. Group-l (n=15 underwent aerobic training. Group-ll (n=15) underwent resistance training. Group-III (n=15) underwent concurrent training for 12 weeks and Group-N acted as control did not participate any special activities. The study was conducted on dependent variables such as vital capacity and lean body mass. In the present study random group design was used. Analysis of covariance (ANCOVA) statistical technique was used to find out the adjusted mean difference among the variables. Scheffe's post hoc test was used to find out the paired adjusted mean difference when the study was significant The results of the study proved that there was a significant difference existed between control group and aerobic training, resistance training and concurrent training groups.

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Keywords: aerobic training, resistance training, concurrent training, vital capacity, lean body mass, basketball.

Introduction

Sports can be defined as a planned systematic "competitive activity to recognise & specify distinguishably and differentiate human hidden physical and mental potential in the unified form. This approach characterises the sports domain upto a well organised system of competitions only to develop the healthy culture for a society .In the narrow sense sports is a mechanism which enhance physical and mental qualities and skills of an individual or a group while by way of competitive activities / games. Participant enjoyment while performing and entertainment for spectators are the main purpose in this process/system.

Physical Fitness is the ability of an individual to live a happy and level-headed life. It implies the ability of each person to live most effectively within his potentialities and characterises the degree to which a person is able to function efficiently. It involves not only physical but intellectual, emotional, social and spiritual aspects of an individual also. In other words, it may be said that it is the ability to carry out daily tasks with robustness and vigilance, without undue fatigue, and with sufficient energy to enjoy leisure time pursuits and to meet unanticipated emergencies. It can be said that the fitness is the ability to last, to

bear up and to persevere under difficult circumstances where an unfit person would give up.

Good physical fitness is essential for long term well being. A routine exercise programme is the best way to live the healthy life upto the older age. A well planned training program not only provides the platform for fitness but also the athlete feels the changes in the body in the shape of better performance and faster recovery. An established progressive and scientific workout and strong nutrition dietary routine can enhance extrinsic presentation of the body also (Physical Personality). A high-impact exercise application can endeavour fats and increment in the metabolic rate.

A successful athletics training program is the total process of preparing of players through different means and forms for better performance with the objectives to achieve the improvement in physical fitness, acquisition of motor skills, improvement in tactical efficiency, training and improvement of mental capabilities. Training cannot be equated with the physical activity. Training is characterizes with performance and competition oriented process. It is a scientific process which is thoroughly planned and systematic. The basic aim of sports training is the exploitation of hidden human biological reserves under normal

conditions for performing some work. It is a unified process of training and performance improvement. It is a continuous process of perfection of means and method for the improvement of performance. The daily routine of the sportsman is controlled during the sports training to develop the individual or a team with the principle of plan the Play and play the plan. The coach has the leading role in this whole process of trg. program. As per the principle of specificity of training, specific physical training programme is required for the specific sports discipline. The sports training must be relevant, scientific, controlled, performance and competition oriented. To make the sports training more effective and to exploit the hidden human reserves for the performance sports, the tactical efficiency of an athlete is developed under a unified process of training.

Aerobic means with oxygen'. During vigorous work, the body is working at a level that the requests for oxygen and fuel can be meet by the body's admission. Aerobic exercise is actual exercise that means to Improve the effectiveness of the cardiovascular framework in engrossing and shipping oxygen. High-impact signifies "with oxygen" and alludes to the utilization of oxygen in the body's metabolic or energy - creating measure. Numerous sorts of activities are vigorous and the definition are performed at moderate degrees of power for broadened timeframes that gets the heart siphoning and quickens relaxing. These activities make heart more grounded and more productive in conveying oxygen. The mechanics of vigorous exercise necessitate that oxygen be acquired by the lungs and moved to the veins. Oxygen rich blood is then siphoned by the heart to the muscles. The muscles use oxygen for muscle withdrawal. The main side-effects framed are carbon dioxide and water.

The biochemical capacity to generate the high-quality enormous amount of aerobic energy (ATP through oxidative phosphorylation) per unit time is directly and uniformly linked with the Anaerobic Strength. This quality of anaerobic power is one of the key factor in the events like 1500 & 3000 meters where maximum strength and power generation are required for a duration of 4 to twelve minutes.

Aerobic capacity is generally constrained with the aid of transport of blood, no longer the use of oxygen. The major influential factors of high impact right here are the distribution in the lungs, haemoglobin, the capability of the coronary heart to pump, and the capillarization of the apparent muscles.

Resistance training has become an essential part of athletic molding, recovery and general work out schedules (Pollock and Wilmore, 14990). Despite the fact that resistance training has for some time been acknowledged as a methods for creating and keeping up strong strength, force and muscle hypertrophy, its valuable relationship to wellbeing factors and persistent sickness been perceived as of late.

One generally understands that the strength of a man is the ability of his muscles to overcome external resistance auto counteracted. All sports and games requires strength, basic or specific. Today spectacular improvement in performance has been attributed mostly to modern method of strength training. A specific training effect, consists all aspects of strength development as a feature, be it basic or specific forms of muscular efficiency, and an athlete must consider it and thus he/she must do strength training. The methods, which are definite, dynamic, static and corresponding, are very useful for athletes prepared at various levels, to work on. The training aids, that are applicable and also available for specific sports, must be considered by a player involved in resistance training.

The mechanism of strength building through resistance exercises start with the damaging of the muscle. The muscle cells get microscopically damaged but also quickly repaired the body which lets the muscle regenerate and grow stronger, in Resistance Training. Anabolism is the repair and re-growth of the muscle tissue and catabolism is the breakdown of the muscle fibre. The term anabolic is usually used with steroids. When muscle fibre gets broke down with resistance exercise, anabolic, which means to grow happens. In fact, some breakdown or catabolism is required for many biological processes in the body to grow, before its re-growth. Post resistance-exercise session, growth hormone, testosterone, insulin-like growth factor, protein, and other nutrients

reach the muscle to help repair it and to make them stronger. It is very significant to leave time between workouts, as the muscles heal and grow in rest time, when you are not working out.

An increase in size (diameter) of existing fibers in muscle anatomy is the major component in making a muscle stronger, This occurs due to a greater number of myofibrils per fiber, more total protein and an increase in the size and strength of connective tendentious, and ligament to us tissues. This kind of increase in size of muscle is called hypertrophy. In other words the results from a disturbance in the equilibrium between consumption and remanufacturing of ATP during the throughout process of training is hypertrophy. This is also called as ATP deficiency theory. The effective hypertrophy take place when the specific maximal explosive power training consisting of highest training loads with very few repetitions is performed with suitable recovery periods. This mechanism keep back ATP shortage enlarges hypertrophy.

The cohesive development of all the physical fitness factor in relation to each other results in the top form. The top form is the sole objective of all type of training approaches in performance sports. The first and foremost step is to identify the nature and structure of sports performance required for a specific sport. This component/fact determines the method of training along with total planning, organization, implementation and assessment of training. High sports performance through multiple means of sports training can be achieved by a scientific, systematic and a well-planned periodized training program. Various training are used for the improvement, maintenance and recovery of performance capacity and performance readiness. To match up the need of training of so many components not only for the sports performance but also for body composition the parallel training was introduced as a new training system. Now a days this type of training system is being utilized by the health oriented population for well being and improving general health.

Parallel training (CT) is characterized as a mixture of resistance and cardio workouts in a periodic training programme to enlarge all components of the genuine performance.The

long term adaptation of physical capacity to training is affected by the accumulation of specific physiological responses. These physiological changes occurs in the body only after the optimal maximum stress given on the body during the training session by in the shape of exercises over an extended period of time (weeks, months, years) .

The concurrent training tries to construct up immensely all sizable traits (physical components) simultaneously. This methodology, as some other, has its very own upsides and downsides.. The biggest loss is that (in the case of high end athletes), the substantial improvement in all physical components developed in identical training can be sustained besides overtraining or with limited training impacts. This is where a modification of concurrent training comes into play. The modification is simple and is based on training emphasis. In other words train all of the qualities, but emphasize only a few of them while maintaining others.

Concurrent training attempts to build up immensely significant characteristics simultaneously. This methodology, as some other, has its own upsides and downsides. The greatest bit of leeway of the simultaneous methodology is the equal improvement, everything being equal. The greatest burden is after some time (or with the most progressive competitors), you essentially can't build up the entirety of the significant characteristics simultaneously without gambling overtraining and restricting potential preparing impacts.

It is no wonder that for most of the sports, the amount of lean muscle mass as compared to fat mass, i.e. composition of body, is considered and for a specific sport, a specific composition may be required for success. It is true that proper training and nutrition cannot alter the height because of the genetics factor being in force, but these can alter the body composition, which includes the weight and the amount of lean mass, and is necessary to be maintained for basketball players, through long competitive season.

Most high rank basketball players are seen relatively lean and tall. Although, a specific body composition may not be the defining factor of success in basketball, as it is in other sports, but a player's position is strongly

defined by this factor. For instance, the ones who are taller, heavier and have a high body fat percentage tend to have the center and forward positions & the guard always happens to be the one with a lower body fat percentage, body mass and height. Thus it can be said that the positional roles in high level basketball strongly relate with aerobic fitness, composition of the body and anaerobic power. The coaches and players of basketball highly prioritize the physical fitness and the size of the body. While the position of the player in the team may be determined by his/her size, but all the players are required to be highly fit, due to the physical demands of the game, which are of intermittent nature and of high intensity. To evaluate power, aerobic fitness, body size and composition of the players and to track changes in these parameters, the coaches of basketball use physical tests that are particularly related to the sport. These evaluation and tracking functions help in selecting the players and evaluating the effectiveness of the training programs.

Basketball is a sport with very fast changes in metabolic activity requiring rapid adaptation to alterations in oxygen demand which would implicate a specific adaptation of the lung. High-intensity intermittent running has been shown to increase ventilatory performance / vital capacity that intermittent exercise enhances the respiratory demand as well as it enhances the cardiac demand

In Basketball related activities, the heart and lungs work harder to supply the additional oxygen to match up the muscles demand and it makes lungs and heart stronger. As physical fitness improves, body becomes more efficient at getting oxygen into the bloodstream and transporting it to the working muscles. That's one of the reasons that athletes are less likely to become short of breath during exercise over time. Some types of exercise can also strengthen the muscles of the neck and chest, including the diaphragm and muscles between the ribs that work together to power inhaling and exhaling.

When athlete performs exercises and challenges the muscles, the need for oxygen increases. As a result, the breathing rate increases to bring in more oxygen and the heart rate increases to pump the oxygenated blood throughout the body. Exercise, especially aerobic exercise, increases the efficiency of this process and may increase lung capacity. The greater the lung capacity, the easier the breathing will be for an athlete, as the quality brings in more oxygen with each breath. However, athlete may still experience breathing issues if have poor lung function. As athlete breathe, oxygen moves into capillaries surrounding the air sacs in lungs as carbon dioxide moves out of the bloodstream. Athlete then exhales the carbon dioxide and inhale fresh oxygen.

Statement of the problem

The purpose of the study was to find out the effects of aerobic training, resistance training and concurrent training programmes on vital capacity and lean body mass among university basketball players

Objectives of the Study

1) To examine the effects of Aerobic Training, Resistance Training and Concurrent training on vital capacity among university level female Basket Ball Players.
2) To examine the effects of Aerobic Training, Resistance Training and Concurrent training on lean body mass among university level female Basket Ball Players.

Hypothesis

1) Aerobic training, Resistance training and Concurrent training will effect significantly to vital capacity among the university level female Basket Ball Players.
2) Aerobic training, Resistance training and Concurrent training will significantly effect to lean body mass among the university level female Basket Ball Players.

Sample

The sample for the study was consisted of sixty (60) women basketball players studying in different affiliated Colleges of Kurukshetra University, Kurukshetra. The age range of the participants was between 18 to 25 years. The participants included in the sample were regularly participating in the games and sports. Only those participant were included who have given their consent to participate in the study

and having the good mental and physical health. They were experimented for 12 weeks programme consisting of aerobic training, resistance training and concurrent training load.

Design

All the 60 players which were selected for specific training programme were very well acquainted with the basketball sport and were playing the specific positions of the point guards, shooting guards, forwards, power forwards and centre. The total sample was randomly divided into 4 batches which consists of (Experimental Group-1 =15 for Aerobic training) N-1, (Experimental Group-2 = 15 for Resistance training) N-2, (Experimental Group-3 =15 for Concurrent training) N-3 and (Experimental Group-4 =15 with the routine training work out) N-4. The specific work out as per the aerobic, resistance and concurrent training/conditioning programmes were given to experimental teams for 12 weeks. The N4 group was given with the routine training

workout as per their college schedule. All the participants were inform about the goal and protocol of the study.

Statistical Techniques

In the present study random group design was used. All the four groups were randomly selected from various colleges basketball players of Kurukshetra University. Analysis of covariance (ANCOVA) statistical technique was used to find out the adjusted mean difference among the variables. Scheffe's post hoc test was used to find out the paired adjusted mean difference when the study was significant.

Results

The pre and post test data collected from the experimental and control groups on vital capacity and lean body mass are statistically analyzed by ANCOVA and the results are presented in table- I

Table-1: Analysis of Covariance on Vital capacity and Lean body mass of Experimental and Control Groups

	Aerobic Training Group	Resistance Training Group	Concurrent Training Group	Control Group	S O V	SS	Df	MS	'F' Ratio
Vital Capacity	3.82	3.76	3.86	3.65	B	2.34	3	0.78	15.6*
					W	2.76	55	0.05	
Lean Body Mass	64.74	65.18	66.42	62.05	B	23.93	3	7.98	4.29
					W	102.25	55	1.86	

(The required table value for significant at .05 level of confidence are of 3 and 56 and 3 and 55 are 2.70 and 2.72)

* Significant at .05 level of confidence

The adjusted post-test means on vital capacity of aerobic, resistance, concurrent training and control groups are 3.82, 3.76, 3.86 and 3.65 respectively. The obtained F ratio value of 15.6 on vital capacity were greater than the required table value of 2.72 for the degrees of freedom 3 and 55 at 0.05 level of confidence. It is observed from this finding that significant differences exist among the adjusted post-test means of experimental and control groups on vital capacity.

The adjusted post-test means on lean body mass of aerobic, resistance, concurrent training

and control groups are 64.74, 65.18, 66.42 and 62.05 respectively. The obtained 'F' ratio value of 4.29 on lean body mass were greater than the required table value of 2.72 for the degrees of freedom 3 and 55 at 0.05 level of confidence. It is observed from this finding. that significant differences exist among the adjusted post-test means of experimental and control groups on lean body mass.

Further to determine which of the paired means has a significant improvement, Schelle S test was applied as post-hoc test. The result of the follow-up test is in Table – II.

Table II:- **Scheffe S Test for the Difference Between the Adjusted Post-Test Mean of vital capacity and lean body mass on aerobic, resistance, concurrent training and control groups**

Aerobic Training	Resistance Training	Concurrent Training	Control Group	Mean Difference	CI at .05 level
Adjusted Post-test Mean of vital capacity					
3.82	3.76	-	-	0.06	
3.82	-	3.86	-	0.04	
3.82	-	-	3.65	0.17*	0.106
-	3.76	3.86	-	0.10	
-	3.76	-	3.65	0.11*	
-	-	3.86	3.65	0.21*	
Adjusted Post-test Mean of lean body mass					
64.74	65.18	-	-	0.44	
64.74	-	66.42	-	1.68*	
64.74	-	-	62.05	2.69*	1.52
-	65.18	66.42	-	1.24	
-	65.18	-	62.05	3.13*	
-	-	66.42	62.05	4.37*	

* Significant at 0.05 level of confidence.

The result of the study shows that aerobic, resistance training and concurrent training increases vital capacity and lean body mass when compare with control. concurrent training may have better effect to increases vital capacity and lean body mass of university basketball players.

Discussion

The findings of the study proved that there was a significant difference existed between control group and aerobic training, resistance training and concurrent training groups. Thus, 12 weeks of tentative treatment reduction in vital capacity of the basketball women players compared to control group. However there was no significant difference between experimental groups on vital capacity. The above findings are in consonance with the study conducted by Rathod and Kuravatti (2018), Kilinç (2008) and Moradians and others (2016).

The results of the study showed that there was a significant difference existing among aerobic training, resistance training, concurrent training and control group and aerobic training and concurrent training group on lean body mass. However there was no significant difference between aerobic training group and resistance training group as well as resistance training group and concurrent training group. The above findings are in consonance with the study conducted by Hamid Arazi and others (2011), Willis (2012) and Kilinç (2008).

Conclusions

From the analysis of the data, the following conclusions were drawn.

1. The result of the study shows that aerobic, resistance training and concurrent training increases vital capacity and lean body mass when compare with control group.
2. Concurrent training may have better effect to increases vital capacity and lean body mass of university basketball players.

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AUTOMATC BONE-AGE ASSESSMENT MODEL BASED ON MACHINE LEARNING CLASSIFICATION USING THE CARPAL BONES

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ABSTRACT

In the past few years, computer systems have been widely used in the field of Medical Investigations. We recommend individuals in medical imaging surveys that use their bone characteristics to estimate the human age. It is the direct comparison of bone age assessment with bone growth measurements. For a lot of years, an assortment of studies has been done to determine a method of identifying the age of child using their bone features. At the present time, the technique that is used most commonly to identify the age is Skeletal Age Assessment Technique. Bone age assessment is a technique that is very habitually used by child development specialists and in study of forensic cases. The decision-making process in these assessments, however, depends on the expert's opinion; therefore, the assessment may differ from another expert. In the proposed work, we present the automatic bone age assessment based on machine learning classification using the carpal bones. We use machine learning technique like neural network for the classification of bone age using their features. For any classification technique feature extraction play a vital role to classify the test sample. In proposed work, we use fuzzy rule set to decision of sample data and on the basis of classification, we find the performance metric like precision, recall and accuracy of the proposed implementation. For the simulation of propose work, we use the image processing toolbox under the MATLAB software.

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1. Introduction

BAA (Bone age assessment) is a process for determining the person's skeletal maturity. Like, child's bone age indicates his / her structural maturity levels that are superior to the physiological age measured by child's birth date. Hands and wrist radiographs obtained are the most common way for measuring bone age. Automatic techniques for assessing radiography of hand and wrist have been implemented, that reduces the inconsistency of guide method. The theory of 'non-radiological' wrist bone visualization techniques (like ultrasound for calculation of bone age) are found and are less accurate than methods of radiography. At 18, the age of bone cannot be calculated by means of wrist as well as wrist radiographs. So, the clavicle medial end is used for calculations of bone age for individuals aged between 18 years to 22 years. Clavicle CT visualization is being studied, although more doses of radiation are necessary [1-5]. The process anticipates the grown-up's height, with diagnosing and organizing of disorder of endocrine plus syndromes of paediatric. Furthermore, the methods of BAA could be utilized into forensic medicine for deciding undisclosed corpse age. In the proposed work, utilization of SIFT feature extraction method, neural network (NN) and fuzzy logic (FA) has been executed.

1.1 Image-Processing

An image is formed from pixels. It is shown by the function of mathematics f(a,b) in which a and b be two coordinates inclined horizontally as well as vertically/rows as well as columns. At any point, the f(a,b) shows the value of pixel in a point image . The image segmentation has practical application dependent on CBIR (content based image retrieval) and in case of medical imaging, tasks has been recognized [4, 5]. The segmentation diversity type has broad variety of methods for segmentation of image. The following figure depicts components utilized in plane of coordination.
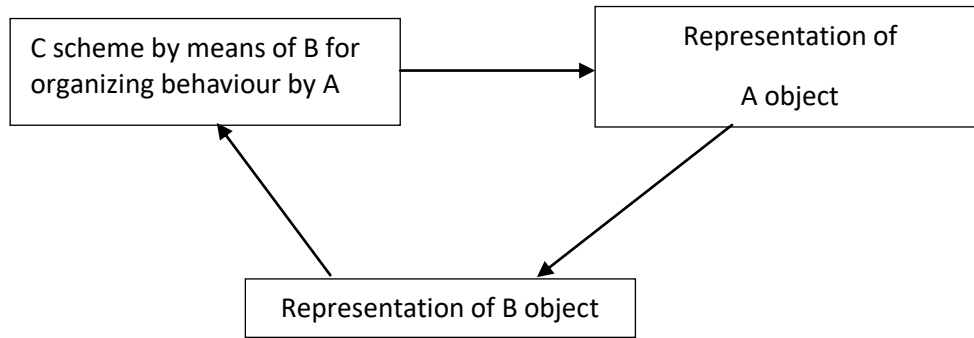
```
┌─────────────────────────┐          ┌─────────────────────────┐
│  C scheme by means of B │          │    Representation of    │
│  for organizing         │ ───────▶ │                         │
│  behaviour by A         │          │       A object          │
└─────────────────────────┘          └─────────────────────────┘
           ▲                                     │
            \                                   /
             \                                 ▼
            ┌──────────────────────────────────┐
            │     Representation of B object    │
            └──────────────────────────────────┘
```

Figure 1.1: Coordinate plane representation of an Image

An image L ($\vec{m}$) allowing for 'feature vectors' $\vec{G}$ ($\vec{m}$) for 'form vectors';

$$\vec{G}\ (\vec{m})=\dfrac{L(\vec{m}}{\vec{Z}(\vec{m}} \qquad (1)$$

Here, vectors $\vec{Z}$ ($\vec{m}$) is an image of local vector features, possibly responses of band pass filter. For images of color, vectors $\vec{G}$ ($\vec{m}$) will comprise data for pixel color ($\vec{m}$). For fragmentation of images, feature vectors $\vec{G}$ clustering ($\vec{m}$) is being experimented in that image. A dense area of the image has a separate gray-level or colour that corresponds to the area inside the feature space by a comparatively more density of sampled feature vectors [6].

Image processing is a technique of executing a process on an image for obtaining an improved figure for extracting some needed information. It processes the signal, where image is taken as an input, and output is an image /feature connected by the image. Nowadays, image processing is taken as one of the best technologies. It has the core study area in engineering with computer science disciplines. Image processing essentially includes the below steps [7]:

- Image Acquisition Tool for importing of image.
- To analyze and manipulate the image;
- Outcome which contains results in the form of report or altered image on the basis of analysis of the image.

1.2 SIFT (Scale Invariant Feature Transform)

SIFT (Scale-invariant feature transform), was planned by David Lowe , which is capable to

successfully differentiate image plus delineating elements of an adjacent image. The basic Scale Invariant Feature transform estimate has the following five process steps:

- Detection of Scale-space local extreme
- Localization of Key-point
- Orientation assignment
- Descriptor of Key-point
- To trim out the match which are false

1.3 Fuzzy Logic

Fuzzy sets was given by Zadeh . It is basically designed to reflect the uncertainty and ambiguity. It has the ability for human reasoning. The fuzzy logic theory provides the ability to capture and process human-related uncertainty. In the description of the principles and issues of uncertainty, fuzzy logic is required. It is a strict mathematical field with an ability to provide an efficient tool for modelling the uncertainty of human reasoning. The knowledge of experts is modelled by the rules of language expert by means of IF-then logic expression.

Fuzzy set has membership function (MF) which can be uniquely determined with the key terms related to linguistics. It provides a combination of tools for experiencing human systems. It is dependent on three key concepts, like fuzzy sets, linguistic variables and distribution of probability. Its importance is for many models dependent on human thinking and reasoning is particularly common in a substantially similar facts.

1.4 Neural Network (Nn)

NN is the network of easy fundamentals which act as parallel for functions. NN can be trained for performing an exact function for adjusting

the weights value among the elements. The function of network is evaluated by the connection among elements. Some activation functions can be utilized for generating the appropriate outcome

2. Methodology

BAA consists of five stages:

(i) Extraction of ROI,
(ii) Identification of feature point,
(iii) Feature extraction of SIFT, and
(iv) Fuzzy logic rule set
(v) NN classification.

Step: 1 Using the previously proposed ROI extraction method in which the user hit the center of the appropriate bone for the suitable epiphyseal center location, the ROIs as of every hand X-ray that are extracting and rotating to the straight

Step: 2 position. Therefore, every ROI are in the position of reference, regardless of the position in the unique X-ray photograph.

Step: 3 Feature extraction could be separated into two parts:

i. Detection of features
ii. Description of features.

In the Detection of features, detection of key takes place. In the feature explanation, the descriptor of local image is calculated for every key point. The detector of SIFT is utilized. The key points are recognized by apply the thresholds of multi-level. Though, the descriptor of SIFT is utilized for describing specified key characteristics.

Step: 4 Feature extraction matching will be done using a fuzzy rule set.

Step: 5 Neural Network is utilized for the purpose of classification. Because of more features and the supposition of non-linear relation among classes and features, BPNN is used for classification.

Step: 6 Estimation of age classes.

Step: 7 Validation using proposed metrics.
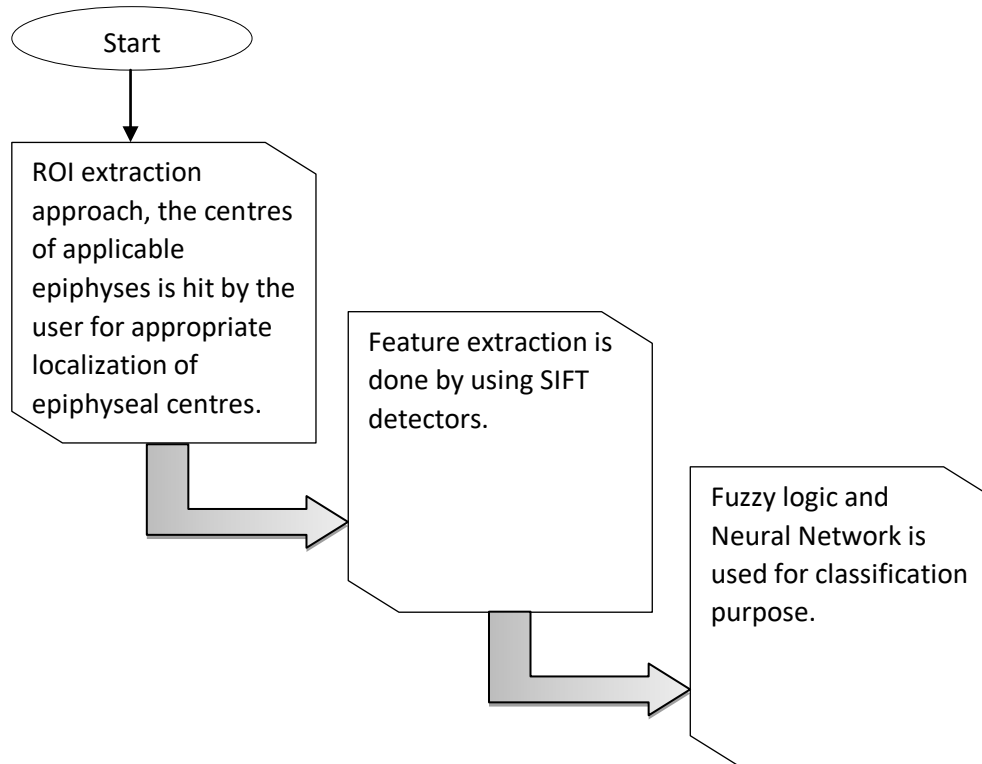
Figure 2.1 Flowchart of proposed work

3. Results and Discussion

3.1 Tools Required

MATLAB Tools is used in the expansion of this work. There can be more tools that could be utilized in this growth as it dependent on individuals and their interests. Following are the tools used:

- least amount of RAM of 3GB

- Processor of Pentium III of Intel or over

- MATLAB version R2012a

Table 3:1 Tools Utilized

System	Core 2 Duo or higher
Random Access Memory	3 MB
Operating System	Windows 7
Hardware	Keyboard and Mouse
Software	Matlab 10.1.0

MATLAB stands for Matrix Laboratory. It is used for providing simple access for matrices and this software is designed by the (LINPACK) Linear System Package and (EISPACK) Eigen System Package project part with the help of their developers

It is a language of high expertise for technical compute. It has programmed environment apparition and calculation. Adding up, Matrix Laboratory is considered as a language of modern programming. Matrix Laboratory has composite data structures, that has debugs tools, built-in editing with a support of OOPS (Object oriented programming). Because of mentioned factors, MATLAB is considered as worthy tool for research and teaching.

1. Matrix Laboratory has much remuneration with a comparison to traditional computer language like C, FORTRAN etc. for recovering industrial problems.

2. It is considered as an interactive method in which data is treated as an array in which dimensioning is not required.

3. Software package is considered while 1984 and currently, it is measured as a system tool for mainly university as well as industry globally.

4. Matrix Laboratory has strong built-in routines which has an extensive range of computation. The graphics instructions can be accessed easily for easy availability of results.

5. Proper applications are composed in packages considered as toolbox which is consists of toolboxes for, representative computation, sign processing, reproduction, optimization, control theory and numerous another applied science plus engineering fields.

By logging into the account, user can enter in Matrix Laboratory by clicking twice on shortcut icon of MATLAB on user's Desktop. The user can start Matrix Laboratory, by demanding the windows known as 'MATLAB desktop emerge'. Desktop is a considered as a window which has other major tools in or close are:

- The Window used for Command giving

- The window used for checking the History

- Work-space

- Directory where current files are kept

- Help window

- Start- buttons
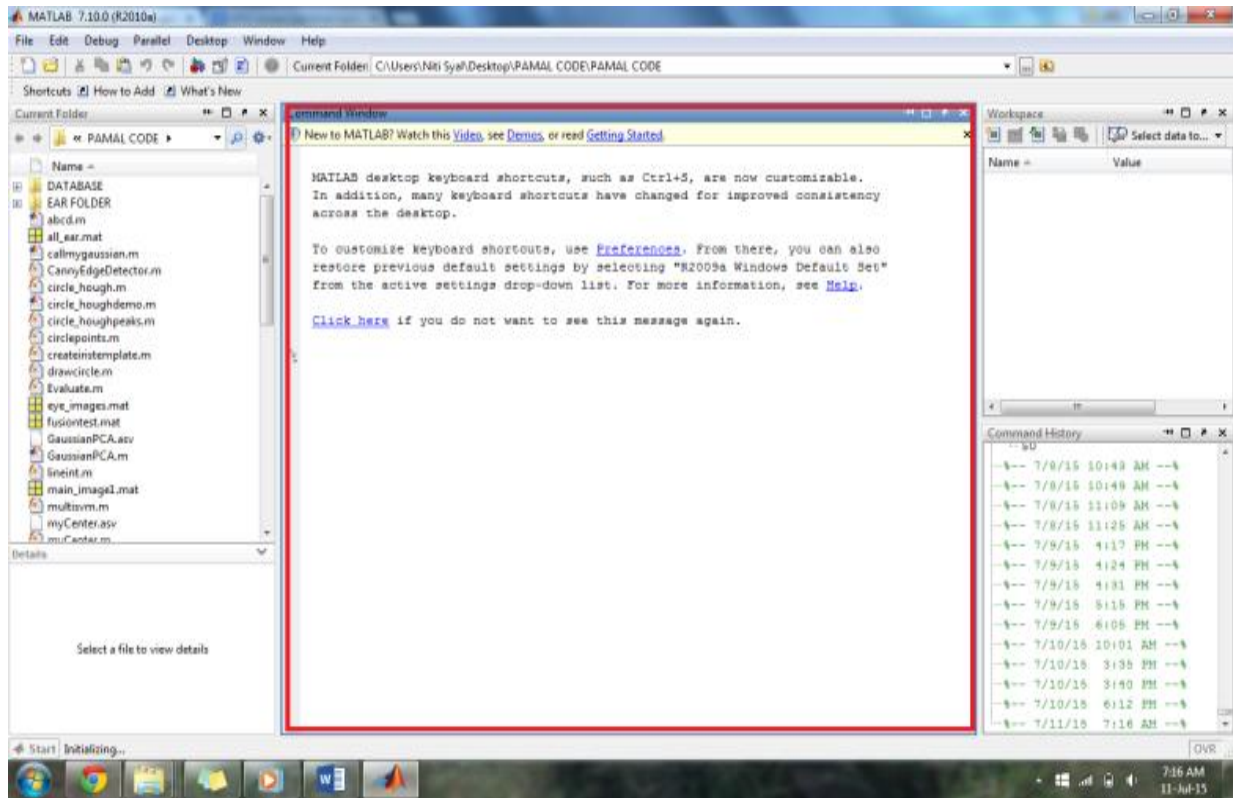
Figure 3.1 The window used for command giving
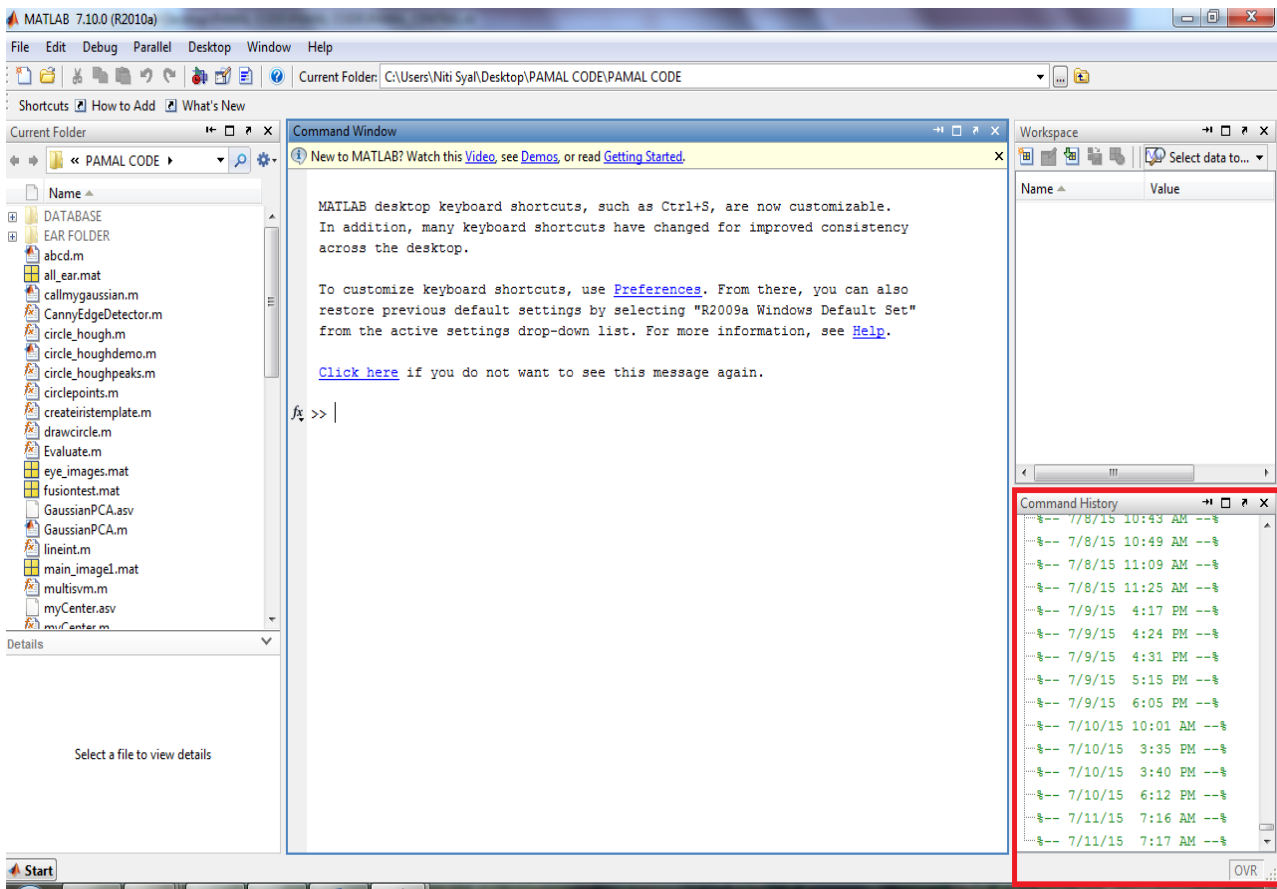
Figure 3.2 The window used for checking history
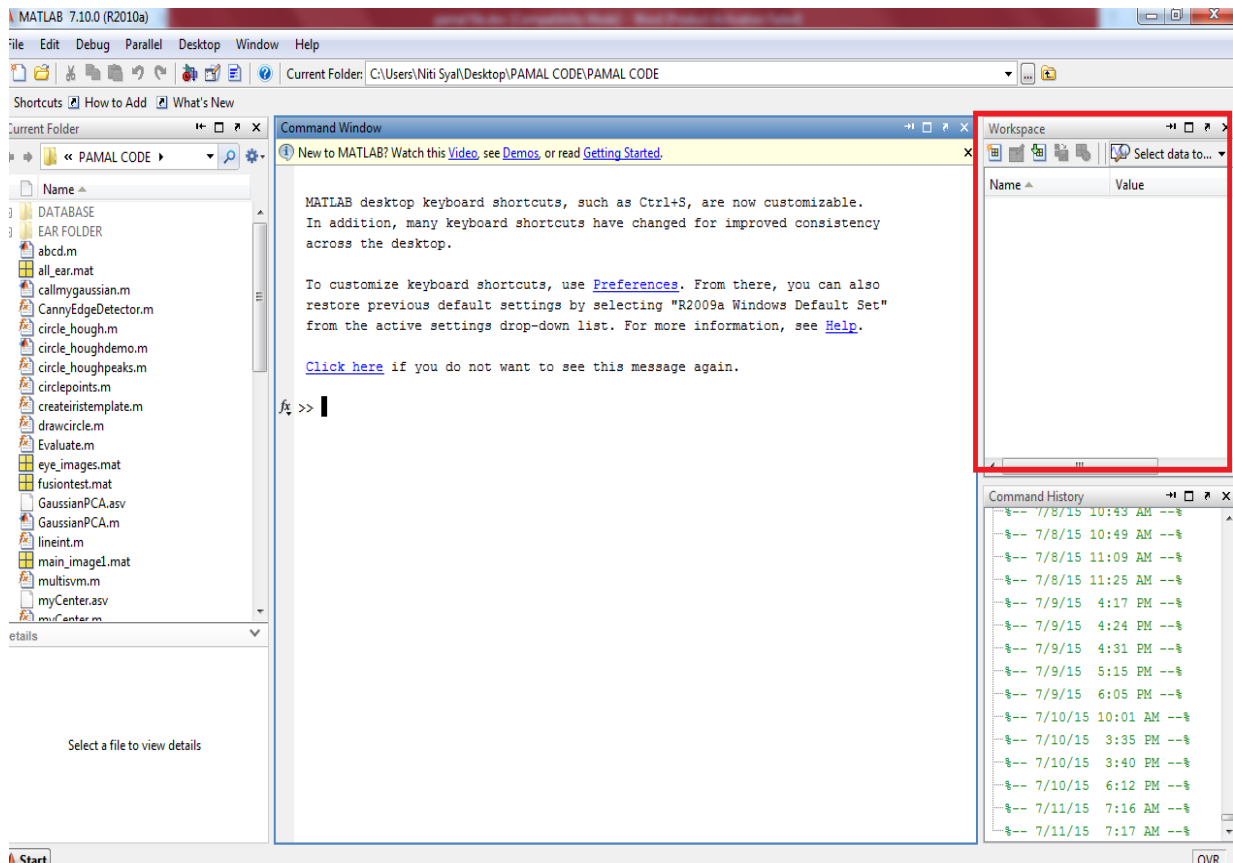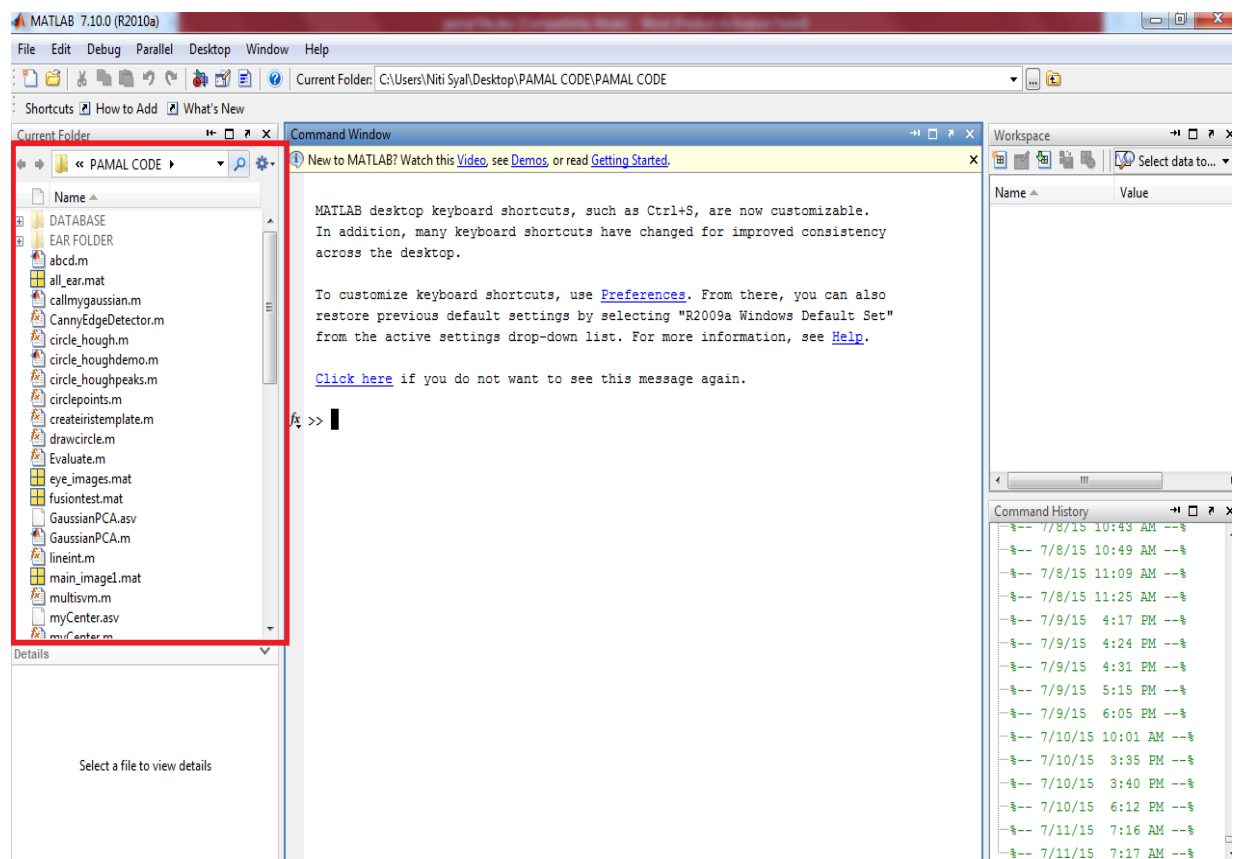
Figure 3.3 Work-spaces

Figure 3.4 Directory where current files are kept

3.2 Results

The experiment is simulated in the MATLAB 2010a. Following are the results that have been achieved for optimizing the results. The whole simulation performance is measured using various metrics as shown below:
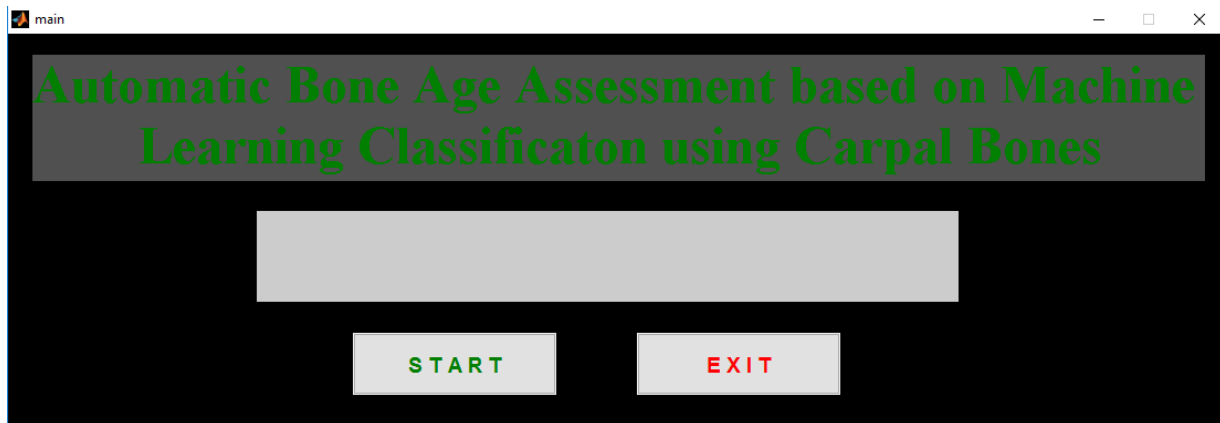

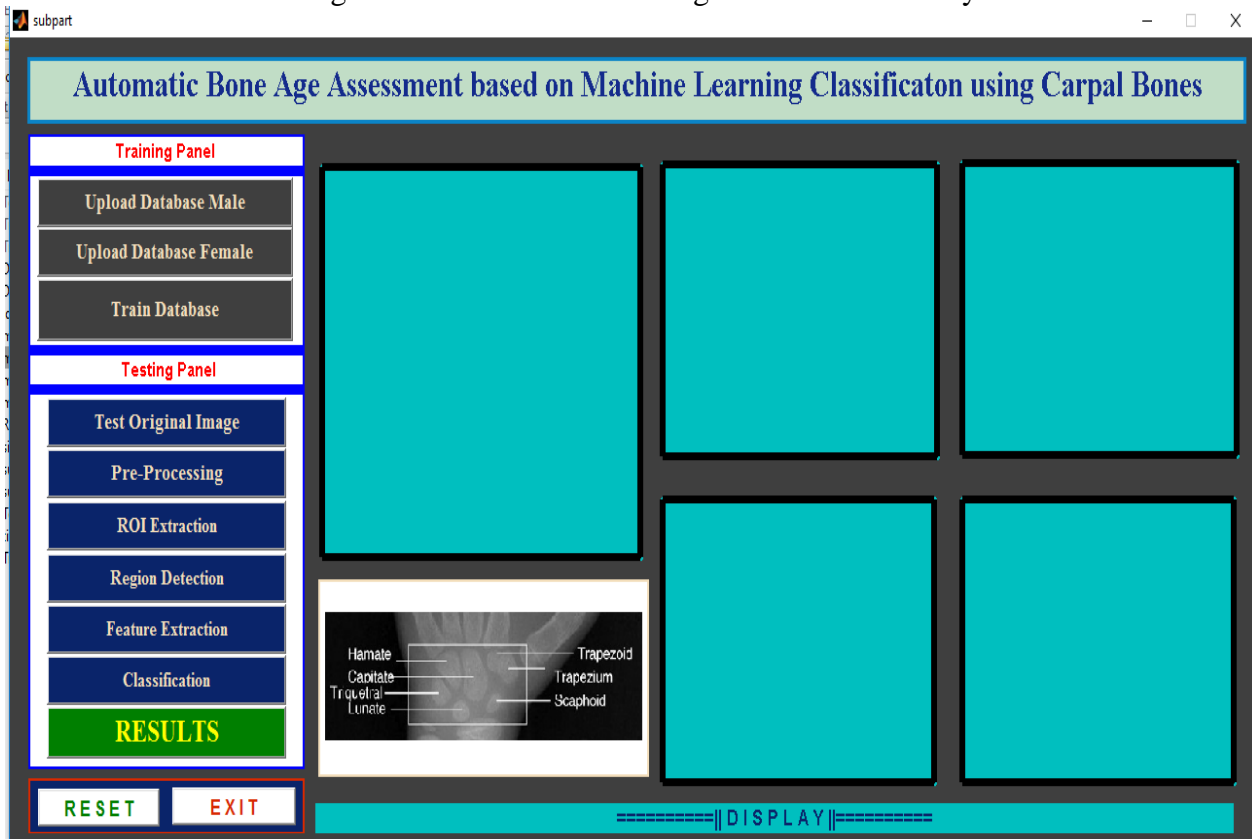**Figure 3.5 Working Window**

Above figure shows the main working window for BAA system.

Figure 3.6 Main GUI

Above figure shows the main working window for BAA system in which various buttons for feature extraction, classification has been show.
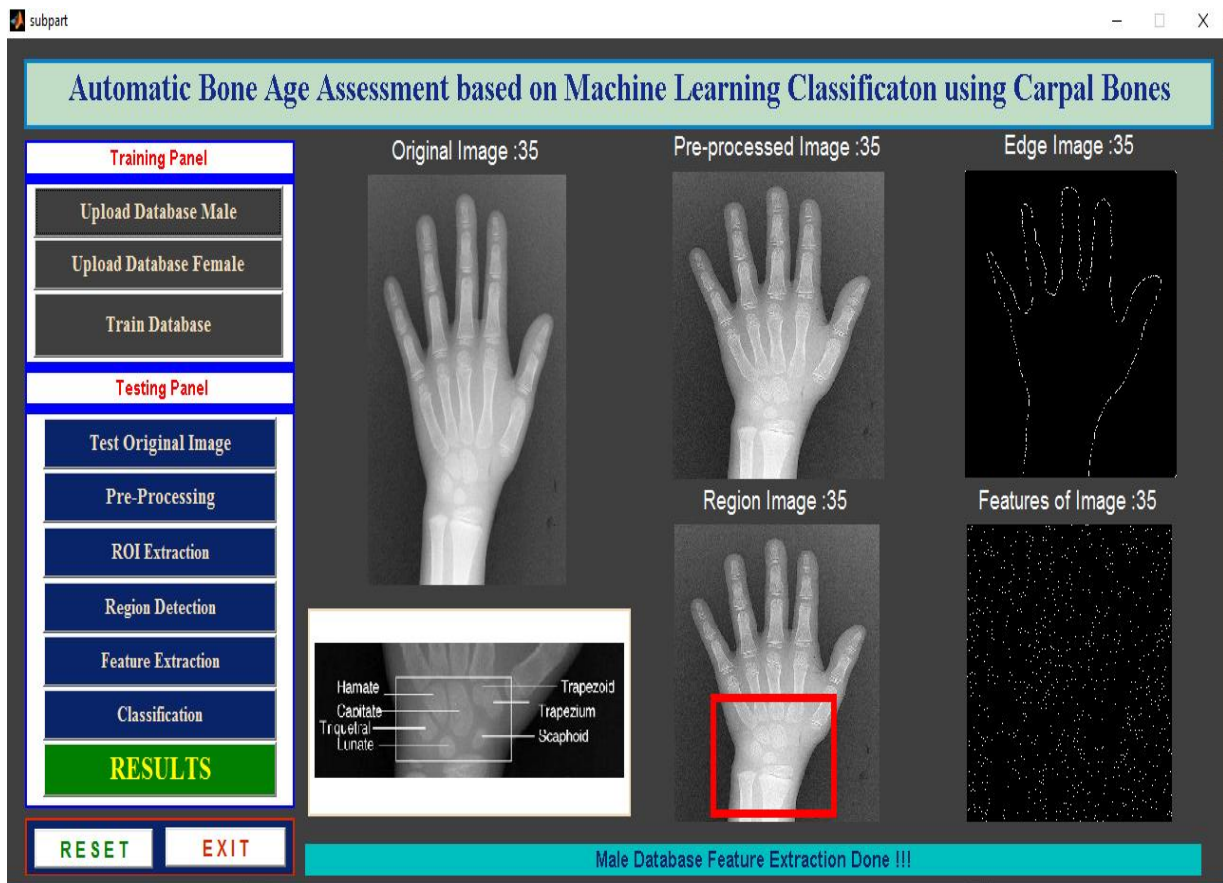
Figure 3.7 Male DB Uploading

Male uploading db has been shown in above figure.
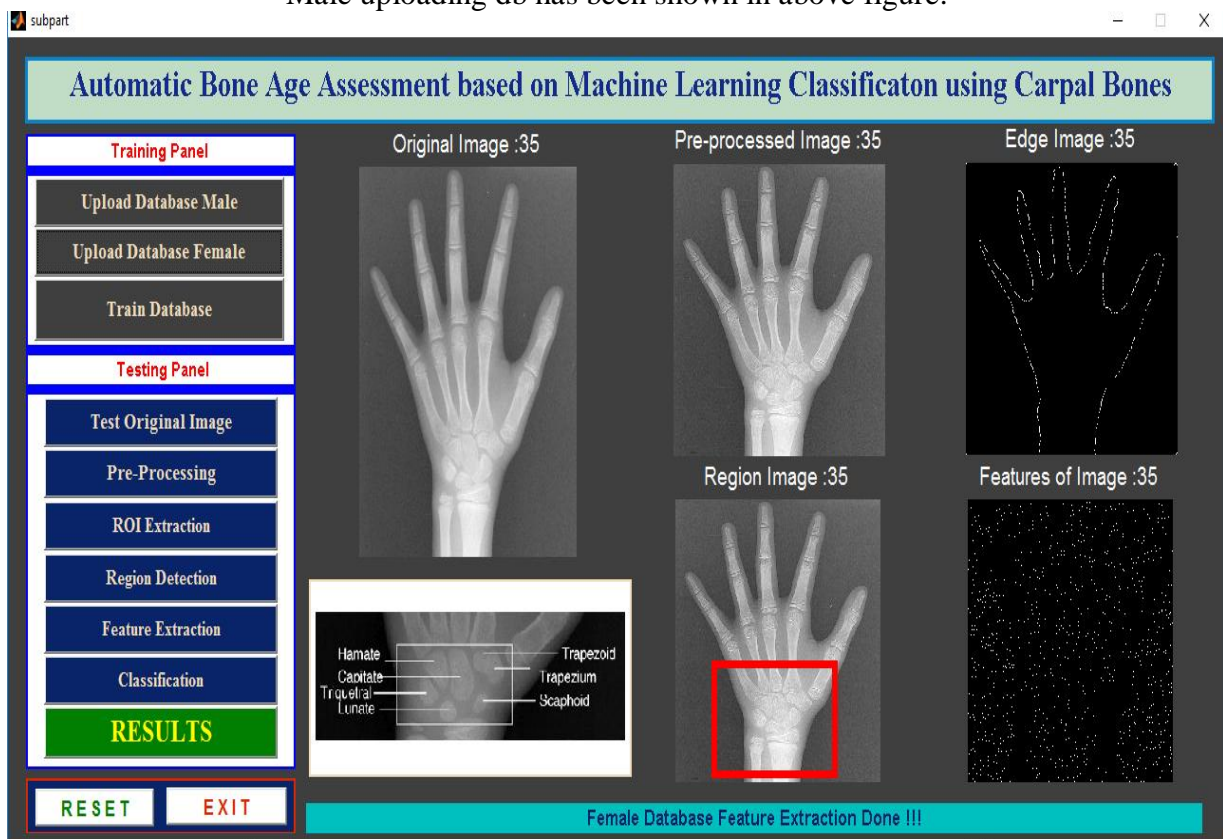
Figure 3.8 Female DB Uploading

Female uploading db has been shown in above figure.
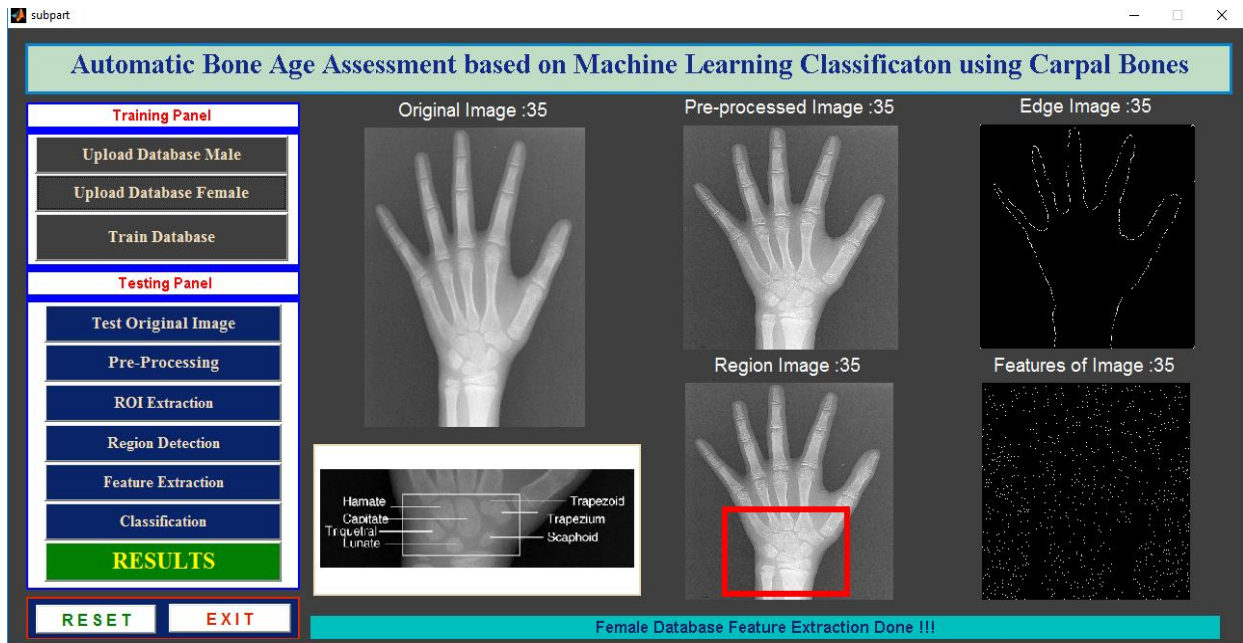
Figure 3.9Train DB

Male and Female uploading db has been shown in above figure in which the training process for both has been completed.
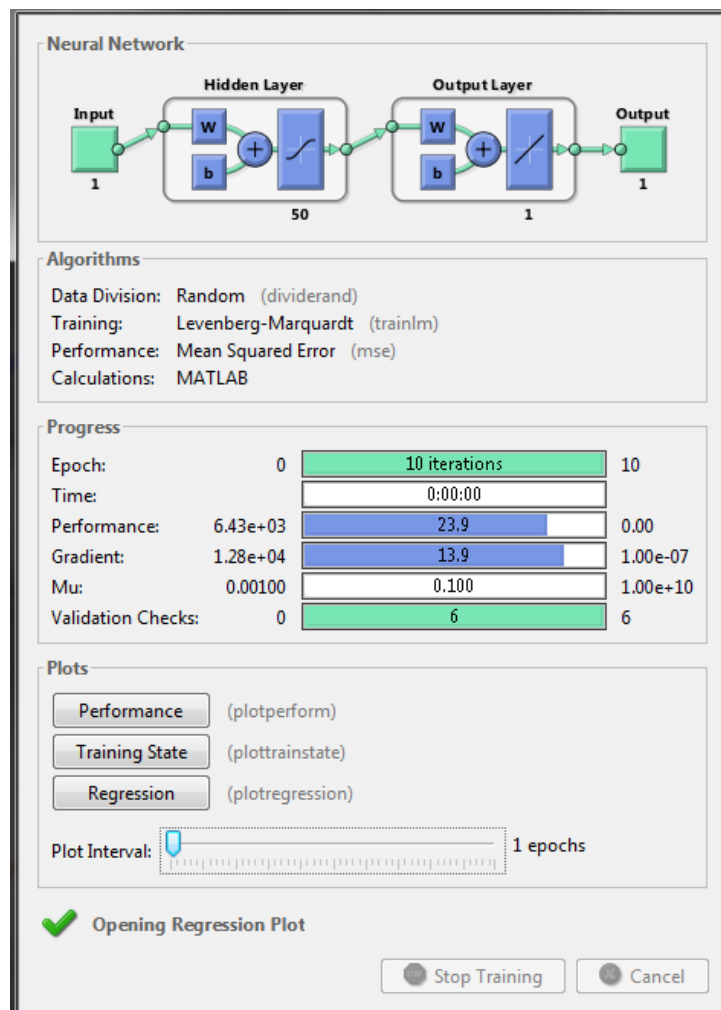
Figure 3.10 Neural Network Training
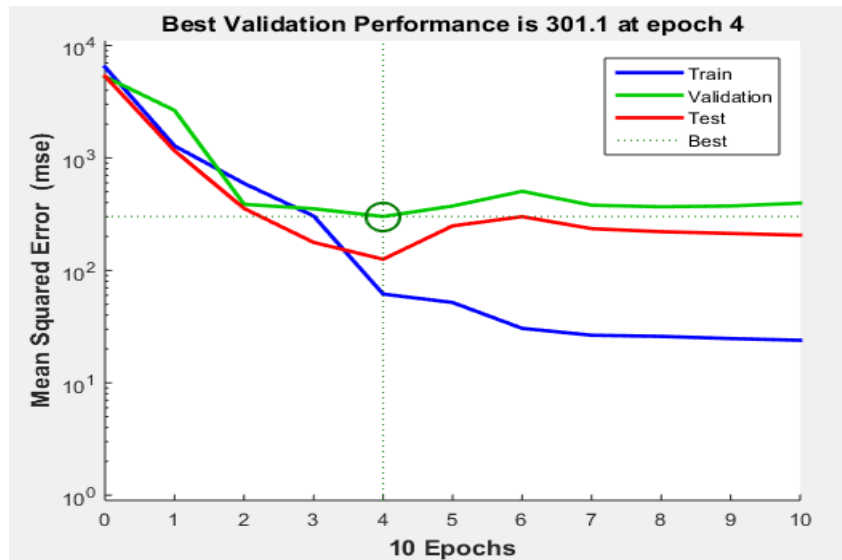
Figure 3.11- Performance of Neural Network
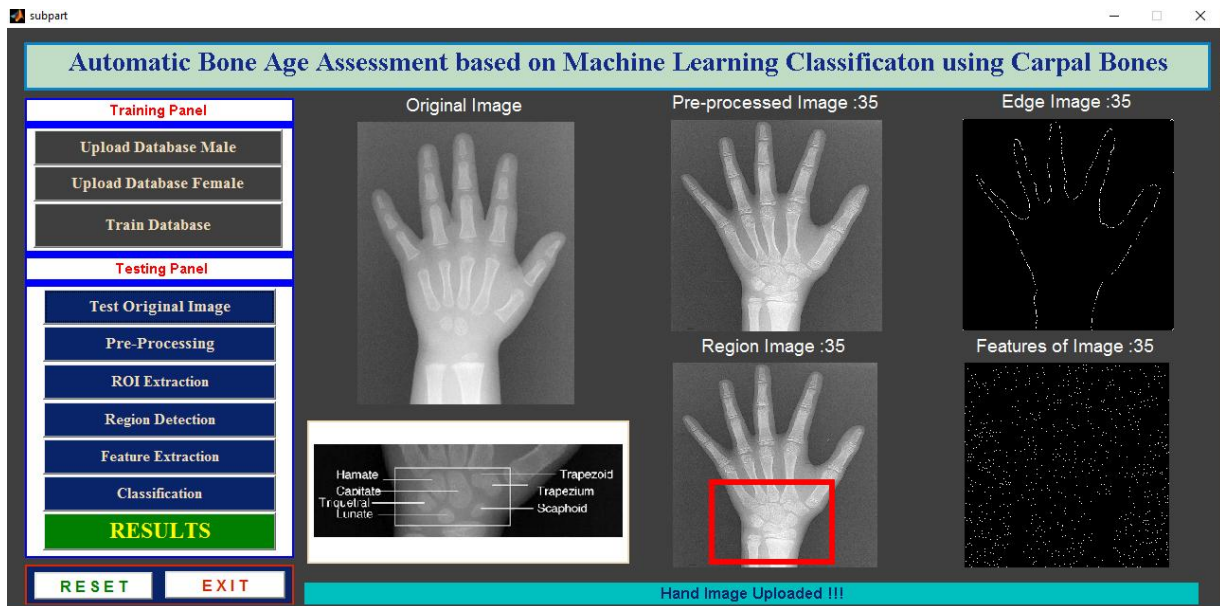
Figure 3.112 Test image Uploading

In the above figure test images has been shown

Figure 3.123 Pre-processing

Pre- processing has been done in which, image features has been enhanced.

Figure 3.14 ROI Image

Region of interest has been shown in above figure.
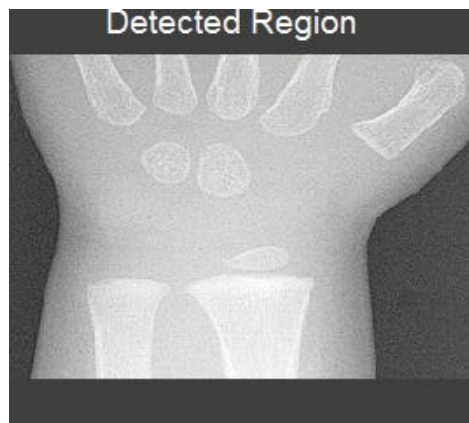
Figure 3.15 Detected Region

Detected region of main focus has been shown above.

Figure 3.16 Feature Extraction

Feature extraction SIFT points has been shown in above window.
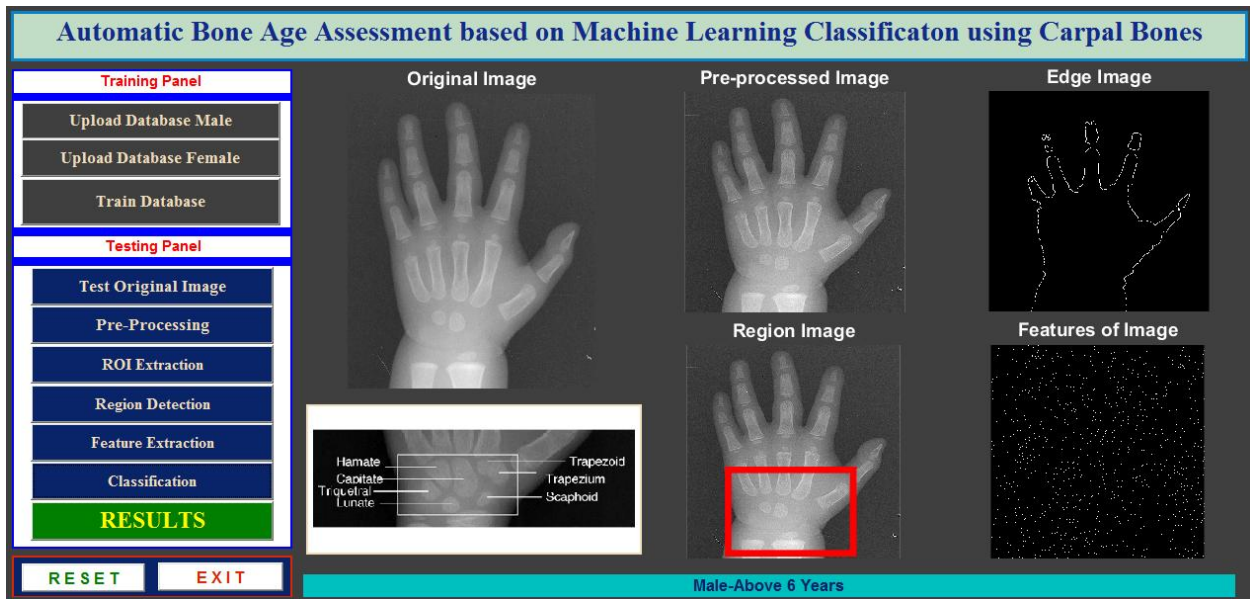
Figure 3.17 Classification of images.

Classification of test images is done and male of age above 6 years has been detected.
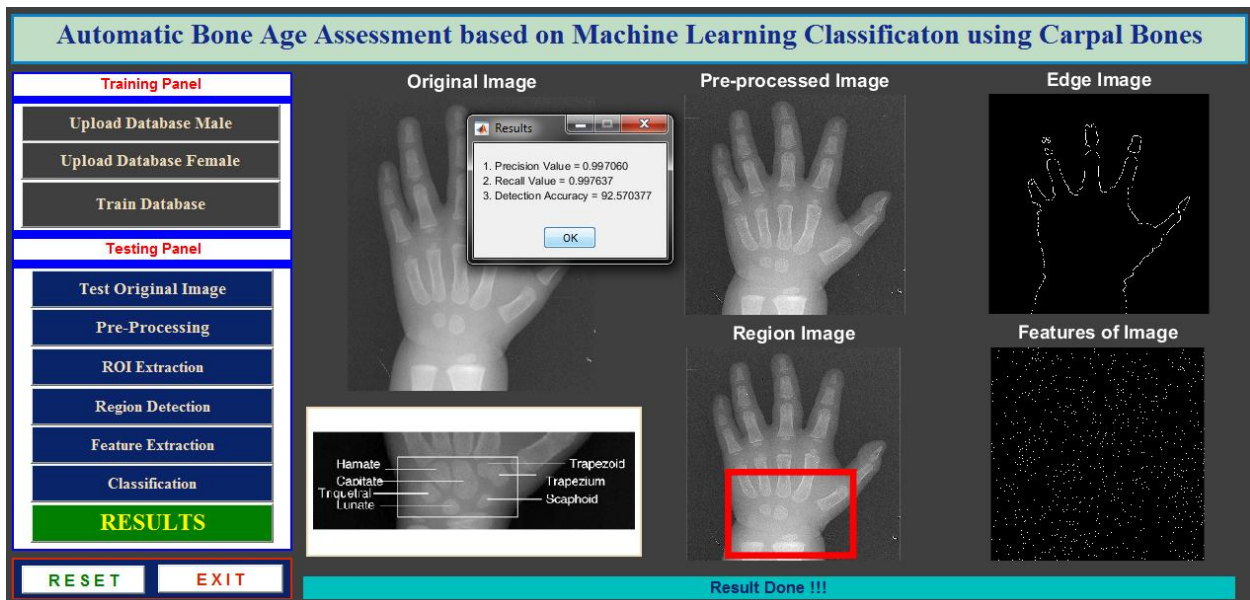
Figure 3.18 Result Evaluation

Result evaluation has been done using three metrics i.e. recall rate, precision rate and accuracy having values 99.76, 99.67 and 92% respectively.

Conclusion

BAA (Bone Age Assessment) is commonly utilized for assessing the enlargement rank of kids as testing of hormonal troubles part with the genetic diseases. The purpose of maturation of skeletal is dependent on examination of radiography of region of wrist bone. The work gives a novel BAA approach by using AI technology. The method is calculated as a BAA-based method which is using repository of image and parallel parameters for retrieval of content-based image.

The proposed system is aimed to conquer the limits of methods of traditional approach, used for estimating the age of human that is frequently rough. The approach gives prediction of age for hand as well as wrist x-ray, until the various years age and three metrics i.e. recall rate, precision rate and

accuracy having values 99.76, 99.67 and 92% respectively.

Though there are some shortcomings of using Fuzzy logic and Artificial Neural network separately. Artificial Neural Network cannot explain that they how they reach their end decision as so many iterations are performed and many combinations are made during this process. Whereas on the other hand, Fuzzy logic cannot make decisions by themselves as they work on approximation and membership function, they need some fuzzy expert to solve this problem.

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A STUDY ON FACTORS RESPONSIBLE FOR MENTAL HEALTH OF TEACHERS

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ABSTRACT

Mental health is multifaceted and value-laden, making it hard to describe. It contains identity, tolerance of frustration, growth and learning through unique experiences, accurate solution, and some achievement in numerous endeavours. Also it showed that gender, education, relationship status, and self-concept affected teachers' psychological health. School atmosphere, pay, and neighborhood neglect cause teacher stress as well as burnout. Educators' mental health impacts teaching - learning process. Unsane teachers may hurt the society by educating and guiding students poorly. Their effort is lacking. Their maladjustment won't affect their character though and will affect offspring. This study aims at determining teachers' mental health as well as identify the causes of poor mental health.

Keywords: Mental Health, Teachers, Factors, School

1. Introduction

Teachers are society's backbone. Throughout ancient times, they've been recognised in our nation and world, influencing new generations. As a crucial social builder, they may strengthen the country's cornerstones. Schools are really the second most essential organization after households for developing children's morality as well as sociality. Education is interesting and demanding due to the societal respect as well as duties it requires. Educators and school employees have an incredible devotion and feeling of responsibility, which might worsen their concerns. Management systems as well as working environment affect teachers' mental health. Work-related stress affects teachers' mental health and quality of life, according to research. Teachers' jobs cause stressful situations (Mishra-Panda, 1996).

The mental health affects teaching and knowledge. Unhealthy educators may harm the country by providing substandard instruction and supervision. Their work is lacking. Their stress arising doesn't alter their character, but it affects children. This study intended to determine and assess the mental health concerns of Punjabi junior high school teachers or general teachers.

1.1 Mental Health

Mental health is cognitive or emotional health or the absence of mental disorder. Positive thinking or systems thinking defines mental health as the opportunity to appreciate life as well as balance interests with psychological wellbeing. Mental health involves expressing feelings and adapting to demands.

The WHO defines mental health as a condition of well-being that helps people to identify their potential, cope with regular life's stressors, undertake useful work, and give to oneself.

 "The term mental usually means something that is purely related to human brain function, as well as general properties that can be called emotional states, relationships with others, and social equilibrium".

"Health" goes beyond bodily well-being. This also indicates mental equilibrium, brain structure, environmental adaption, or psychosocial adjustment. Becoming sick isn't health. Positive mental health is a state of physiological, social, intellectual, and spiritually well-being (Berg, 1975; Jahoda, 1958).

"The Vedanta approach to mental health has been the subject of serious research by many prominent scholars (Akhilananda, 1952; Dalai, 1991). They have, in particular, taken into account Sri Aurovind's work to develop mental health research into a psychotherapeutic system over the last few decades".

Two mental health research methods use confirmatory requirements (Dohrenwend, 1994). Diagnosis that attempts to identify symptoms and develop devices to combine them to infer disorders such as schizophrenia and major depression.

"Verma, Nehra, and Puri (1998) suggested a dual mental health theory. The approach defines mental health as the absence of mental illness as well as some positive aspects. Well-being, fulfilment, faith, resilience, ego strength,

super-ego, innovation, enjoyment, honour, life quality, consciousness, social support, and so on grow.

Mental health is an ambiguous concept because of definition varies widely. Mental health is a vague concept that serves as a scientific as well as ideological designation. This report merely discusses variables affecting teachers' mental health before addressing programmes to enhance it. Teachers in development in the modern societies can confront dysfunctional behaviors. Several issues can impact a teacher's mental health. Psychoanalytic is one approach to mental wellness. Psychoanalytic beliefs that mental health is an individual characteristic as well as a consequence of mental growth or dynamics persist. It preserves mental health from early socialisation. Psychoanalysis or psychotherapy can improve early development. Psychological wellness is viewed as a product of the child's specific mental development or life experience.

2. Review of Literature

Mental health is described as a person's ability to adapt to the environment as well as to each other with the utmost efficiency and satisfaction. Ability to sustain socially sympathetic behaviour and a cheerful disposition in the face of adversity (Menninger (1945); Maslow and Mittelmann (1951): (i) Enough peace of mind, (ii) Suggests proper self-assessment, (iii) proper spontaneity and emotionality, (iv) efficient contact with reality, (v) proper physical needs and ability to satisfy them, (vi) Appropriate self-awareness, personality integration and consistency, (vii) appropriate life goals, ability to learn from experience, (viii) ability to meet group requirements, and (ix) as a standard of normal psychological health.

"Jahoda (1958) proposed the positive mental health: self, growth, development, or self-fulfilment, integration, autonomy, reality. Awareness of, and an individual's attitude towards learning the environment".

"According to Clausen, Merton, and Nirbert (1966), mentally healthy individuals are engaged in some project aimed at adapting well to social situations and benefiting society".

A teacher's mental health is a state in which he / she is effective in his / her work, is satisfied

and proud of the activities he / she pursues, cheers for the performance of his / her duties, and is personally considerate of his / her colleagues (Bernard (1961). Therefore, in order to achieve the objectives and objectives of school education, there is an essential need for a school organizational environment in which teachers maintain healthy mental health and effectively support student development.

According to Hilgard, Atkinson, and Atkinson (1971), a mentally fit person is a productive person. It has a life philosophy that guides him through the ups and downs of life, considering the necessities of the moment.

When it comes to mental maturity, a person is always working to improve their knowledge, act appropriately, or express their feelings and viewpoints.

To summarise, "Schultz (1977) emphasised on the following seven characteristics for a positive sense of self: the development of one's senses; warm connections with others; emotional stability; accurate perception; skill or responsibility; identity."

"Bhatia (1982) considered a person to be healthy when both his body and intellect were sound. It was found that mental health was characterized as the capacity to manage one's feelings and thoughts in the course of daily life. It relates to the capability to face or accept life's challenges head-on.

Male instructors were shown to have higher mental health versus their female counterparts, according to a study (Srivastava, 1987; Prasad, 1990; and Sahu and Mishra, 1995).

Healthy mental health that we all can seek has a homogeneous structure of desirable attitudes, health values, correct self-concepts, and scientific perceptions of the entire world. In the context of ensuring the quality of education, the criterion for determining teachers is the improvement of the education of millions of learners, as teacher factors influence teacher behavior / education strategies (Kamau, 1992). It is desirable to study the mental health of teachers.

"Kamau (1992) investigated teacher burnout and mental health. Male teachers are emotionally overextended, exhausted, internally controlled, anxious, cold to students, more personally achieved, and normal compared to females. Researcher has found

that we have a low ability to establish constructive ability to cope with demands and stress of life".

According to Gaziel (1993), stress-related weariness, poor sleep, worry, and sometimes even burnout may occur in people who are affected by stress (exhaustion). High blood pressure or ulcers are also possible side effects in more serious forms. Psychological and physiological health can be adversely affected by high levels of stress. In most cases, stress is characterised in perspective of (i) the external qualities of the environment. (ii) A person's emotional state is also considered. (3) a combination of variables that highlights the interdependence of a person with his or her surroundings. Mental health may be described as allowing individuals to maximize their satisfaction with themselves and their social order, minimize fiction and tension, and achieve the maximum success their abilities allow.

"Sharma (1995) sought to teachers' mental health and discovered that male teachers were much more likely to suffer from mental illness as a consequence of technological life situations.

"According to Boyle, Borg, Falon and Baglioni (1995), teachers are considered student and parent counselors, social workers, and, to some extent, parents of students under their supervision. It's no wonder that teacher stress and burnout are steadily increasing, as students and parents are asking teachers for more roles and more demands from local boards of education and the State Department of Education".

A study by Nayak (2005) looked at how teachers' self-concepts grow in relation to their mental health as well as adaption in the classroom. Findings of the study showed that strong mental health was a significant antecedent of a person's self-esteem.

3. Objectives of study:

1. To study and find out the factors responsible for mental health of teachers.
2. To recommend some meaningful recommendations that can contribute towards refining the mental health of teachers.

4. Methodology

Teachers' mental health was examined in this study, that was primarily explanatory. Only secondary data is used in this research paper. Secondary data was obtained from various journals, research papers, organizational publications, World Bank reports available online, and more. Readers can trust the secondary data because it has already been approved, published, and published and cannot be challenged.

5. Research Findings
Factors responsible for mental health of teachers

There is no doubt about the importance of teachers in the curriculum. Teacher quality, ability, personality, and effectiveness are arguably the most important factors affecting the quality of education. "However, teacher performance is affected when it is not mentally healthy, as it causes sensations of shame, rejection, tension, guilt etc., making the world and life perceived as dangerous." From time to time, they are forced to behave maladapted. General mental health problems arise from life events and work pressures. This applies to teachers as well as others. "Bereaved families, divorces, financial difficulties, family history, and personal characteristics can cause mental health problems".

There are two broad categories of factors that influence a teacher's mental health. Both on the job and off, as described below:

(i) Professional factors

Inaptitude, danger, low pay, heavy workloads, service volatility, insufficient resources, and manager-teacher intimacy are occupational variables. The like. She can't find work or lacks professionalism. More so because many were obliged to become teachers to make a living. Handling with student behavior, posting to located in remote regions, and repeated transfer to government-affiliated teachers can be tedious and stressful. Considering the increasing cost of living and additional responsibility, teacher pay have not grown. In private schools, instructors are abused by administration since they are paid a little

money compared to their services. Even legitimate agencies like the University Grants Commission, the National Council for Teacher Education, and state governments haven't contained this danger. Most schools require 6 out of 8 classes every day, which would be a lot. Overload typically generates emotional strain and mental exhaustion, which could also lead to stress. Peer conflicts for promotions, discriminatory treatment even by company's head, uneven stress distribution on teachers—some can gain several periods, others their ability You may acquire a short period of time owing to shortage of, even near to the company's head upsets peace, collaboration, and friendliness between instructors may create anxiety and impact teachers' mental health. This is due to the dictatorial conduct of some administrators, managers, supervisors, and so forth., who force demands on teachers without evaluating their services. Private schools are worse. Some teachers are temporarily appointed and don't perform well after a long time of duty, which impacts their mental health. Teachers experienced anxiety, despair, and stress. Many organizations lack bookstores, audio-visual equipment, and scientific facilities. Inadequate amenities might create instructor stress and unhappiness.

Social factors: Social factors include lack of social fame, high moral expectations, interpersonal relationships between teachers, etc., as detailed below.

Lack of social fame: Many leaders and educators provide verbal service to the importance of teachers. Everyone agrees that teachers are the future builders of the country. The slogan sounds very sweet to the ear, but what matters is the teacher in the eyes of society.

High moral expectations: Society expects teachers to be saints. Undoubtedly, teachers need to present a model of ideal behaviour in front of their students. But how many students actually imitate or identify a teacher's model or ideal? Teachers are members of society, and bad social conditions can affect a teacher's personality.

Lack of professional aptitude and spirit: Choosing school as a career is usually a last resort. Teachers lack professional competence as well as spirit even though they were compelled to become teachers so they had neither any work opportunities. Definitely.

Occupational hazards: The teaching profession is sometimes frustrated, with maladaptation and stress, such as student discipline, dealing with remote and inaccessible areas, especially frequent transfers to government-affiliated teachers.

Lack of social fame: Most presidents and teachers praise teachers. Everyone believes teachers are the country's future. The tagline sounds nice, yet society values teachers more.

Low salary: Despite high living costs and increased teacher responsibility for the child's overall personality development, teacher salaries have not increased at the same rate.

High moral expectations: Society expects teachers to be saints. Undoubtedly, teachers need to present a model of ideal behaviour in front of their students. But how many students actually imitate or identify a teacher's model or ideal? Teachers are members of society, and bad social conditions can affect a teacher's personality.

Work load: At school, the workload of education can be high. The teacher could teach 6 of 8 periods daily. Excess causes emotional strain and burnout, resulting to stress.

Relationships between teachers: Conflicts between peers, such as promotion, can disrupt harmony, cooperation, and goodwill between teachers.

Manager-teacher relationship: In educational institutions, some supervisors are dictators. People act formally as well as order instructors without recognising their work.

Service instability: It's tenure. Several teachers are temporary. Stress, despair, and anxiety may result.

Lack of facilities: Many institutions do not have suitable facilities such as well-equipped libraries, audio-visual equipment, and scientific laboratories.

6. Conclusion & Recommendation

Mental health balances socioeconomic, physical, mental, and emotional existence. It extends further than the lack of mental disease and affects how people feel regarding ourselves. Consider others. How do we handle life's challenges?

Some suggestions were made to improve teachers' mental health.

Refining Teacher-Teacher Relations: A school's success depends on teamwork. Schools must improve teacher morale. Frequent employee meetings will clear up difficulties and misconceptions. To acquire sufficient skills, schedule guided programs and vacations.

Refining Teacher-Principal Relations: Most school systems tend to blame each other. Administrators blame teachers for school malfunctions, and teachers blame administrators for their authoritarian attitude and partial treatment. This relationship needs to be improved by eliminating such anxieties, deciding and implementing major changes only after careful deliberation with staff, acting as a true team leader, and encouraging team spirit. I have. At the same time, the teacher provides the best service to gain the trust of the principal and students.

Specialized Growth: The School / Board of Education encourages teachers to update their knowledge of teaching content and methods, library facilities, and try innovative methods, and be friends.

Seminars, workshops, conferences: Invite teachers from different schools/universities to discuss educational issues, evaluate alternative perspectives at seminars and workshops, and fall behind in improving educational trends and technologies. Do not have to.

Teacher-Community Relations: A close relationship should be found between teachers and the community. Schools employ communities and help improve community hygiene, roads and drinking water. Under the guidance of the teacher, students can voluntarily participate in village improvement projects to build a close relationship between the school and the community. This will increase the fame of the teacher.

Spiritual Practice: "According to Hussein, certain mental movements like ":

(i)   clear the air, take deep breaths and relax,
(ii)   focus on your good,
(iii)   meditation practice.,
(iv)   feeling that one is not alone in one's goodness, and,
(v)   extending one's goodness inward and then outward to loved ones, elsewhere, and finally upwards.

Such programs that help instructors enhance their mental health by improving beneficial adjustments.

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MIGRATION OF STUDENTS-ANALYSIS OF CHALLENGES FACING BY STUDENTS TO STUDY ABROAD

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ABSTRACT

Student migration is studying abroad. International higher education is becoming a market-leading industry during globalisation. The proportion of Indian and foreign students is increasing in the previous 14 years. Several students have been pursuing higher education abroad, and so many foreign students are contemplating overseas students as a permanent stage in the nation. Going abroad is now a common practice for young people in India. Anyone who leaves India to study abroad describes the whole experience as a life-changing experience. Studying abroad is not only providing you with a good education, but it also changes your outlook on life, dealing with difficult situations and coping with stress. This paper describes the challenges facing students in their community. The event is scheduled before departure. This study shows pre-departure problems like getting credible data, comprehending the admissions procedure, and arranging visa paperwork. In the host nation, students face linguistic, economic, and culture difficulties.

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1. Introduction

Over the years, individuals have moved in search of food, endurance, and colonization of new territories, fleeing combat areas and political turmoil, and looking for new, more fulfilling and exciting opportunities. Emigration is a global wonder. Migration is a regular phenomenon that affects the structural and economic aspects of the moving population. Factors affect movement. Displacement involves moving people or households permanently or temporarily. Student migration refers to students that spend and over a year outside their home country. "Universally adaptable pupils go between two nations to participate in academic activities in the target country, which is different from their home country. Suburb-crosser."(UNESCO, 2015).

Given our continued interest in the internationalization and globalization of reality, the mobility of cross-out skirt students around the world continues (P.G. Altbach and J. Knight, 2007).

The six main countries promoting about half of global research are the United States, United Kingdom, Australia, Germany, France and Canada. Other well-known dissenting opinions against global understudy are the Russian Federation, Japan, Spain and New Zealand. Nowadays, some Asian countries such as Singapore, Hong Kong, South Korea and Malaysia also have a large number of students from all over the world.

In 2017, more than 5 million students were studying outside their country of origin (Neghina, 2017). The expansion of students around the world studying abroad is no coincidence. They represent highly accomplished and energetic gatherings (Russell, Rosenthal, and Thomson, 2010) and are incredibly added to the economy of the country that owns them. Educational costs, migration, and tax collection arrangements in the host country are huge variables that affect the financial benefits of global research. Due to the relationship between the growing number of global studies and their immediate money-saving benefits of having an organization or host country, significant efforts and commitments to attract them are increasing. There are several benefits associated with attending school in a country with a solid training framework and a great learning society. Nonetheless, global Understudy faces a number of challenges when training abroad. Some of these difficulties are: Diverse display styles, low language proficiency, diverse academic needs and assessments when compared to home country, new daily environment (social stun), personal anxiety, budget difficulties, personal well-being issues, new neighborhood medicine Service frameworks, issues of adaptation to different climates and foods, social and social

separation, and distribution from loved ones. There is a great deal of enthusiasm among young people in Punjab to resolve their student visas. Early students go abroad to get a postgraduate degree, but even a class 12 passout prefers to study at a foreign university. Students are also fascinated by the modern lifestyles of other countriesIn certain villages, leaving is a symbol of status. The bulk of Punjab students see study as a launching pad to developed nations. Kaur, 2019). In certain villages, leaving is a symbol of status. The bulk of Punjab students see study as a path to permanent residency in wealthy countries. Punjab is mad for studying overseas. Punjab is an Indian immigration hotspot. Punjab is one of India's top free immigration states. Punjab is provision of better than just about any other state, with a 66 percent growth in passport applications in the last two years. Grewal (2019). Existing study on international student adaptability were mostly undertaken in North America, Europe, and Australia. The influx of international students to Asia is gaining steam. This will be fascinating to see how adjusting students in these nations varies from advanced countries. The objective of this research is to examine the plans of students who seem to be ready to study overseas.

2. Review of Literature

Many students from underdeveloped countries study in developed nations. Global student movement helps talented migrants move to developed nations (Suter and Jandl, 2006; Borjas, 2009; Mok, 2010). Long-term trends reveal many Indian students study overseas. It's climbed for years. The trend demonstrates an increase in Indian students studying abroad.

Indian youth are progressively traveling overseas. Most students who study abroad never return. Standard of living, educational standards, and wealth could be considerations in not coming. This study depicts Indian students studying abroad. Students studying in India in the past couple of years (Kaur Harkirat & Aggrawal Rashmi, 2019).

Poonam Kakkad & T.P. Madunea. (2015) Focusing on what benefits are associated with international education that is important to students, we investigated the factors that influence student decisions regarding study abroad. We also discovered barriers that students feel when deciding to study abroad. This paper identifies motivational and constraining factors that influence student decisions about the same thing. For most international students, admission to a university or college can be an overwhelming life and cultural transition.

International students confront scholastic, social economic, and psychological challenges given the advantages of studying abroad (Alsahafi and Seong-Chul, 2017; Banjong, 2015; Mesidor, 2016; Wu et al., 2015). These problems can impair a students' performance, emotional and physical health, social health, and views of the host country. Foreign students undergo a sometimes-difficult assimilation. Enrolling in a US university might be stressful for foreign students.

Many studies have examined the obstacles overseas students face at U.S. universities. Language problems, integrating to academic environments, misconceptions, and communication issues with instructors and classmates are common. Anxiety, worry, isolation, social aspect, cultural shock, money troubles, inadequate housing, loneliness and despair, and adaptability to daily life (G. Bradley 2000, E. A. Erichsen and D. U. Bolliger 2011), J.J. Lee and C. Rice 2007, I.G. Msengi 2007, X. Zheng 2010).

Russell et al. surveyed 900 Australian overseas students. 41% of overseas students reported stress in 2010. Loneliness, culture clash, and prejudice may cause stress.

Yi et al. (2003) Conducted research on the use of counselling services by international students at major universities in Texas. Most past surveys on the issue of global student change have been conducted in North America, Europe and Australia, with more than half of the global surveys flowing out of Asia (OECD, 2013). In spite of the fact that the difficulties were taken seriously in the writing, more tests are expected to investigate these difficulties in various situations anyway. This survey hopes that Punjab students will understand the difficulty of seeing before the flight.

3. Research Methodology

Quantitative methodology adopted in this study that draws on the concept of student migration-

a study of the challenges students face when deciding to study abroad. This survey surveyed students trying to move to another country for the survey. In this survey, we conducted a survey to collect information. According to respondents, men (n = 120) and women (n = 80) related to this review.

4. Objective of the Study

The above study aims to examine the barriers experienced by Ludiana students who want to do creative research abroad.

5. Scope of Study

The survey will be conducted in the area of Punjab and will give you an idea of the current migration patterns of students studying abroad. This study will help you understand how seasonal student migration leads to social change. This study will explore the expected education of students abroad. This poll will benefit institutions of higher learning that admit foreign students, educational planners, syllabus designers, foreign student's faculty advisors, and university psychological counseling.

6. Analysis & Interpretation

200 Amritsar students, 40% women and 60% males, participated in the survey. Almost all respondents were 18-21. Most students want to study in the US, Canada, Australia, UK, and NZ. Themes emerge from this study's findings. Before going abroad, students have to face study and language difficulties. Percentage technique presents group discussion opinions. The following aspects inferred from Tables 1 and 2 explaining what 200 people investigated. Of these, all responded positively. Based on the analysis of the data, 75% students are interested in studying abroad. This ambiguity shows that Punjab students are rushing towards international education. As per survey 70% students participated in coaching from various language exams. Over 35% of students experience more levels and 65% experience lower levels of homesickness. Students are broke. To enter canada, choose Canada. Australia, the UK, NZ, and the US follow. Learners love Canada, according to the study. 30% of students have financial challenges, according to the analysis. Several students who study overseas because of immigration fraud. Percent of people say advisory body don't lie.

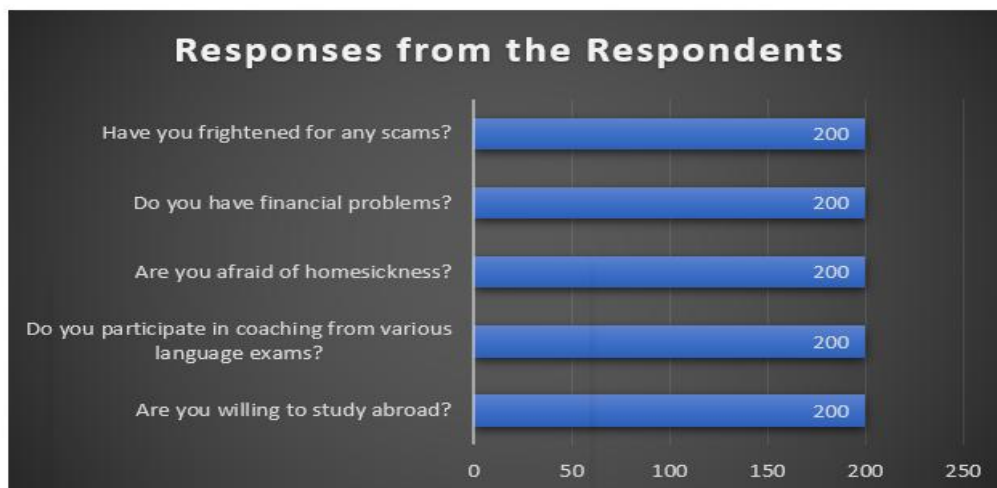| Table 1: Responses from the Respondents	
Opinion	**Number**
Are you willing to study abroad?	200
Do you participate in coaching from various language exams?	200
Are you afraid of homesickness?	200
Do you have financial problems?	200
Have you frightened for any scams?	200

Table 2: Questionnaires

Question	Response		
	Opinion	**Students**	**Percentage**
Are you willing to study abroad?	Yes	150	75
	No	50	25
	Total	200	100
	Opinion	**Students**	**Percentage**
Do you participate in coaching from various language exams?	Yes	140	70
	No	60	30
	Total	200	100
	Opinion	**Students**	**Percentage**
Are you afraid of homesickness?	Yes	70	35
	No	130	65
	Total	200	100
	Opinion	**Students**	**Percentage**
Do you have financial problems?	Yes	60	30
	No	140	70
	Total	200	100
	Opinion	**Students**	**Percentage**
Have you frightened for any scams?	Yes	80	40
	No	120	60
	Total	200	100

7. Conclusions

Some countries are currently competing for foreign students. To recruit foreign students, host schools must grasp their obstacles and how to assist them adjust fast. Numerous nations, including the US, Australia, and Canada, provide international education. International education boosts the host economic growth and provides jobs. Government agencies must heed student opinions. The pupil was discovered while researching Punjabi migration. They're crucial to migration. Learners were 88% male. Many people migrate for study, according to this report. Foreign students in similar nations might well have adaption issues. As India is cosmopolitan, overseas students suffer coordination challenges, particularly from India to certain other nations. These difficulties promote foreign students to find solutions. When they become independent, they adopt new learning mechanisms. Planning and adaptability require much time, effort, and assistance. The above study refers to a specific set of students from their home nation in a specific region. Non-student survey findings are restricted. This survey didn't report on motive, ethnic heritage, temperament, epidemic attitudes, or borders limitations relating to scheduling and language constraints. Research is needed to examine additional group characteristics.

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EFFECT OF TWELVE WEEKS CONDITIONING TRAINING PROGRAMME ON SELECTED ANTHROPOMETRIC PARAMETERS AMONG BASKETBALL PLAYERS

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ABSTRACT

The current research was deliberated to know the effect of twelve weeks conditioning training program on chosen anthropometric parameters of college level Basketball players. To attain the aim of the current research, total thirty (N=30) of college level Male Basketball players of Krishna Institute of Education & Technology Bilaspur, Yamuna Nagar (Haryana) were engaged as subjects. The age of the participants were ranged from 20 to 28 years. Suprailiac Skin Fold and Calf Skin Fold were selected as dependent parameters and Twelve – weeks conditioning training Program was selected as independent parameters for present study. After the compilation of relevant raw figures, to identify the impact of twelve weeks conditioning training program on selected anthropometric parameters of college level Basketball players, t-test was employed on mean values of pre and post-tests with the help of Statistical Package for the Social Sciences (SPSS) 16.0. The level of significance was set at 0.05 percent. There was noteworthy impact of twelve weeks conditioning training protocol on subcapular skin fold of College level Basketball players. There was significant impact of twelve weeks conditioning training protocol on suprailiac skin fold of College level Basketball players. There was considerable impact of twelve weeks conditioning training protocol on calf skin fold of College level Basketball players.

Introduction

The lackluster showing of athletes at the higher rivalries, not just concern particularly to the mentors, coach Physical educationists and sports researchers, yet it is additionally concerned straightforwardly to the player's innate quality. Various variables, similar to expertise capacities, engine capacities, mental. components, social and natural variables and so forth are mindful as the presentation restricting elements behind the athlete on the characteristics of lackluster showing in rivalry. Inherent capacity is fundamental, yet it should be joined with difficult work, great training and testing match insight. It is truly challenging to characterize capacity and to gauge.

Basketball is a group activity wherein two groups, most regularly of five players each, contradicting each other on a rectangular court, contend with the essential goal of shooting a b-ball (around 9.4 inches (24 cm) in distance across) through the safeguard's circle (a container 18 inches (46 cm) in measurement mounted 10 feet (3.048 m) high to a backboard at each finish of the court) while keeping the rival group from shooting through their own loop. A field objective is worth two focuses, except if produced using behind the three-point line, when it is worth three. After a foul, planned play stops and the player fouled or assigned to shoot a specialized foul is given at least one-point free tosses. The group with the most focuses toward the finish of the match dominates, however in the event that guideline play terminates with the score tied, an extra time of play (additional time) is ordered." Anthropometry is an arising reasonable specialization worried about the utilization of appraisal to overview human size, shape, degree, affiliation, improvement and gross breaking point. It is an essential solicitation for fundamental theory in issues identified with progress, exercise, execution and food. The district has been depicted as the quantitative interface among life systems and physiology. It places the singular competitor into target concentration and gives an away from of their fundamental status at some unpredictable time, or, significantly more essentially, obliges appraisal of differential development and arranging impacts. Without an insight of the improvement of young people and youth and their fundamental movement, confirmation of limit and seeing of preparing is usually a question of confusion and creation. Anthropometry gives the focal fundamental motivation to the possibility of athletic execution. Anthropometry is the organized evaluations that express the parts of human body. The appraisal on anthropometric evaluations might be valuable in picking the reasonable game or game for any person. The thought behind the decision of a game or

occasion by a person of his piece of slack is to give out as far as possible. Hence, the piece of anthropometric appraisals in any game or occasion is ordinarily huge (Wikibooks, 2010).

Methodology and Procedure

Current research was designed to know the impact of twelve weeks conditioning training program on chosen anthropometric parameters of college level Basketball players. To attain the purpose of the present study, total thirty (N=30) of college level Male Basketball players of Krishna Institute of Education & Technology Bilaspur, Yamuna Nagar (Haryana) were recruited as subjects. The age of the participants was ranged from 20 to 28 years. Subcapular Skin Fold, Suprailiac Skin Fold and Calf Skin Fold were selected as dependent parameters and Twelve – weeks conditioning training Program was selected as independent parameters for present research. All the anthropometric measurements were taken with the use of Weighing Machine, Anthropometer Rod, Skinfold Calliper, Sliding Calliper and Gullick Tape. All the measurements were taken from the right hand side of the athletes. After the compilation of relevant figures, to identify the effect of twelve weeks conditioning training program on selected anthropometric profile of college level

Basketball players, t-test was implemented on mean values of pre and post-tests with the help of Statistical Package for the Social Sciences (SPSS) 16.0. The level of significance was set at 0.05 percent.

Results of the Study

Table No. 1 : Mean and SD values of Pretest and Posttest of Subcapular Skinfold (CM) in college level Basketball players

VARIABLE	GROUP	MEAN	SD	t-value
Subcapular Skinfold	Pre-test	4.93	4.65	2.63*
	Post-test	7.56	4.72	

$t_{.05}$ (29) = 2.09

Table no. 1 shows the Pre-test & Post-test Mean, SD and t – values for subcapular skin fold of College level Basketball players. The values of the above table statistically make known that the calculated t – value of subcapular skin fold 2.63 is higher than table value 2.09. Thus it established that with the application of twelve weeks conditioning training protocol there was considerable difference between Pre-test and Post-test in anthropometric variable of subcapular skin fold. The values of table no. 1 are also illustrated in figure no. 1.
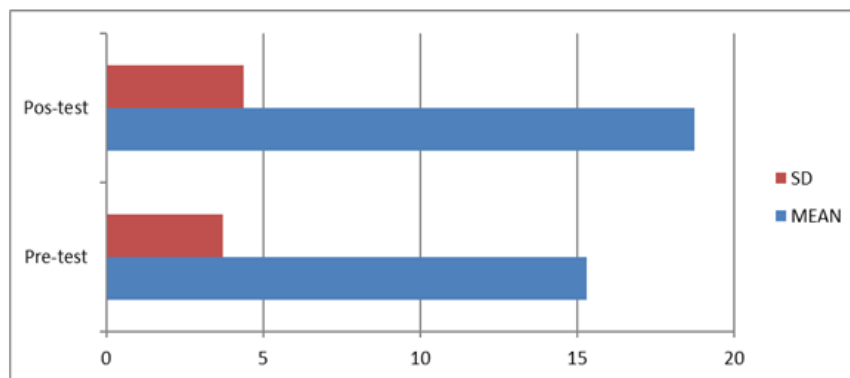

Figure No. 1 : Mean and SD values of Pretest and Posttest of Subcapular Skinfold (CM) in college level Basketball players

Table No. 2 : Mean and SD values of Pretest and Posttest of Suprailiac Skinfold (CM) in college level Basketball players

VARIABLE	GROUP	MEAN	SD	t-value
Suprailiac Skinfold	Pre-test	16.74	4.83	6.53*
	Post-test	22.63	5.33	

$t_{.05}$ (29) = 2.09

Table no. 2 demonstrates the Pre-test & Post-test Mean, SD and t – values for supraspinale skinfold of College level Basketball players. The table disclosed that the calculated t – value of supraspinale skinfold 6.53 is higher than table value 2.09. Hence it proves that after carrying out twelve weeks conditioning training protocol there was considerable

difference between Pre-test and Post-test in anthropometric variable of suprailiac skinfold.

The values of table no. 2 are also illustrated in figure no. 2.
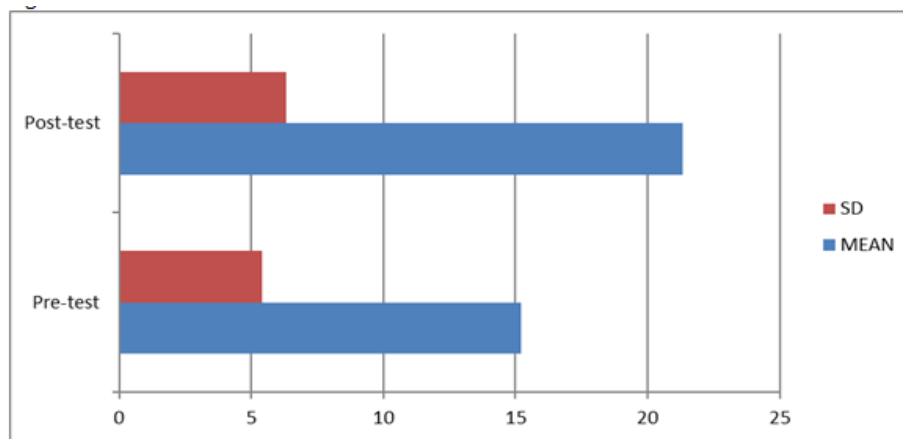

Figure No. 2 : Mean and SD values of Pretest and Posttest of Suprailiac Skinfold (CM) in college level Basketball players

Table No. 3: Mean and SD values of Pretest and Posttest of Calf Skinfold (CM) in college level Basketball players

VARIABLE	GROUP	MEAN	SD	t-value
Calf Skinfold	Pre-test	14.63	4.36	5.82*
	Post-test	17.46	4	

$t._{05}(29) = 2.09$

Table no. 3 confirms the Pre-test & Post-test Mean, SD and t – values for calf skinfolds of College level Basketball players. The table confirmed that the calculated t – value of calf skinfold 5.82 is higher than table value 2.09. Hence it established that with the application of twelve weeks conditioning training protocol there was considerable difference between Pre-test and Post-test in anthropometric variable of calf skinfold. The values of table no. 3 are also illustrated in figure no. 3.
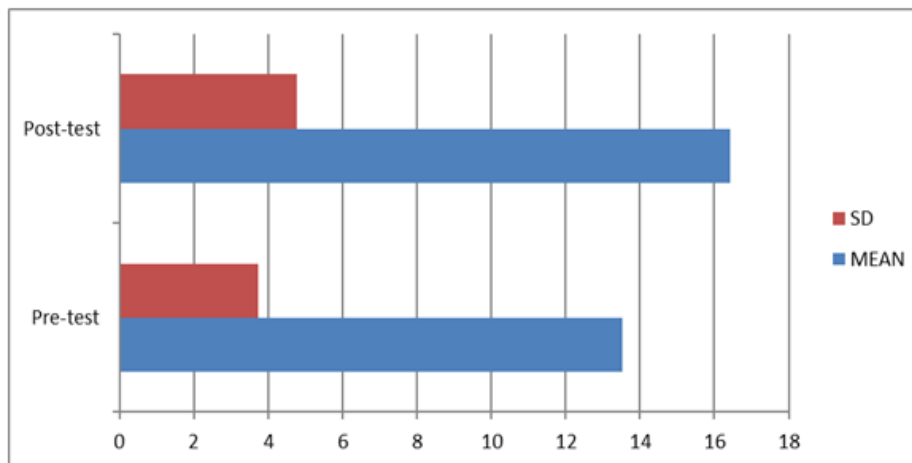

Figure No. 3 : Mean and SD values of Pretest and Posttest of Calf Skinfold (CM) in College level Basketball players

Conclusions

The result of the study illustrated that there was considerable difference between the pre-test and post-test measurements of subcapular skin fold of College level Basketball players. Therefore the present research confirms that, twelve – weeks conditioning training protocol has considerable effect on subcapular skin fold of college level Basketball players.

The result of the study shows that there was considerable difference between the pre-test and post-test measurements of suprailiac skin fold of College level Basketball players. So the present study confirms that, twelve – weeks conditioning training protocol has considerable

effect on suprailiac skin fold of college level Basketball players.

The result of the study revealed that there was considerable difference between the pre-test and post-test measurements of calf skin fold of College level Basketball players. Consequently the current study confirms that, twelve – weeks conditioning training protocol has considerable effect on calf skin fold of college level Basketball players.

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LANGUAGE CREATIVITY AMONG ADOLESCENTS IN RELATION TO READING COMPREHENSION

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ABSTRACT

The present study examines language creativity among adolescents in relation to reading comprehension. The sample of the study comprised of 1006 students of class 9th and 10th, studying in Government, aided and private schools both in rural as well as urban areas of Ludhiana district of Punjab. Descriptive survey method was employed to collect the data. Language Creativity Test by S.P. Malhotra and Sucheta Kumari and Reading Comprehension Test (RCT) BY Dr. Pramila Ahuja and Dr. G.C. Ahuja was used to collect the data. The major findings of the study revealed significant relation between language creativity and reading comprehension.

Keywords: Language creativity, Adolescents, Reading Comprehension

Introduction

We are living in such a revolutionized society where a very small level of competence makes a big difference. Present world is statistically and technologically advance. It is driven by high aspiration, motivation and unsatiating desire to excel in all walks of life including education. Students and their parents, today, are more concerned about their higher academic achievements. Academic achievement is determined by many variables and the most important among them are: school environment and language creativity. The success as a whole depends on the skills of the individual. These skills may be literacy skills, professional skills, behaviour skills, creativity skills, language skills and performance skills etc. It is increasingly acknowledged that creativity has become essential in daily life. Each individual has the potential to be creative and the level of creativity actualization results from different factors that can be cognitive, conative and environmental. The rapid evolution of society obliges individuals to adapt constantly. Flexibility and creativity give the possibility to cope with the numerous changes, people may have to face during their lives. Creativity is considered to be a necessary component of the problem-solving process (e.g., Mumford, Mobley, Uhlman, Reiter-Palmon & Doares, 1991), and creative ideation develops greater flexibility (e.g., Runco, 1986). The ability to cope with new situations can be acquired through the development of autonomy, self-confidence, motivation and creativity (Carson, et al.,1994; Deci & Ryan,

2000; Russ, Robins, & Christiano, 1999; Shankland, Genolini, Riou Franca, Guelfi, & Ionescu, 2010).all the above factors may be enhanced or hindered by the individual's immediate environment and educational settings (Lillard & Else-Quest, 2006; Mellou, 1996; Ogletree, 2000; Shankland, Riou Franca, Genolini, Guelfi, & Ionescu, 2009).

Another variable that makes a big difference in the success of a child is language creativity. As we all know that language is not a subject, rather it is a skill. Expertise in any language is possible through a lot of practice and interest. But to use language creatively, is another important aspect especially when it is related with reding comprehension.

Researchers from various fields such as psychology, education and artificial intelligence have studied the process of reading for decades; while many theories have been proposed, less explained interconnection of creativity and reading especially reading comprehension. Creative reading includes novel concepts which the reader must creatively understand in order to comprehend the text.

Language Creativity

Language creativity, or the artful use of language, is central to children's emotional, cognitive and social development and education, as well as to communicate in general. Linguists and psychologists have shown that children naturally play and experiment with language sounds, structures and meanings and it has been argued that this kind of spontaneous often playful, creativity in

language, contains the seeds of more prestigious poetic, literary and dramatic cultural forms (Cook 2000; Tannen 2007).children also pursue creative activity through language, using it for practising social roles, speculative thinking, intellectual exploration and the creation of alternative worlds.

The notion of linguistic creativity is propounded by Chomsky in 1966. It is the ability of an ideal speaker in a homogenous speech community to combine a finite known stock of elements on the basis of finite known stock of computational patterns. It is a general view that only writers, poets, painters, musicians and scientists are creative persons, but now a days, number of psychologists have started feeling that creativity can exhibit its pleasant influence in any sphere of life. A doctor, a teacher, a clerk, a peon, a labourer and a butler all can be creative persons in their respective fields of work. Guilford and Hoepfner (1971) stressed the same thing when they pointed out that specialization in art, music, shop work or commercial subjects undoubtedly calls for quite different combination of abilities and aptitude score summations of different compositions. The scientists, technicians and businessmen etc. all have creative talent that pertains to their specific field. Similarly, poets, novelists and writers display a peculiar type of creativity in their writings that can be called as language creativity. In simple words, language creativity may be defined "multi-dimensional attribute that is differently distributed among the people and includes mainly the factors of fluency, flexibility, originality and elaboration. Craft (2000) stated that language is a medium through which possibility can be explored. By possibility Craft means creative ability. Craft (2000) further remarked that even with very young children it is possible to encourage experimentation, analysis and the expression of feelings-and that the National Curriculum leaves plenty of room for so doing. Sharp (2001) remarked that creativity is increasingly gaining recognition as a human trait that can and should be developed through education.it is viewed as important not only for personal development and fulfilment but also for its

contribution to the advancement of society/ nation.

Adolescents

Adolescence has long been recognized as a period of heightened risk-taking and accordingly, a stage that requires special oversight from adults. "Adolescence" is a dynamically evolving theoretical construct informed through physiologic, psychosocial, temporal and cultural lenses. (Fletcher, 2016). World Health Organization (WHO) defines adolescence as a phase of life between 10-19 years of age characterized by physical growth, emotional, psychosocial and behavioural changes, thus, bringing about transformation from childhood to adulthood. These changes occur a year or two earlier in girls than boys. Some of the changes are externally visible and some are internal. According to Stehlik, (2018), Adolescence can be defined biologically, as the physical transition marked by the onset of puberty and the termination of physical growth; cognitively, as changes in the ability to think abstractly and multi-dimensionally; or socially, as a period of preparation for adult roles. Adolescence has been described as a phase of life beginning in biology and ending in society (Petersen, 1988).

Reading Comprehension

Reading is an activity performed to develop an understanding of a subject or topic. Reading is an essential skill that individuals need to process in order to be successful in life. Reading keeps individual informed and up-to-date. Reading is both receptive and active process. It is a dynamic process in which the reader is searching for connections of ideas in the text. Reading requires the utilization of many mental processes as information is collected, processed and analysed. Also, reading is a source of enjoyment for individuals. (Li and Wilhelm, 2008). If a child can read and understand the meaning of something he reads, he's said to have reading comprehension. More than just being able to read the words, reading comprehension includes the ability to draw inferences and identify patterns and clues in text. For instance, if a child is reading about a person who decides to carry an umbrella, the child can infer that the

person is expecting rain, or that rain may factor into the story somehow.

Reading comprehension is defined as "a thinking process by which a reader selects information, or ideas from printed materials; determines the meanings the author intended to transmit; decide how they relate to previous knowledge; and judge their appropriateness and worth for meeting the learner's own objectives." (Veeravagu, et al (2010: 2006). According to Edward L. fry," comprehension is a part of getting the thoughts that were in the author's mind into the readers' mind." According to Caldwell, Jennings, and Learner (2010), "Comprehension is the essence of the reading act'' (p.17). Reading Comprehension refers to the ability to gain meaning from what one has read (Hallahan, Kauffman & Pullen, 2009). Hallahan et al. (2009) state that," reading too slowly or in a halting manner interferes with a person's ability to comprehend text" (P.197). according to Caldwell et al., 2010, "The many levels of comprehension include drawing on background experiences, literal comprehension, higher-level comprehension, and the ability to study and learn from text "(P. 17). The two types of reading comprehension include narrative comprehension, which refers to stories and novels, and expository comprehension, which refers to informational material such as science books (Caldwell et al., 2010).

In many second or foreign language-teaching situations, reading comprehension receives a special focus for several reasons. It is considered as an important language ability because it enhances the process of language acquisition and helps students to read for a variety of purposes. Besides, written texts serve various pedagogical purposes. Therefore, extensive exposure to linguistically comprehensible written texts can enhance the process of language acquisition. Education is universally recognized as prime key of moral, cultural, political and socio-economic development of a nation. The nations, which have been taken major initiatives, made revolutionary advances and performed miracles in the last two decades. No doubt, this great achievement is based on their effective educational system (Ahmad, 2001). It is considered that educational system of any country can provide the vouch of success and prosperity for their nations. According to Saeed (2001), '' The achievement of a comprehensive and effective educational system is necessary for the survival of nation." It is often conceived as a systematic action of imparting relevant knowledge, skills and habits to the learners in their preparation for meaningful life and contribution to better society (Oloyede, 2006). A sound and effective system of education results in the enfoldment of learner's potentialities, enlargement of their competencies and values. Recognizing such an enormous potential of education, all progressive societies have committed themselves to the universalization of education with an explicit aim of providing" quality education for all."

Literature Review

Rim and Upitis (2005) conducted study and found that students who participate in the Arts display greater academic achievement along with motivation and creativity. Wandell, Dougherty, Ben-shachar and Deutsch (2008) found that there is correlation between Art and reading skills. Rao & Satyapal (2010) explored the significant impact of socio-demographic variables on language creativity. Fereshte Masoud. G (2012) determined that there is meaningful relation between memory and components of creativity. Handayani (2013) carried out a study about using children's short stories to enhance students' comprehension and found positive results. Liao (2015) found that amongst eight grade students, silent reading fluency significantly predicts reading comprehension. Jiang (2016) examined the association between oral reading and level of comprehension in ESL students with different backgrounds in first language. The findings suggested that difference first language backgrounds tend to have different factors that develop reading comprehension as each first language tends to be orthographically distant from English. Ntereke and Ramoroka (2017) found that only 12.4% of students perform well in a reading comprehension task, 34.3% presented a low level of execution in the task. Cartwright et al., 2019; Dewi et al., 2020), with gender (Saracaloglu and Karasakaloglu, 2011), found that women present a better level of

reading comprehension than men and with knowledge related to reading.

Emergence Of The Study

"Language is the blood of the soul into which thoughts run and out of which they grow. ´ (Oliver Wendell Holmes)

Language is a vital tool for communication, it is not only a means of communicating thoughts and ideas, but it builds friendship, economic relationships and cultural ties. In classroom when language is used efficiently and effectively at the right place, at the right time and also fulfils the desired purpose, and then it becomes creative. Learning is a transactional process in which both students and teachers know how to understand and communicate with each other and in which trust creates conditions to reduce anxiety as well as great striving and motivation. (Felner et al., 2007). As knowledge regarding human development and learning has grown at a rapid pace, the opportunity to shape more effective educational practices has also increased. Taking advantage of these advances, however, requires integrating insights across multiple fields-from the biological and neurosciences to psychology, sociology, developmental and learning sciences and connecting them to knowledge of successful approaches that is emerging in education. Strong relationships have biological as well as affective significance. Brain architecture is developed by the presence of warm, consistent, attuned relationship; positive experiences; and positive perceptions of these experiences (center on the developing child, 2018). Such relationships help in developing the emotional, social, behavioural and cognitive competencies, foundational to learning. Students need a sense of physical and psychological safety for learning to occur, since fear and anxiety undermine cognitive capacity and short circuit the learning process. Barkley (2005) described The National Reading Panel's scientifically based-reading research and identified areas important to reading comprehension. Three of these areas included prior knowledge, self-monitoring, and using graphic organizers (Barkley, 2005). A student's prior knowledge influences reading comprehension because the more knowledge

that a student has about a text, the more likely they are to understand and remember what they read (Barkley, 2005). Findings have confirmed that children who are good readers, more likely to have positive self-concept related to their reading abilities where as poor readers are more likely to have negative reading self-concepts (Chapman & Tunmer, 1995; 1997; Chapman et .al., 2007) correspondingly, poor readers have often have a lack of motivation regarding reading and experience more negative feelings, such as anger, sadness and unpopularity (Guethrie & Wigfield, 1997); Morgan, Farkas, & Wu, 2012; Park, 2011. Students who see themselves as good readers will anticipate success in academic situations and often perform better at academic tasks than students who exhibit poor self-belief and hence anticipate failure, 2000; Zimmerman, 2000. In 1970 and 80s, reading comprehension research was mostly discussed in a connection between a reading skill and language competence (Clarke, 1980, Carell, 1983, Bernhards, 1991, etc.). The latter researches were aimed at the investigation of the phonological awareness (Foy & Mann, 2006, Anthony and Francis, 2005) in relation to reading strategies in the foreign language (Roche, 2013, Stranovska, Munkova, Hvozdikova, 2013 etc,). In the recent years, however, approaches to teaching of reading comprehension have focused on the importance of acquiring strategies (e.g., summarizing, questioning, clarifying etc.) that help students to become strategic readers while coping with difficult passages (Alderson, 2005). Since reading comprehension is not an observable phenomenon, assessing learner's comprehension and development of the reader's competence through the use of those strategies seems important in order to affect learners' achievement (Brown, 2000).

Definitely, the scarcity of research in this area especially in India provides a convincing rationale to undertake further investigation into examining the relationship between language creativity and reading comprehension. Therefore, the investigator made an attempt to study the relationship between language creativity and reading comprehension among adolescents.

Objectives

1. To study level of language creativity and reading comprehension among adolescents.
2. To find out the relationship between language creativity and reading comprehension for the different groups of adolescents.

Hypothesis

There is no significant relationship between language creativity and reading comprehension.

Methodology

Descriptive survey method was employed for the study.

Sample Of The Study

The sample of the study confined to 1006 adolescents of 9th and 10th class, covering different districts of Punjab.

Tools Used

Language Creativity Test by S. P. Malhotra and Sucheta kumari was used. It was developed with a sole purpose of measuring language creativity of school and college going students. It has five Sub-tests, namely: (i) plot building, (ii) Dialogue writing, (iii) Poetic diction, (iv) Descriptive style, and (v) Vocabulary test. and each sub-test is to be scored for four factors, viz, Fluency, Flexibility, Originality and Elaboration. All these sub-tests are verbal in nature and collectively form a language creativity test. So, these sub-tests can be collectively administered individually or to a group of students ranging from 30 to 40 at a time. There are 27 items in the test. It generally takes two hours and thirty minutes depending upon the grade level of the students.

Reading Comprehension Test by Pramila Ahuja and G. C Ahuja was used to check the reading comprehension of students. The whole basis of the test is a comparison between the pupil and an expert reader. Therefore, the answer which appears on the scoring key, should only be taken as correct. No synonyms or alternate responses are to be accepted.

Results And Discussions

In order to study the level of language creativity and reading comprehension among adolescents, the data was analysed and computed values of sample are given in tables.

Table 1: showing language creativity and reading comprehension among adolescents.

Variable	N	Mean	Standard Deviation
Language Creativity	1006	470.01	72.248
Reading Comprehension	1006	25.35	7.758

Table 1 shows that the mean for the measure of language creativity and reading comprehension has been found to be 470.01 and 25.35 respectively in total sample of 1006 adolescents and their S.D is 72.248 and 7.758 respectively. The values show moderate level of language creativity and moderate reading comprehension in the sample.

Table 1.1: Distribution of the scores of language creativity of adolescents

Class Interval	Frequency	Percentage	Cumulative Frequency
241-280	5	.50	5
281-320	14	1.40	19
321-360	48	4.80	67
361-400	102	10.20	169
401-440	181	18.10	350
441-480	203	20.30	553
481-520	202	20.20	755
521-560	128	12.80	883
561-600	85	8.50	968
601-640	30	3	998
641-680	2	.20	1000

Total   N= 1000

Table 1.1 shows that language creativity falls in average level (553)
among adolescents. The value is near to the value of mean that is 470. The standard deviation of mean found to be 72.248.

Table 2: Distribution of the scores of reading comprehension of adolescents

Class Interval	Frequency	Percentage	Cumulative Frequency
6-10	10	1.00	10
11-15	89	8.90	99
16-20	196	19.60	295
21- 25	239	23.90	534
26-30	209	20.90	743
31-35	149	14.90	892
36-40	75	7.50	967
41-45	26	2.60	993
46-50	7	.70	1000

Table 2 shows that mean value 743 and is verified from central tendency.

Table 2.1: showing the coefficient of correlation between language creativity and reading comprehension for the different groups of Adolescents

Group	N	Df	Table value at 0.05 and 0.01 levels.	Correlation Value	Level of significance
TOTAL	1000	998	0.0619 0.0520	.099**	Significant
MALE	439	437	0.0875 0.0735	.123**	Significant
FEMALE	561	559	0.0875 0.0735	.079	Not significant
RURAL	475	473	0.0875 0.0735	.109*	Significant
URBAN	525	523	0.0875 0.0735	.096*	Significant
Government	269	267	0.0875 0.0735	.153*	Significant
Aided	196	194	0.0875	.029	Not Significant

Table 2.1: shows that corelation value is more in Male category than Female having the value of .123** and .079 respectively. The value of male is significant on 0.01 level.

Educational Implications

Children of present are the citizens of tomorrow especially when there is the contribution and involvement of adolescents. They are the future decider and maker of tomorrow. To enhance and enrich their academic as well as language skills, they must be mentally sound and always be surrounded by congenial and positive environment. parents, today have very much conscious and aware of their children's when their academics, educational grades and career is concerned. In the present study mean for the measure of language creativity and reading comprehension has been found to be 470.01 and 25.35 respectively in total sample of 1000 adolescents and their S.D is 72.248 and 7.758 respectively. This value shows moderate level of language creativity and moderate reading comprehension in the sample. Moreover, corelation value in males is more than females.

There is positive corelation between the values of rural as well as urban adolescents. So, female adolescents should be given more opportunities and encouragement in enhancing their language creativity along with reading comprehension.

Conclusion

The study found that language creativity of adolescents in private schools is higher than government schools as private schools provide rich facilities, better infrastructure and more laborious teachers than government schools. Private schools provide more rich opportunities and put more efforts to enrich the language creativity as well as reading comprehension of adolescents. In private schools, teachers put more stress on students to communicate well and in proper manner and that is possible only when their reading skill is good. And again, in private schools, necessary attention is given on all the four skills; Reading, writing, listening and speaking etc. It has a positive effect on the language creativity of the students especially adolescents.

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A STUDY OF RELATIONSHIP AMONG EDUCATION, FINANCIAL INCLUSION (FI) AND WOMEN EMPOWERMENT (WE)

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ABSTRACT

Empowerment of women is very burning issue at global level. It plays very significant role in the development of a society. Education is the only light which can enlighten an individual's life as a whole. Empowerment is not out of the sphere of the life, so education is important for empowerment too. To understand what empowerment is, what financial inclusion is, education is required. Further, for empowerment women should be part of financial system. The present piece of research studies the relationship between education, financial inclusion and women empowerment. The results clearly indicate that there is quite significant and positive correlation between education and financial inclusion, financial inclusion and women empowerment, and women empowerment and education.

Introduction

A nation's political, social or economic development will stall if females aren't involved in national affairs (Sahu, 2015). It is intimately related to female emancipation, a basic human right that is also essential to the creation of a more tranquil, wealthy world. Women can be empowered through supporting their sense of self-worth, their freedom to make their own decisions, and their right to have an impact on social change for both themselves and other people (World Vision, n. d.). The majority of female's home responsibilities are linked with economic endeavours and the use of their energy and skills to generate additional cash for the household, which can mean the difference between a respectable standard of living and degrading destitution (Sahu, 2015). Even in agriculture, females make up about 43% of the agriculture workforce in the emerging nations (FAO, 2011). However, there are still considerable obstacles for women and girls everywhere in the globe.

In order to better organise their lives and have more control over the external factors influencing them, they need to have more access to information and resources, more independence in decision-making, and freedom from the traumas that tradition, belief, and practise inflict on females (Sahu, 2015). Females or their groups should be capable of developing their actual self and strength in every sectors of life via multifaceted course of empowerment (Surekharao and Rajamanamma, 1999). Traditionally, women are underrepresented in positions of authority and decision-making. They are paid differently for doing the same amount of work, and women frequently encounter various obstacles at job which are related to the law (World Vision, n. d.).

Women farmers are less efficient because of gender differences in asset ownership, education, access to credit, and extension services, according to a wide number of researches on women's roles in agriculture (Doss, 2001; World Bank, 2001; FAO, 2011; Quisumbing et al., 2014). Girls and women are frequently viewed as being less important than males in poor countries. They are frequently forced to perform household chores or are married off for a dowry before they reach adulthood, rather than being sent to school. Yearly, up to 12 million teenage females get wedded (World Vision, n. d.).

Women often lack the verification IDs they need to access financial firms since they don't have it. Women are sometimes prohibited from entering banks, which are typically run by more males than women, in emerging and poor nations. Additionally, women frequently don't even have power over their possessions because her male relatives hold that authority (Das, 11 March, 2022). Last but not least, because women do not have financial independence, it is challenging for credit reporting agencies to compile financial histories of women, which prevents financial firms from financing to them. Further obstacle

is the succession and wedding regulations. The sons are the ones who receive the inheritance in a patriarchal culture. Nevertheless, laws have changed or are being altered in many nations today to empower women (Das, 11 March, 2022).

Just 15.1% of Indian women had a bank or savings account that they utilised personally in 2005–2006. According to the National Family Health Survey (NFHS-5) - 2019–21, roughly 78.6% of Indian women have a bank or saving account that they manage personally and not male family members. In 2016–17, the percentage of women utilising their bank accounts personally increased to 53% (Jadhav, 19 May, 2022).

The main tactic for financial inclusion in India in recent years consists of the following components: (i) inspiring agents and middlemen like non-governmental organisations (NGOs), microfinance institutions (MFIs), and business correspondents (BCs) to penetrate financially excluded and backward zones; (ii) concentrating on a decentralised strategy by leveraging existing provisions like the state level bankers' committee (SLBC) and district consultative committee (DCC) and bolstering regional development banks (RRBs) and cooperatives locally; (iii) using technology to promote financial inclusion; (iv) urging banks to open simple, no-frills accounts; (v) placing a focus on financial literacy and credit counselling; and (vi) fostering complementarities between the formal and informal sectors (Swamy, 2010).

Several of the main barriers preventing females from accessing institutional finance are illiteracy. It is quite challenging for both males and females and women to comprehend and value the importance of formal money in their lives without proper education. They frequently don't use the savings and loan products offered by financial institutions as a consequence of this. Further, Faster gender equality is possible with economic empowerment. On a worldwide scale, nevertheless, it is claimed that 35% of women are economically marginalized (Das, 11 March, 2022).

Education plays a big role in this empowering. Girls who receive an education can later ultimately seek decent jobs and boost their economic growth of the country. With 8 years of schooling, they are also four times less likely to marry young, which makes them and their households happier. Economic expansion, good governance, and social change all depend on empowering girls. Women can realise their greatest potential if women lead secure, contented, and fruitful lives. Raising happier, healthier children and contributing their skills to the marketplace. They can also support healthy businesses, advance communities, and enrich all of mankind (World Vision, n. d.).

According to Knowles et al. (2002), the gap between genders in literacy is a barrier to financial progress. Earlier, Klasen (2002) noted that by diminishing the typical stock of human capital, gender discrimination in schooling has a significant impact on up-shooting of economy. According to a new analysis by Klasen and Lammana (2009), financial systems in the Middle East and North Africa loses the chances for income progress because of the gap between the gender in schooling, implying that obstacles to women employment aren't just bad for females but also seem to slow down economic growth in both advanced and advancing worlds.

The capacities approach highlights how females may improve home wellbeing and thereby lower poverty. Research shows that females are effective resource managers than males (Fanta & Mutsonziwa, 2016). Women still live in an unequal environment despite the fact that they are "productive catalysts for change" and essential members of the family and society. This is because females were left out of the growth process (Swamy, 2014).

Research Methodology

Objectives of the Study

I. To study the relationship between Financial Inclusion (FI) and Women Empowerment.

II. To study the relationship between Education and Women Empowerment.

III. To study the relationship between Financial Inclusion (FI) and Education.

Hypotheses

I. The will be no significant relationship between Financial Inclusion (FI) and Women Empowerment.

II. The will be no significant relationship between Education and Women Empowerment.

III. The will be no significant relationship between Financial Inclusion (FI) and Education.

Sample

Aim of the research was to study of relationship among education, financial inclusion (FI) and women empowerment (WE). To accomplish the aim of the research a sample of 550 female participants was collected from Punjab. The sample included literate, matriculate, graduate and post-graduate females.

Tools Used to Assess

1. **Level of Education** – Level of education was assessed just by asking the participants to the level of education they have studied.
2. **Financial Inclusion** – Financial inclusion was assessed by using a survey questionnaire developed by the researcher herself keeping in mind the conceptual framework of financial inclusion.
3. **Women Empowerment** – This was assessed by using a survey questionnaire developed by the researcher herself keeping in mind the conceptual framework of women empowerment. Women empowerment has five sub-domains: Economic, Social, Psychological (Personality and Intellectual Development), Political and Decision Making (D M) Empowerment.

Tools Used For Statistical Analysis

The aim of the research was Study of Relationship among Education, Financial Inclusion (FI) and Women Empowerment (WE). To reach the goal descriptive statistics and Pearson's Product Moment correlation were applied on the data collected.

Results and Discussion

The global progress and well-being of community are thought to be strongly correlated with FI. Giving everyone access to inclusive financial services - i.e., banking and finance facilities which are affordable - has emerged as a top issue in several nations, encompassing India (Bhatia & Singh, 2019). The majority of research (Datta & Singh, 2018; Ghosh & Vinod, 2017) that have examined the issue in India have employed data that is readily accessible to the general population to assess the scope of financial inclusion. The number of studies employing primary data is modest (Bhatia & Singh, 2019). The present study uses primary data to carry out research. The results have been discussed below. In Table 1 descriptive statistics for the variables under study have been presented. Many researchers (George and Mallery, 2010; Trochim and Donnely, 2006; Field, 2009; and Gravetter and Wallnow, 2012; Pallant, 2011; Tabachnick and Fidell, 2007) suggested that if the skewness and Kurtosis values are between +2 / -2 the data can be considered having normal distribution. Perusal of Table 1 makes it crystal clear that the values of skewness and kurtosis of all the variables are within acceptable range. So, the data obtained falls in normal range.

Table 1 Showing descriptive statistics for the variables under study.

Variables	*M*	*S D*	*Sk*	*Ku*
Economic Empowerment	7.38	3.855	.147	-1.506
Social Empowerment	1.68	1.444	.929	.944
Personality Development (Psychological)	1.97	1.271	.002	-.918
Intellectual Development (Psychological)	1.69	.829	-.790	.074
Political Empowerment	1.12	.372	1.335	2.664
D M Empowerment	25.44	2.353	.580	-.393
Empowerment Total Score	39.30	1.452	.222	.408
Education	10.25	2.544	.999	-.345
Financial Inclusion	96.68	2.048	.654	.599

I. *The will be no significant relationship between Financial Inclusion and Women Empowerment.*

In Table 2 correlations among variables used in the present study have been presented. The results indicate that there is significant positive correlation between Financial Inclusion and Economic Empowerment $r(548) = .311$, $p<.01$, Social Empowerment $r(548) = .361$, $p<.01$, Personality Development $r(548) = .305$, $p<.01$, Intellectual Development $r(548) = .141$, $p<.01$, Political Empowerment $r(548) =.272$, $p<.01$, and Decision Making Empowerment $r(548) = .367$, $p<.01$, whereas it has insignificant correlation with Empowerment Total Score $r(548) = .069$, $p>.05$ (hence, the present research partially fails to prove n*ull hypothesis I*). Empowerment of Women is a solid strategy to change power dynamics in support of the females, which improves equality of the gender. As a result, women are better positioned for making decisions about their lives and consequently, feel more satisfied (Batliwala, 2007). A national financial inclusion initiative called Pradhan Mantri Jan Dhan Yojana, which aims to give individuals access to bank accounts, was recently unveiled by the Indian government (George & Thomachan, 2018). According to a research, families became first-time financial users as the poverty rate fell and their degrees of expendable income increased (Singh & Kodan, 2011). According to the research, the most of the females in India (46% population of India) are refused chances and rights because of their reliance on money. Women must be included in the financial system because it increases their savings continuously and gives them access to loans and the possibility of paying for microfinance services. Additionally, it promotes the use of conventional financial products that provide adequately sized products and services, raising revenue from jobs and microbusiness. Or, to put it another way, financial inclusion educates females about their place and rights in the economy, enhancing their market access and other resources for total empowerment (Deka, 2015). Social and financial exclusion are related. Small landowners, workers with no land, self-

employed people, people working in the unorganised sector, businesses, people living in slums, immigrants, people who belong to certain ethnic minorities, people who are socially ostracized, elderly persons, and females are all included in the omitted part (Rangarajan Committee Report, cf. George & Thomachan, 2018).

II. *The will be no significant relationship between Education and Women Empowerment.*

It has been found that there is significant positive correlation between Education and Economic Empowerment $r(548) = .294$, $p<.01$, Social Empowerment $r(548) = .317$, $p<.01$, Personality Development $r(548) = .344$, $p<.01$, Intellectual Development $r(548) = .105$, $p<.05$, Political Empowerment $r(548) =.222$, $p<.01$, and Decision Making Empowerment $r(548) = .436$, $p<.01$, and Empowerment Total Score $r(548) = .185$, $p>.01$ (hence, fails to prove n*ull hypothesis II*). Education is very important for economic empowerment because without education it is quite challenging to do financial activities (for example, getting a job, starting a business, and even doing small calculations). The fundamental component of every community, region, or nation is the empowerment of females. In a child's everyday existence, a female influences the most. Females have a significant role in the culture. Using schooling to empower women can result in a shift in attitudes for the better. The capability to react to problems, to question their established roles, and to transform their lives are all made possible by literacy, which is a major step in the empowerment of women (Bhat, 2015). Various researches have shown that illiterate females have strong morals, minimal economic capacity, low status of nutrition, and small freedom in the home. Further, the wellbeing and health of the children are significantly impacted by the youngsters' lack of education. In India, the grade of mother's education was inversely correlated with the new-born death rate. Additionally, a lack of schooling might have a negative impact on how a nation develops (Bhaskar, Mar 8, 2021).

Table 2 Showing Correlation Matrix for Variables Under Study

	Economic Emp.	Social Emp.	Personality Develop.	Intellectual Develop.	Political Emp.	D M Emp.	Emp. Total Score	Education
Social Empowerment	.643**							
Personality Development	.622**	.715**						
Intellectual Development	.251**	.236**	.432**					
Political Empowerment	.374**	.440**	.533**	.377**				
D M Empowerment	.586**	.702**	.661**	.154**	.492**			
Empowerment Total Score	.297**	.005	.073	.312**	-.032	.538**		
Education	.294**	.317**	.344**	.105*	.222**	.436**	.185**	
Financial Inclusion	.311**	.361**	.305**	.141**	.272**	.367**	.069	.176**
**. Correlation is significant at the 0.01 level. *. Correlation is significant at the 0.05 level.								

III. *The will be no significant relationship between Financial Inclusion (FI) and Education.*

The results (Table 2) indicate that there is significant positive correlation between Financial Inclusion and Education $r(548) = .176$, $p<.01$ (hence, fails to prove *null hypothesis III*). Results are consistent with previous researches. According to reports, education and healthcare costs are two of the main reasons why impoverished women in India are reluctant to use the formal banking system (Agrawal, 2016). Although to a smaller extent, unofficial borrowing and literacy exerts a significant effect on women's choice to get an account opened in a bank (Sabic-El-Rayess, 2019). Further, another study demonstrates the vital role that educational qualification plays in financial inclusion by showing that those with a secondary educational background are more likely to open and sustain more accounts, save more money, keep borrowing, own more debit and credit cards, and use more digital payments, mobile payment accounts, and payments via internet (Bakhshi & Agarwal, 2020).

Conclusion

The objective of the present research was to study relationship among education, FI and women empowerment. The results have clearly shown that these three variables are significantly and positively correlated to each other. Education is very important for understanding financial schemes, services and products. Availing financial services, schemes and products are factors leading to women empowerment. Education is also positively correlated to women empowerment because education makes an individual capable of making right decisions, speaking for one's rights, enhances communication skills leading to social empowerment. So, these three variables are multiples of each other and are very important for the growth and development of nation, a region, a culture.

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BLOCKCHAIN-BASED REAL-TIME TAMPER-PROOF EVIDENCE MANAGEMENT

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ABSTRACT

In today's E-world, with the rapid rise in cybercrimes, the importance of digital evidence is also growing for the provenance of person linkage with cybercrimes. Digital evidence comes with its exclusive challenges related to the Chain of custody(CoC). CoC can be defined as a procedure to preserve and record the sequential history of handling digital evidence. With the advancement of technology, the preservation of digital evidence also becomes progressively more important in investigations. To maintain the authenticity and privacy of evidence, its entire lifecycle must be recorded. Also, traditional database technologies cannot preserve the integrity and authenticity of digital evidence. Blockchain-Based Chain of Custody is a blockchain-based answer for maintaining and tracing the digital forensics chain of custody. Blockchain is a data structure that permits creating a digital ledger for recording and storing transactions shared by all participating partners over a distributed networks. Blockchain makes use of cryptography for safeguarding the process of recording and keeping transactions that happen within the network, creating an unimpeachable audit trail. To achieve authentication, integrity, and confidentiality of digital evidence, in this research, we proposed using a blockchain-based chain of custody that can be used for forensic applications to bring in integrity and manipulate resistance to the digital forensics chain of custody.

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Keywords: Blockchain, Forensics, Chain of Custody, Digital evidence, Cyber Forensic

Introduction

One of the main problems in digital forensics is the management of evidence. From the point of evidence collection until the time of their exploitation in a legal court, evidence may be accessed by multiple parties involved in the investigation that takes its ownership temporarily. The Chain of Custody(CoC) is the process of validating how any kind of evidence has been gathered, traced and protected on its way to a court of law. Chain of Custody is not a mandatory step in forensic analysis[1]. However, it is extensively used as evidence; to be acceptable in a court or in legal procedures, it must be proved to be not tampered during investigation process. Thus, a good Chain of custody process should use a standard for dealing and handling evidence, irrespective of whether the evidence will be used in a trial or not.

Currently, Chain of custody process requirements is met by employing a physical handover of evidence where, at each step, CoC forms are filled in and signed in front of case officers. In this form, we take a step toward the dematerialization of this process by proposing a Blockchain-based architecture for CoC of digital evidence called B-CoC. Leveraging the features offered by blockchain technologies, we defined an architecture able to support the CoC process[2]. To this aim, we proposed an architecture, namely B-CoC, that is able to realize an Evidence log with integrity checks (i.e., every process is able to verify and detect if there has been an integrity breach that would invalidate the digital evidence). B-CoC integrates together an ordinary database with a permissioned blockchain: the first represents the Evidence DB where digital evidence is stored, while the second represents the Evidence Log that allows for tracking digital evidence during their lifecycle. This distinction is made to store each type of information in the most suited kind of distributed storage: digital evidence are a relatively static and significant piece of information and do not need particular support for updates, while the evidence log is characterized by a reduced size of record to be stored and is subjected to a high update frequency. In particular, we set up a classified permission blockchain, and we applied an intelligent contract to keep track of the possession changes during the evidence lifecycle. We implemented our prototype on an Ethereum[3] private network, and we evaluated the impact of the system configuration parameters on performance.

A blockchain is basically a block of chains, with the growing list of entries referred to as blocks that are merged with cryptography [4]. Each blockchain contains a hash value of a previous block and a timestamp that keeps

track of the creation and modification time of the file. In terms of security, not a single person not even the proprietors of the document, nobody able to modify once it has been recorded[17]. Blockchain was developed in 2008, and it was employed in 2009 to function in the general public dealings' ledger of the cryptocurrency, a type of electronic money[18]. Blockchain technology is decentralized that means peer-to-peer. It

consists of network computers, which apply blockchain technology to put all together and manage the information that records each bitcoin dealing collected by its network[5]. The architecture of the blockchain technology demonstrated in Figure 1, executes a decentralized, fully replicated append-only ledger in a peer-to-peer network, initially employed for the bitcoin cryptocurrency.
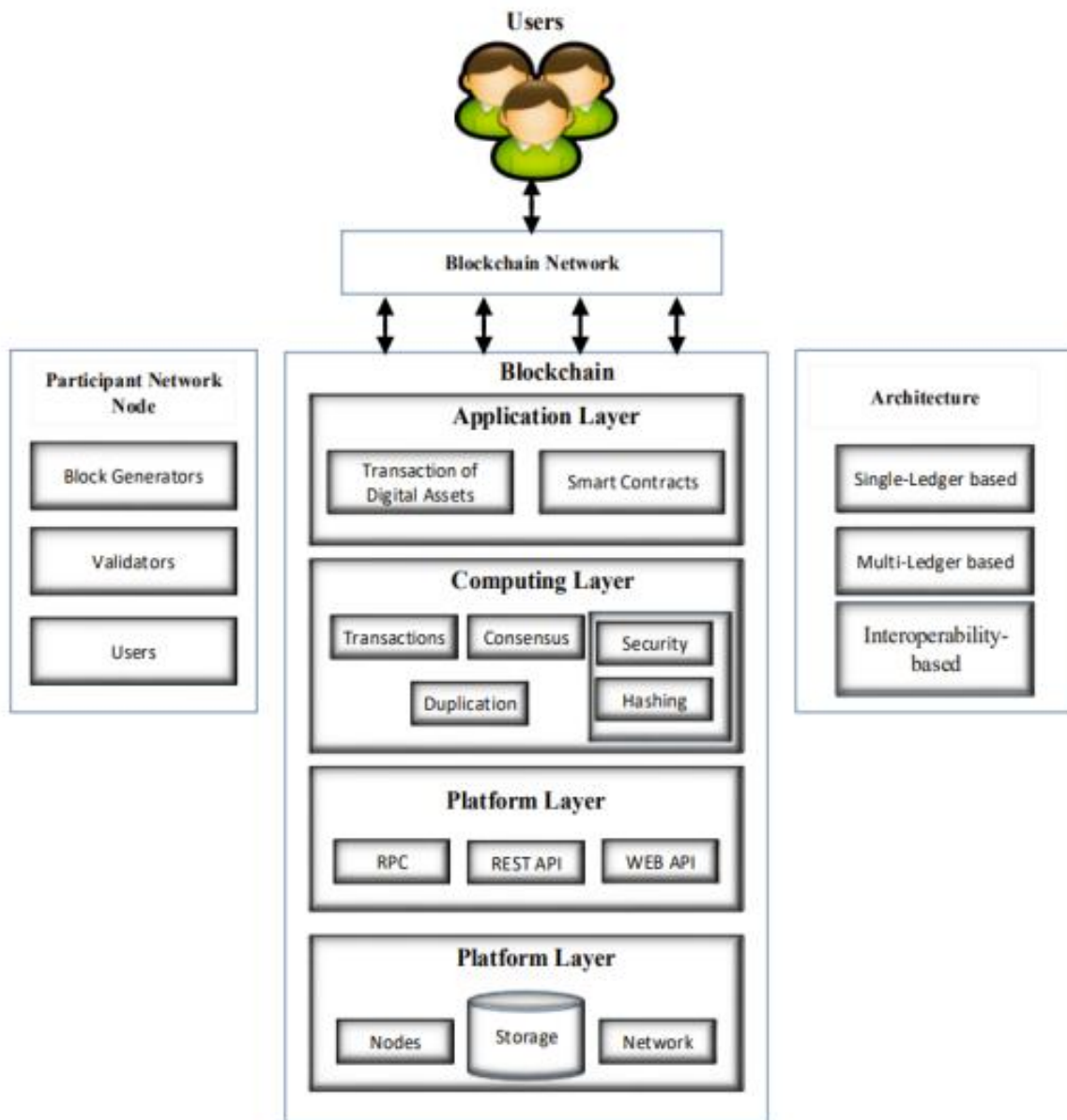
Figure 1. The architecture of blockchain[16].

Problem Analysis and Motivation

The crime investigation process relies deeply on physical and digital evidence nowadays. The judicial system allover the world has gradually become flexible in accepting digital evidence, given the fact that the digital

evidence handling mechanism is somewhat similar to how they treat physical evidence. The field of digital crime investigation continues to grow rapidly and therefore requires adequate computer investigators with skills needed to capture the relevant evidence like crime scene, call data records, search

collected records, recover data etc. and engage with the forensic process[6].

The issues a forensics investigation team encounters with digital evidence are due to the nature of digital information, which can be as follows:

• Easily duplicated
• Integrity of the evidence
• Accessibility to evidence
• Secure storing of evidence
• Transmitted to someone else or to a different country;

• In some cases, the digital evidence is time-sensitive to the case and pre-arrest situations.

An issue arises with the gap introduced when providing digital evidence versus physical in the court of law. This is undoubtedly becoming a challenge to the judicial system's solid and secure digital witnesses. Another issue is that there are different practices of digital forensics investigation models. Figure 2 illustrates the construct in the investigation process and how physical and digital evidence supports each other in creating a comprehensive theory about the criminal case[7].
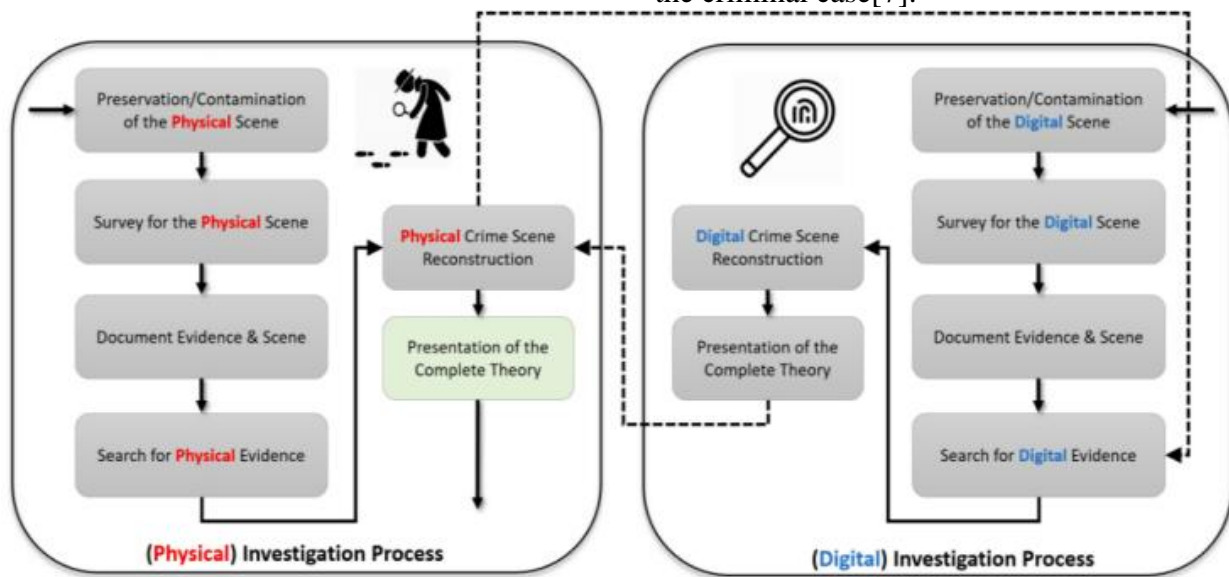

Figure 2. Physical and digital investigation constructs[15].

The paper explores for the utilization of blockchain technology to improve the Chain of custody(CoC) method and the evidence handling life cycle. The blockchain is a digital ledger system, namely distributed ledger technology, and we trust it can address the current issues challenged with the digital evidence-handling life cycle. distributed ledger technology (DLT) implementation is increasing as regards its benefits in improving sustainability, automation, and digital revolution. It also provides built-in security to control access to data and trace changes during the course of the data life period. However, the blockchain is an emerging technological improvement; hence very few solid, real-life applications are found.

The paper proposes a conceptual blockchain model, i.e., CB, to fill the gap in the literature and address the challenges faced in handling

digital evidence to transform the global law practice efficiently. The conceptual blockchain model (CB) demonstrates how blockchain and smart contracts can provide scrutinized and traceable access to the evidence chain of custody for those involved participants, e.g., regulators, courts, law firms, etc. The conceptual blockchain model (CB) nodes are trusted network stakeholders with a viable and distributed set of rules/standards. The conceptual blockchain model (CB) intelligent contracts ensure the automation of rights on the evidence associated to the plaintiff, defendant, and involved third party. It also has the elasticity to adapt to and comply with the applicable juridical system and provide compliance metrics to the evidence handling lifecycle

Proposed B-CoC Model

B-CoC is a blockchain-based solution for maintaining and tracing the digital forensics chain of custody. Blockchain is a data structure that allows the creation of a digital ledger for recording and storing transactions (events/records) shared by all contributing parties over a widly spread network of computers. Blockchain makes use of cryptography for safeguarding the method of recording and storing transactions (events/records) that occur within the network, creating an unimpeachable audit trail[8].

In relation to the Chain of custody(CoC), the blockchain's capability, exclusively in combination with cryptographic hashing and encryption, could hypothetically create documentation pertaining to access to evidence that is tamper-proof . The evidence that is to be well-preserved is first encrypted securely and have a blockchain ability added on[9]. The encrypted data would be available only to the desired party on the blockchain network but would concurrently record the time, date and possibly user ID of the accessing party and add it to the irreversible record in blockchain, all done automatically through a smart contract. The blockchain itself can be read via a particular function in a way that is like how the bitcoin blockchain can be decoded. This functionality of blockchain allows courts and associated personnel the ability to examine the historical Chain of custody without accessing data itself[10].
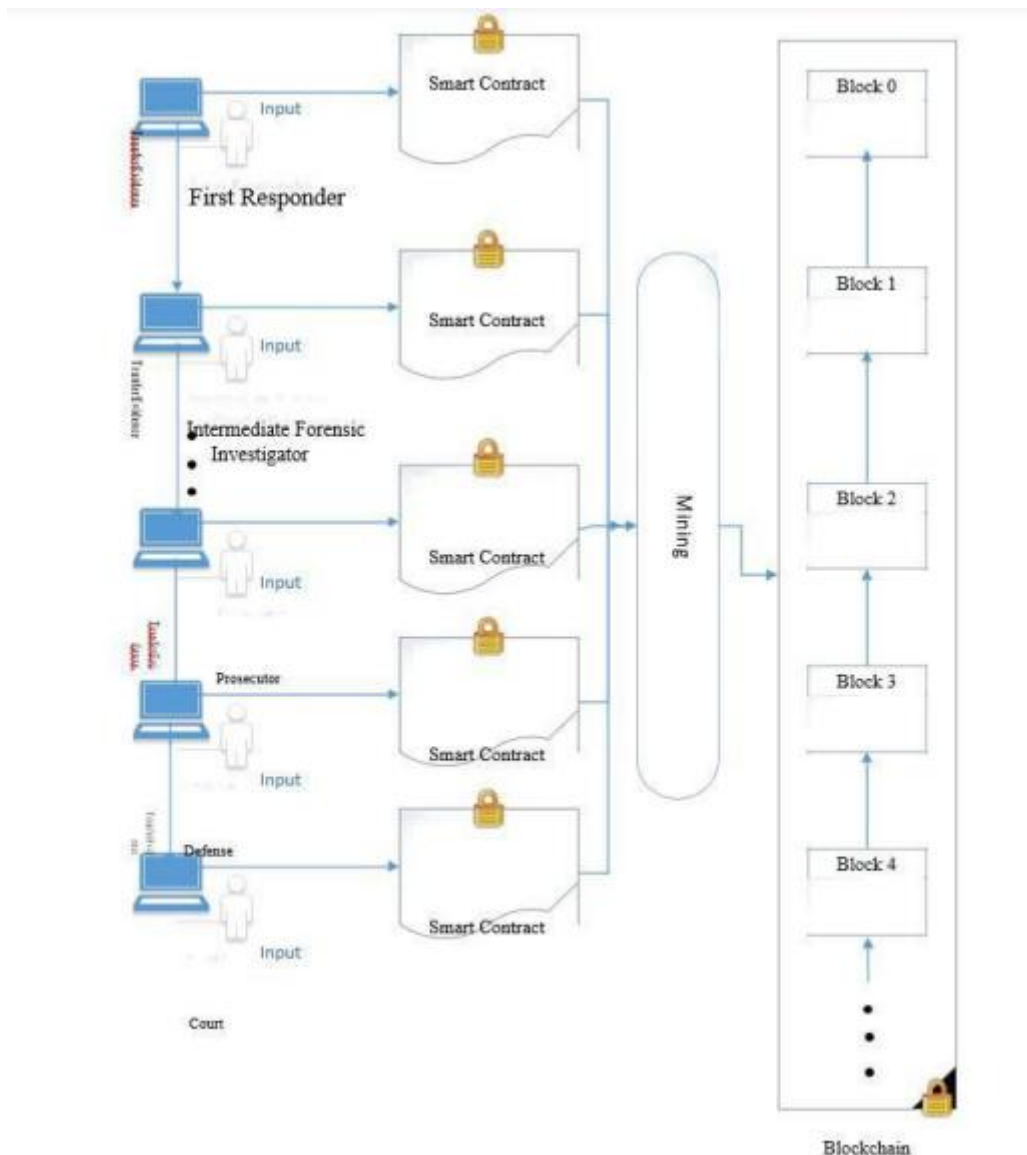

Figure 3. Blockchain based CoC[14]

Benefits of Proposed Model

B-CoC: Blockchain-based digital forensics chain of custody has excellent potential to bring substantial benefits to forensic applications by maintaining integrity, transparency, authenticity, security and auditability of digital evidence to achieve the desired end[11]. Some of the benefits are summarized below:

- Collecting, preserving, and validating digital evidence can be strengthened with the help of B-CoC.
- The provenance of any action or event can be traced back to where it initially entered the process in question[12].
- B-CoC also helps in improving transactional efficiency and cost reduction of certain kinds of transactions due to increased transparency resulting in eliminating the requirement of a trusted third party for validation of specific claims or evidence transfer and consensus-based Proof of Trust, resulting in increased trust among communicating parties[13].

- Reduction of fraud due to improved transparency of the audit trail.
- B-CoC allows organizations to embed verification for the event or action within the evidence
- Record itself, thereby enabling established and ongoing evidence that is both accessible verifiable.

Conclusion

This paper presented B-CoC, a blockchain-based architecture to dematerialize the CoC process in digital forensics. Blockchain by design enforces integrity, transparency, authenticity, security and auditability, thus making it possibly the best choice for maintaining and tracing the forensic CoC. Blockchain help out in friction reduction through increased trust and thus brings real promise for the forensic community. The future work aims at developing a complete Ethereum based intelligent digital forensic Chain of custody using smart contracts.

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GOLD AS AN INVESTMENT OPTIONS IN HARYANA

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ABSTRACT

In today's world, money plays an important role in everyone's lives—everyone saves money for future requirements. People who are saving put their money into a variety of assets in order to satisfy their future demands. Individual savings are put into assets based on risk and profit expectations, security money, and liquidity. One of the best alternative investment options is gold investing. According to numerous research, the majority of gold in Indian households is in the form of jewellery. Jewellery, coins, bullions, ETFs, mutual funds, and e-gold are just some of the ways to invest in gold. In the current market climate, which is highly volatile and frequently changing, the various techniques of investing in gold cause uncertainty among investors. "A study on" is the title of this research. different types of gold investment aims to investigate the many types of gold investment available to investors. The study's objectives are to better understand the various investment options available to investors, the factors and know-how involved in gold investing, the benefits and drawbacks of various forms of investment, and to assist investors in becoming more aware of the various gold investment options. The study gathered both primary and secondary data. A website, a research article, and a magazine questionnaire serve as the primary data, while supplementary data is gathered from other sources. According to research, many investors prefer to invest in ETFs, Futures, and options to make their investments more profitable and comfortable. Investors are encouraged to own gold through gold mutual funds.

Introduction

Gold is a basis of wealth and savings in India, and it is a crucial aspect of Indian society. A further growth in gold jewellery and investment demand is expected as consumers adjust their pricing expectations upwards, and this trend is expected to continue.Long-term, as local investors acquire gold for the purpose of accumulating wealth, the market will continue to exist."Jeni Branson (2014, Jeni Branson, Jeni Branson, Jennifer Branson, Jennifer Branson,Gold has emotional worth as well as cultural and financial significance, all of which contribute to its continued demand across generations. Now,However, it is obvious that a growing number of Indians are realising that gold deserves a role in their lives beyond the gold mines.Not only in their kitchen cabinets or bank lockers, but also in their investment portfolio. Until recently, gold reserves served as the foundation for all financial transactions.financial systems around the world Gold

Research Objectives

The research is based upon the following objectives:

1. To study about the diversified options available to investor while investing in gold.
2. To study the factors effecting the choice of investment in gold.

Literature Analysis

According to Andy Soos (2011), nearly half of all new gold produced is used in jewellery, 40% in investments, and 10% in industrial. The major factors driving an investment, according to Parimalakanthi, K. and Kumar,

M. Ashok (2015), are:principle safety, liquidity, income stability, and appreciation are all important factors to consider.Investors cannot avoid risk, but they may reduce it by investing in secure investments.a profit of some sort Bank deposits are the most popular investment option in Coimbatore, followed by gold and silver investments.

Timothy Worstall (2016) Unfortunately, gold isn't the most lucrative investment, it doesn't pay off on a regular basis, and it's a negative asset. a stumbling block for the economy as a whole, despite the fact that it is actualIndian culture, for the most part, has a very extensive history. Because life in the villages hasn't altered all that much, customary behaviour is based on extremely old historical precedents. Physical gold is a very liquid market that appeals to a large number of people. A small bit of gold can be pawned or sold if necessary.

Gold, whether in the form of gold jewellery or in the form of gold coins, is an excellent way to save money.

Alan Greenspan(2017), the former Chairman of the Federal Reserve, recently expressed his grave anxiety about the economy's prospects.gold's long-term value and quoted in the developed world "Inflationary pressures will eventually raise the price of goods.

gold's price Gold is a good insurance investment right now." Celia Dallas is the Chief Investment Strategist for a worldwide asset management organisation.

Methodology of Study

The study is descriptive and analytical in nature, and the sample was chosen using a convenience sampling technique.Primary data was gathered directly through an interview schedule that was well-designed, while secondary data was compiled from secondary sources.Literature books, journals, magazines, articles, and websites are examples of sources.

Data Analysis and Interpretation

To study the factors influencing the choice of investment in gold:Investing money in gold is worth because it is a hedge against in action. Over a period of time, the return on gold investment is in line with the rate of in action. It is also worth investing in gold for a one more very valid reason. That is gold is negatively correlated to equity investments, the equity markets started performing poorly whereas the gold has performed well.

A) Various Options available to Invest in Gold in India

There are so many ways to invest in gold such as:

1. Futures and options

Derivatives, such as gold forwards, futures and options, allow spread bets on the price of gold, trade currently on various exchanges around the world and over-the-counter (OTC) directly in the private market. In other countries, gold futures are generally traded on the New York Commodities Exchange (COMEX). Whereas in India, gold futures are traded on the National Commodity and Derivatives Exchange (NCDEX) and Multi Commodity Exchange (MCX)

2.Exchange Traded Funds (ETF)

Buying Gold ETF is an option to purchase gold in an electronic form. You can buy them just like you buy shares of any company from your broker. Gold ETF also makes it very easy for you to invest in gold. Also, each of the Gold ETF unit that you buy from the market is roughly equal to the price of 1 gm of gold in market.

3. Coins and bars

You can invest in gold coins and bars, by buying them from your jeweler or from the bank. Goldcoins are mass produced; they are available at very competitive prices compared with similar size bars. Also, Gold coins are universally recognized in the world which makes them easy to resell.

4.Gold Accumulation Plans (GAP)

Gold Accumulation Plans (GAPs) are just like same as the conventional savings plans in that they are based on the principle of putting aside a fixed sum of money every month. At any time during the contract term, investors can get their gold in the form of bullion bars, coins, jewelry or cash.

5.Gold Futures:

Gold futures contracts are binding commitments to make or take delivery of a specified quantity and purity of gold, on a prescribed date, at an agreed price. The initial margin or the cash deposit which is being paid to the broker is only a fraction of the price of the gold underlying the contract.

B) Factors affecting investment decisions in Gold

1. No ongoing returns Gold isn't exactly the most productive of investments, offers no ongoing return, and it's a positive drag on the economy as a whole. The total value of gold may rise over the year but the returns are not fixed as in other options the market in physical gold is extremely liquid having mass appeal. It is entirely possible to pawn or sell a small piece of gold if any need arises. Gold is a very useful form of saving.

2. Safety of principal amount

Gold does not provide a guaranteed safety on the principal amount being invested. The price of gold keeps on fluctuating as per the market conditions. In case of worst scenario, the gold

prices may fall sharply and also it may go below your principal value.

3. Fixed deposit being a safer option

Major reasons for investing in fixed deposits with banks are: Safety, Regular Income and Saved tax but investing in gold doesnot always provide safer returns and no fixed appreciation. Also, people consider fixed deposits are much safer option than to invest in gold.

4. Demographic factors

Investments are made with an avowed objective of maximizing wealth. Investors need to make rational decisions for maximizing their returns based on the information available by taking judgments free from emotions. Demographic factors influence the investors' investment decisions.

5. Risk

The investment avenues may be divided according to their risk level in many parts and the investment in gold is considered to be a high-risk avenue. The market fluctuations lead to fast movement in gold prices which may or may not lead to positive returns.

C) Reasons for Not to Invest in Gold:

Since the old ages, gold is being considered and also has been prized, coveted and being viewed throughout the world as an assetwhich has an actual inherent value. Here are five characteristics that show gold isn't a great place to put your money.

1. Poor long-term returns:

Let's start with the biggest one. Investors are familiar with the phrase "past performance is not necessarily indicative of future results," which is a sober reminder that mutual funds and managed accounts frequently mean-revert (or move back toward their average).

2.How do you value gold?

The current value of any asset you have is the present value of all future cash flows related to the asset. Also, the value of gold in market is determined by its supply and demand, which is very hard to predict. Demand typically goes up based on fear and not fundamentals.

3.Gold doesn't throw off cash:

There is a major disadvantage related to the investment in gold that there are no regular cash flows being made to the investor. .There

are no regular cash dividends made to gold investors.

4.Little actual utility:

Gold isn't even the most useful precious metal. Most of the gold that is extracted from the mines gets turned into gold bars, goldjewelry and gold coins and then stored in a vault.

5. Risks on Investing in Gold:

It is not an essential commodity. People cannot eat gold. Investment in gold does not always provide any current income like dividend or rental as in shares or real estate where the investors can also reap the rewards of their investment without having to sell their asset. Besides when an investor purchases gold, attention needs to be given to how the gold will be safely stored. Storing gold coins in one's house is the equivalent of putting money under one's mattress: It is not a safe place to keep it. Some investors use safe deposit boxes (available at some banks) to store gold. Other investors purchase gold in a manner that does not require taking delivery on the gold. For instance, a gold exchange traded fund enables the purchase of gold without having to take possession of gold.

Conclusion

The research enhances the understanding of investor's attitude and awareness regarding gold investment decisions and displays where currently physical gold's position among the other gold investment instruments is. Investors go through the information search and market analysis before backing the gold investment decision. Research exhibit that gold is already known and marked by the people for its return and all the respondents mostly have investment in gold or plan to obtain more gold. Research also throws light on the lack of awareness about the new trends in gold investment alternatives i.e. Gold ETF, E-Gold and Gold Funds.

As India imports most of its gold requirement, high value of gold imports has now initiated hurting India's current account position. Thus, government should support means of alternate gold investment.

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BRAND PREFERENCE OF CONSUMERS FOR SELECTED BRANDS OF FMCG PRODUCTS -A STUDY OF JALANDHAR CITY

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ABSTRACT

Consumers have awared themselves about different cultures, lifestyles, and brands nowadays. In current study, it has been observed that Marketing variables such as Advertisement, brand name, and brand image play an important role in creating customers' preferences for a particular brand, therefore a marketer must understand how the consumer makes his purchasing decision regarding a particular brand.

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Introduction

Markets all across the world are undergoing unprecedented changes as a result of liberalisation and globalisation. Because of the impact of the media and communication explosion, customers are continuously exposed to innovative ways of life, as well as an unrivalled diversity of products and services. At the same time, thanks to consumers' steadily improving economic standing, there has been a significant shift in their attitudes and desires. As a result, emerging brands that are multifunctional and category specialised are frequently flooding markets around the world. In an overloaded economy, Fast Moving Consumer Goods (FMCGs), among other types of consumer goods, are fighting for shelf space. Today's markets are characterised by fierce competition. Every company aspires to capture a significant portion of the market. This is accomplished through forging a distinct brand identity in the marketplace. Businesses can be made or broken by their brands. The brand name conveys reliability and integrity. This paper investigates consumers' expectations from their favourite brand of selected FMCG goods in terms of aspects such as level of satisfaction, brand recognition, praise from friends, value for money, social acceptability, and the factors they consider when choosing their favourite brand, such as brand name, brand popularity, brand image, availability of the brand, current trend, and so on, to determine the most preferred brands of selected FMCG goods. Tooth Paste and Detergent are taken for my study.

Objective Of The Study

- To examine the factors influencing brand preference for selected FMCGs (Detergent and Tooth Paste).

Review Of Literature

Vernekar, SS(2011): The Paper titled, "An empirical study of Consumers' Attitudes and Perception regarding Eco-Friendly FMCG's products with special reference to Delhi and NCR region" has found that the majority of buyers consider the package to be the most essential aspect of green products, and urban Indian shoppers have a high level of awareness of green products. They are also willing to pay a premium for green products.

Jha, M.(2013): The Paper titled, "Brand Awareness and Consumer Preference with reference to FMCG's sector in rural Bihar" has investigated brand awareness and customer preferences in Bihar's rural communities, as well as consumer preferences in the fast-moving consumer goods sector. The findings reveal that the rural market for FMCGs has been continuously rising over time and is currently larger than the urban market.

Rani,P.(2014): The Paper titled, " Factors Influencing Consumer Behaviour" has investigated the elements that influence customer behaviour. Many elements and qualities influence the individual in what he is and the customer in his decision-making process, shopping habits, buying behaviour, the brands he buys, and the businesses he visits. Cultural, social, personal, and psychological aspects all impact consumer purchasing behaviour. The analysis concluded that I should work as a consultant to help a good consumer-oriented business service provider

obtain clients. Conditions can be made ideal by considering elements that affect customer satisfaction, and the goal of customer satisfaction can be met. The study of customer purchasing behaviour is a key to market success.

Research Methodology

Data Collection

Primary Data were collected from 20 respondents of Jalandhar City using a structured questionnaire. Secondary data were used for Literature review. The primary data is classified and tabulated according to the objectives, and the study uses Simple Percentage and Weighted Averages to analyse the data and develop conclusions.

Data Analysis

Factors considered by Consumers for the selection of a Brand

Sr. No.	Factor	Frequency	Percentage
1	Brand Name	5	25
2	Brand Image	4	20
3	Advertisement	8	40
4	Availability	2	10
5	Others	1	5
		20	100

Findings Of The Study

- Majority of the respondents i.e. 40% are influenced by Advertisements.
- 25% respondents of them select their brands on the basis of brand name.
- 20% respondents select their brands on the basis of Brand Image.
- 10% of them select their brands on the basis of availability.
- Only 5% of the respondents select their brands on the basis of other factors.

Conclusion

A consumer's preference for a certain brand is based on the benefits that brand can provide. As a result of these consumer preferences, the brand can fetch a higher price and more loyalty. Marketing variables such as Advertisement, brand name, and brand image play an important role in creating customers' preferences for a particular brand, therefore a marketer must understand how the consumer makes his purchasing decision regarding a particular brand. The data gathered in this study will help organisations that are already in the industry or are seeking to enter strategize appropriately.

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