

Editorial

Dear Reader,

The current issue of the International Journal of Research in Business Studies (IJRBS) is devoted to the world of knowledge. It includes 6 research papers, selected and invited to the 6th International Conference of Research in Business, held on 20th June 2021, conducted virtually.

The journal established in March 2016 has published 12 issues now. The crest and trough of 6 years' journey of organizing conferences and publications have been worth contributing to the multidisciplinary domain of academia.

The enduring efforts and contributions of the editorial board during the whole process of selection and publication are much appreciated. Their valuable suggestions, on-time guidance, and knowledge sharing with the team have contributed a lot to the growth of IJRBS.

We strive to make this journal more focused, useful, and thorough with each publication. The cherishing feedbacks and suggestions are the fuel to move forwards, hence are highly solicited.

Arun Kumar
Editor-in-Chief
IJRBS

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Industry 4.0: Overview, Components, and Initiatives of Indian Government

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Abstract

The term 'I4.0' or 'Industry 4.0' refers to the 'Fourth Industrial Revolution'. It's a new paradigm where smart Devices are capable of controlling and cooperating with the human being for efficient manufacturing and distribution processes. Since the 1st industrial revolution begun with the use of the steam powered engines, industrial production has seen a huge leap frog till the beginning of fourth industrial revolution. Now with the introduction of I4.0, industries are going to be transformed completely. This article comprises a literature review on recent research results analysing the meaning and elements of Industry 4.0. The aim of this research paper is to give an overview and develop an understanding of the concept of I4.0, its drivers, and components. This paper also provides an overview of government roles and initiatives taken in order to promote the use of technology and digitalization in manufacturing and production.

Keywords

Industry 4.0, Internet of Things, (IoT), Cyber-physical system, Smart manufacturing, 3D printing.

1. Introduction

The term 'Industry 4.0' was firstly coined in 2011 at the Hanover Trade Fair in Germany to showcase the competitive strategy model of the European Union governments and industries in relation to other international markets. Since this point in time Industry, 4.0 is a point of discussion among industrialists, researchers, technical experts, and many others. Now, in the era of industrial digitalization, companies are proactively investing in tools and technologies that allow their manufacturing and production processes, machineries, human resources, and even the product itself, to be integrated into a single integrated

network for data analytics, evaluation of company growth, and efficient performance.

Essentially, the industrial revolution means far more than technological improvements in reality. The word “revolution” refers to an abrupt and drastic changes in operations and management. I4.0 is also going to transform into whole industrial scenario. In order to remain effective and relevant in a global environment, manufacturers, and producers need to constantly update and upgrade their production system technology and accommodate the changing taste of consumers. We can also find that Network readiness index, India lags much behind Developed nations and few developing nations as well. This is the area where government needs to work upon. Tech-oriented strategy, good Industrial policy, and infrastructure development are highly expected from the government end. The purpose of this study is to explore the meaning and components of I4.0 in industrial production. This paper also presents a detailed literature review to explain the components of the fourth industrial revolution. Initiatives and the role of the Indian government have also been discussed in the paper.

2. History of Revolution

The 1st industrial revolution occurred in the last decades of the 18th century and entailed the mechanization of water and steam power. The 2nd revolution took place around the 1900s and was defined by mass production with assembly lines, powered by electricity. The 3rd industrial revolution started around the 1970s and represented the use of computers to further develop automated production processes and machines. The perception of Industry 4.0 or the 4th industrial revolution is symbolized by Smart Factories and the full use of digital manufacturing. (Rouse, 2018)

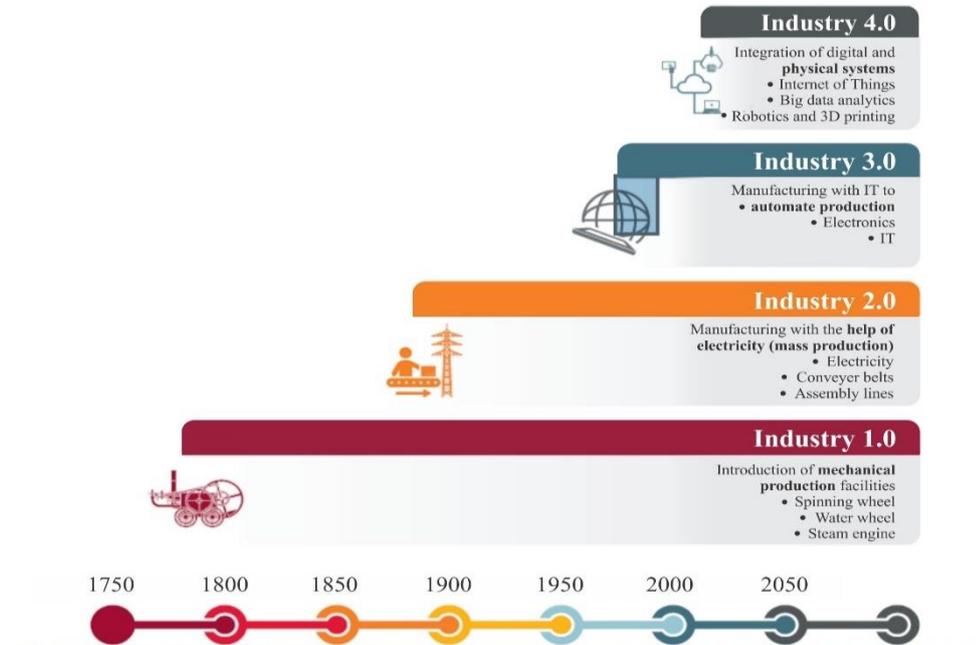


Figure 1: A History of Industrial Revolutions

Source: Grant Thornton & CII, 2017

For centuries, goods including food, clothing, houses, and weaponry were manufactured by hand or with the help of work animals. By the start of the 19th century, though, production started to extrude dramatically with the advent of Industry 1.0, and operations swiftly evolved from there. In the 1800s, water and steam-powered machines had been evolved to facilitate workers. At the beginning of the 20th century, electricity became the main source of energy. Easier to use than water and steam, it allowed companies to focus energy sources on individual machines. Mass production of goods with assembly lines became part of everyday routine. In the last decades of the 20th century, the invention and manufacture of electronic devices such as transistors and later integrated circuit chips allowed for greater automation of individual machines to supplement or replace operators. In the 21st century, Industry 4.0 attaches the IoT with manufacturing technologies so that systems can exchange information, analyze it, and use it for smart actions. It also includes cutting-edge technologies such as additive manufacturing, robotics, advanced materials, artificial intelligence (AI) and other cognitive technologies, and augmented reality. (Thangaraj & Narayanan, 2018)

3. What is Industry 4.0?

Various authors and organisations have defined Industry 4.0 as follows –

Table 1: Summary of Definitions of Industry 4.0

Author & Year	Definitions
(Grant Thornton & CII, 2017)	“Industry 4.0 is characterised by highly intelligent, interconnected systems that form a completely digital value chain. It is built on cyber-physical production systems, which integrate communications, information technology, data, etc. to turn traditional factories into smart factories. The objective is for machines to interact with other machines and goods in real-time, with data being processed and transmitted in real-time, resulting in significant changes across the industrial ecosystem.”
(Campbell, 2018)	“Industry 4.0 creates a strong connection between machineries and their human counterparts. This new concept will have an influence on all personnel from all departments. Industry 4.0 refers to the interconnection of devices in order to establish an automated real-time manufacturing process that utilises the required data. It will transform how businesses respond to client needs and reshape the entire manufacturing chain.”
(Schwab, 2016)	“Industry 4.0 is characterised by a few new technology characteristics, such as the physical, digital, and biological worlds. The advancement of technology has a considerable impact on the development plans of industries, economies, and governments. One of the most essential concepts in the growth of global industry and the global economy is Industry 4.0.”
(Wang et al., 2016)	“To deal with global difficulties and raise industrial levels, Industry 4.0 makes full utilization of emerging technology and rapid development of equipment and tools. The fundamental idea behind Industry 4.0 is to implement IoT services using advanced information technologies. By using technical expertise, production can run more quickly and smoothly with less downtime. As a result, the finished product will be of higher quality, production systems will be more efficient, easier to maintain, and cost savings will be realised.”

4. Components of Industry 4.0

Many technologies that are considered as the main component of the Fourth Industrial Revolution. There are nine main technological trends that are said to be primarily instrumental in shaping industrial manufacturing and production. (Gilchrist, 2016)

Boston Consulting Group also explains that in Industry 4.0, nine technologies constitute the components of the transformation. These technologies are; Big data and analytics, Robotics, Simulations, Horizontal and Vertical system integration, The Industrial Internet of Things (IIoT), Cybersecurity, Cloud computing, Augmented Reality, and Additive manufacturing. (BCG, sd)

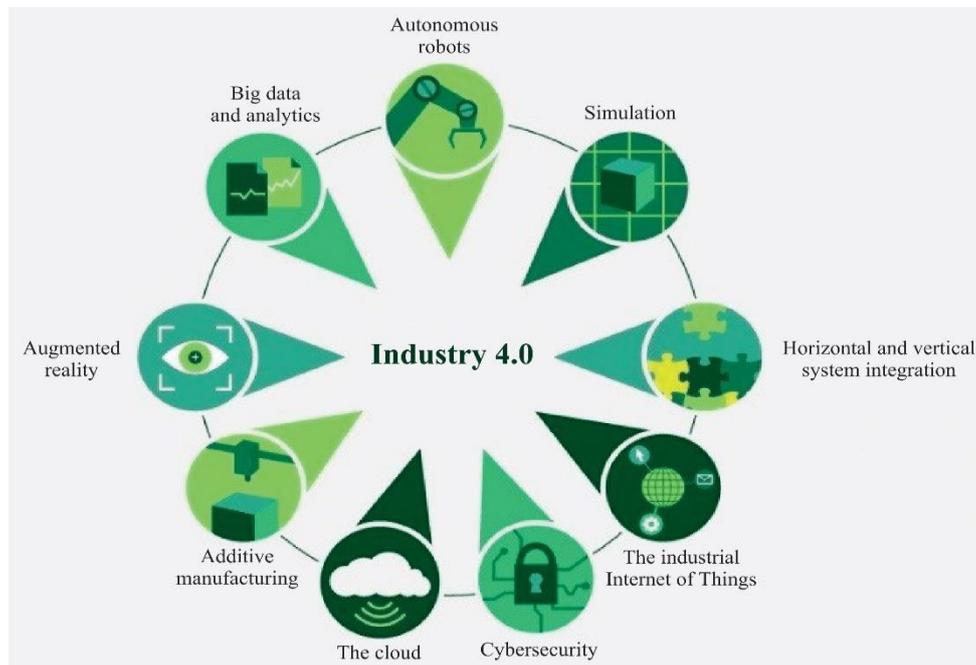


Figure 2: Nine Pillars of Industry 4.0

Source: BCG

4.1 Big Data and Analytics

Authors and organisations define it as follows –

Table 2: Summary of Definitions of Big Data and Analytics

Author & Year	Definitions
(Subodh, 2019)	“Data is now being acquired at an unprecedented rate from many sources. To identify hidden patterns, connections, and other insights, this massive amount of data must be deciphered. With increased processing power, we can now analyse a huge quantity of data in real time. Data collected from various sources, including production equipment and systems on the one hand, and corporate and customer management systems on the other, will need to be compiled and will eventually graduate to become the standard for supporting real-time decision making. Big data will also influence key business choices as it becomes more predictive, providing insights into causal relationships, future trends, and other factors.”
(BCG, sd)	“In the context of Industry 4.0, Data gathering and analysis from multiple sources, including industrial equipment and systems as well as corporate and customer management systems, will become common practice.”
(Roche, 2019)	“Data analytics, which was formerly considered an IT application, is increasingly making inroads into the industrial and supply chain industries. In the industrial industry, data analytics and pattern recognition may be used to decrease downtime and waste. Data may be gathered at various stages of the production process in our facilities.”

4.2. Robotics

Authors and organisations define it as follows –

Table 3: Summary of Definitions of Robotics

Author & Year	Definitions
(Senn, sd)	“While the industrial industry has made significant progress in terms of automation in recent years, there is still a huge deal of untapped potential. Collaborative robots are intended to bridge the gap between regular robots and human workers, allowing for new automation opportunities. These robots are made to work in similar ways to people, but with the extra capability of monitoring and transmitting data.”
(BCG, sd)	“Autonomous robots can interact with others and work safely side by side with humans. These robots will cost less and have an increasing range of capabilities over time.”
(Subodh, 2019)	“The necessity for the manufacturing sector to boost productivity in a variety of ways is what prompted Industry 4.0 in the first place, and it will be the first workplace to have robots that will work together with people to expand current skills and capacities.”

4.3. Simulations

Authors and organisations define it as follows –

Table 4: Summary of Definitions of Simulations

Author & Year	Definitions
(Senn, sd)	“Simulations leverage real-time data to project the physical world of product development and production processes in a virtual environment. These models might be used to run more efficient tests so configurations and processes are optimized before production even starts, reducing downtime and improving quality.”
(BCG, sd)	“Simulations are an important part of the I4.0. They're widely employed in plant operations to make use of real-time data and to simulate the actual environment. When used correctly, these models allow users to test and improve settings in a wide range of scenarios, reducing machine setup times and improving quality.”

Author & Year	Definitions
(Roche, 2019)	“In the present era, simulations are used to develop components that are being manufactured. It may be used in Industry 4.0 to create a virtual environment of the factory using real-time data and assess productivity before making a change in the factory. This allows engineers to better envision the design, allowing them to see issues and bottlenecks early on.”

4.4. Horizontal and Vertical System Integration

Authors and organisations define it as follows –

Table 5: Summary of Definitions of Horizontal and Vertical System Integration

Author & Year	Definitions
(Subodh, 2019)	“Individual activities have traditionally been disconnected from other tasks in the production process. These tasks must be integrated to anticipate requirements and plan for contingencies, synchronise operations, optimise different resources, and perhaps interface with systems outside the framework in order to automate the process. This is intended to operate throughout the whole value chain to build a more coherent network by collaborating across organisations, departments, functions, and capabilities.”
(Senn, sd)	“The goal of Industry 4.0 is to improve communication across the spectrum, not only between machines. Currently, many production systems aren't fully linked. Companies may become more integrated from both the external and internal sides by improving system integration. As a result, a flexible manufacturing environment will be created, enabling for real-time production adjustments and twists.”
(BCG, sd)	“Companies, divisions, operations, and capacities may all benefit from Industry 4.0. The emergence of cross-company, universal data-integration networks has enabled completely automated value chains.”

4.5. The Industrial Internet of Things

Authors and organisations define it as follows –

Table 6: Summary of Definitions of Industrial Internet of Things

Author & Year	Definitions
(BCG, sd)	“As part of Industry 4.0, more gadgets will have embedded computing capabilities. This method enables devices to communicate and interact with one another as well as with centralised controllers. It also decentralises analytics and decision-making, allowing for real-time reactions.”
(Roche, 2019)	“IoT refers to an ecosystem in which all sensors and actuators have the capacity to work independently while communicating with each other. Industrial IoT is similar to consumer IoT, but it is more robust to sustain the harsh conditions of the industry.”
(Senn, sd)	“The networking and connection of smart devices are referred to as the Internet of Things. Smartphones, tablets, and laptops come to mind when people think about the Internet of Things. Also consider wearables, vehicles, and any equipment or gadget that permits data to be sent, even our freezers. The term Industrial Internet of Things (IIoT) is used in the industrial scenario to describe this technology (IIoT). Sensors are being attached to machines and other physical assets on the factory floor to collect data that impact real-time decisions and leads to greater performance and efficiency.”

4.6. Cyber Security

Authors and organisations define it as follows –

Table 7: Summary of Definitions of Cybersecurity

Author & Year	Definitions
(Senn, sd)	“As the level of connection rises, so does the chance of a cyber-attack. Any security compromise might have repercussions across the whole company, from supply chain to operational activities. Companies must stay prepared for cyber-attacks and secure their information systems and manufacturing processes at all costs.”

Author & Year	Definitions
(BCG, sd)	“It's no wonder that Industry 4.0 promotes more connection and the usage of industry-standard communication protocols. As a result, protecting vital industrial systems and production lines from cyber - threats has never been as important as of now. As a result, secure, reliable networking, as well as smart machine access management and user identity verification, is critical.”
(Subodh, 2019)	“The growing connection of devices, as well as the constant flow of data back and forth across open networks, makes the system vulnerable to cyber threats such as malware and spyware. It is critical to identify these risks and safeguard the data in order to retain the integrity of the functioning protocols and systems while also keeping the data's confidentiality.”

4.7. Cloud computing

Authors and organisations define it as follows –

Table 8: Summary of Definitions of Cloud Computing

Author & Year	Definitions
(Subodh, 2019)	“The usage of different services through the internet, such as software development platforms, servers, storage, and software, is referred to as "cloud computing." Data sharing and functionality across systems will traverse several sites and companies, reducing communication and response times to milliseconds. More data-driven services for production and service integration will result as a result of this.”
(Senn, sd)	“Cloud computing delivers expandable storage and enhanced processing capacity as industrial businesses' usage of technology and data exchange develops. The cloud also helps to reduce data silos by improving data accessibility and integrity.”
(BCG, sd)	“The more production-related activities a firm takes on, the more data must be shared between locations. Meanwhile, cloud computing is becoming quicker and more powerful. Machine data and analytics will increasingly be deployed to the cloud, allowing for more data-driven services for manufacturing and production systems.”

4.8. Augmented Reality

Authors and organisations define it as follows –

Table 9: Summary of Definitions of Augmented Reality

Author & Year	Definitions
(Senn, sd)	“Augmented reality (AR) uses a device like a phone or special eyewear to show digital material in the actual world. This technology has a variety of applications in the industrial business, including safety training, streamlined logistics, and maintenance.”
(Roche, 2019)	“The IT sector is being ravaged by augmented reality-based technologies. A few years ago, they were used only in flight simulators. Remote repair instructions may now be transmitted to virtually any location on the planet with an internet connection. It allows technicians to improve their abilities by repeatedly performing high-end repairs and maintenance using augmented reality.”
(Subodh, 2019)	“AR is still in its early stages, and public adoption is just now gaining traction. It overlays a virtual layer on top of real-world elements to provide more information and dimensions for better comprehension and visualisation. It is expected to give real-time information to workers and users, leading to better decision-making and work processes.”

4.9. Additive Manufacturing

Authors and organisations define it as follows –

Table 10: Summary of Definitions of Additive Manufacturing

Author & Year	Definitions
(BCG, sd)	“3D printing is the most well-known example of additive manufacturing. Companies may now create small quantities of customised items instead of prototyping individual components. The advantages include the ability to quickly manufacture complicated, lightweight designs.”

Author & Year	Definitions
(Roche, 2019)	“Additive manufacturing techniques such as 3D printing are already being used by businesses to create prototypes and proof of ideas. Industry 4.0's versatility allows us to create sophisticated designs that would be almost difficult to create using traditional production techniques. The majority of traditional manufacturing methods are subtractive, resulting in the waste of raw materials. Additive manufacturing significantly lowers, if not completely eliminates, raw material waste.”
(Senn, sd)	“While businesses are aiming to increase their usage of additive manufacturing in their processes, 3D printing technologies are already playing a major role in three main areas: design, prototyping, and low-volume production.”

5. Initiatives of Indian Government

If a country wants to emerge as a techno-giant and global leader in terms of production and manufacturing, it needs to work upon strengthening its industrial production by adopting the latest technological advancements. For a democratic country, where capitalism and socialism have equal values and existence, support from the government is highly expected to adopt such technologies. This support could be expected in different forms. Being a policy-maker, the government needs to adopt and demonstrate a proactive role as an enabler and facilitator to promote the adoption of industry 4.0 by the industries. The globalization and tremendous competitiveness are forcing nations to rethink and innovate their production and manufacturing processes by adopting the technologies of Industry 4.0. With the ‘Make in India’ initiative government has taken a bold step to boost Industrial production with the consistent development of IT and infrastructure.

In the Industry 4.0 revolution, the Indian government plays the position of a crucial stakeholder. Moving India's MSMEs sector to the forefront of I4.0 will require significant efforts in terms of resources, infrastructure, know-how, and exposure areas where government intervention will have a significant impact and the benefits of Industry 4.0. Furthermore, the role of government in the history of Industry 4.0 in India goes far beyond the mere empowerment of the MSME segment. Given the important role of advanced technologies in Industry 4.0, it is

required to demystify the core competency requirements of I4.0 through education and skills. The government's role as an enabler is not only to expand support for manufacturing, but also to take reform measures to encourage broader technology adoption. Based in countries like Germany, the central government could propose suitable regulatory frameworks, develop a competitive spirit and create a conducive political environment for a conducive I4.0 ecosystem in the country. For the effective implementation of I4.0, the government may also play an important role in encouraging employment and closing skills shortages. The government needs to ensure that I4.0 is accessible to the MSME segment, the India Inc. segment, which includes approximately 60 million companies and accounts for 45 percent of the country's total manufacturing output. (Jadhav & Mahadeokar, 2019)

In his speech on the 22nd of September in Houston, Texas, Prime Minister Shri Narendra Modi emphasised the importance of 'Industry 4.0' in the global economy and India's advantage. The Modern Coach Factory (MCF) in Raebareli is launching a pilot project to introduce "Industry 4.0" to the country. By establishing a pilot implementation at MCF, Raebareli, the Ministry of Railways and the Department of Science and Technology have collaborated with IIT Kanpur to embark on a unique Industry 4.0 initiative. The full transition to a digital factory using 'I4.0' across the entire value chain from designing to production will greatly improve productivity by providing an insight into the production process to make real-time decisions, minimising human errors through effective monitoring, and ensuring that resources are put to the best possible use as measured by the Overall Equipment Effectiveness (OEE). (Press Information Bureau, 2019)

India was ranked 61 on the Network Readiness Index in 2013. India was rated 91st out of 139 nations in 2016. India ranked 91st, ahead of a few nations such as Pakistan (110) and Bangladesh (122), but below its neighbours Sri Lanka (63), Malaysia, (31), and China (32). (59). for the second year in a row, Singapore topped the rankings. The United States came in fifth place. The World Economic Forum's study makes it apparent that there is a significant difference between industrialised and developing countries due to a variety of causes. According to the report, the digital economy has separated industrialised and developing countries into two groups. The rankings of the top-ranked industrialised countries, such as the United States and Singapore, are nearly constant. However, several emerging countries, particularly India, saw their rankings fall. (Grant Thornton & CII, 2017)

According to the 2016 UNIDO International Yearbook of Industrial Statistics, with a ranking that has improved in three places, India now

ranks sixth among the 10 largest producing countries in the world. India is no exception to this worldwide trend, and its proportion of global manufacturing GDP is continuously growing. All leading countries are taking important initiatives to promote manufacturing by adopting Internet and information technology advancements. The German government announced "Industry 4.0", while the governments of China and India have their own programs focused on "Made in China 2025" and "Made in India" respectively. The goal is to encourage global companies to select India to manufacture their products. With an abundance of outdated regulations and underdeveloped infrastructure, the government is aiming more at enabling policies and improving infrastructure for certain key sectors. According to the IBEF, the Indian government has set a progressive target of maximising the contribution of manufacturing from the current 16 percent to 25 percent of gross domestic product (GDP) by 2025. Globally, the market is expected to I4.0 reach INR 13.90.647 billion by 2023.1. Countries like the US, China, Japan, and European nations like the UK, Ireland, Sweden, and Austria have started adopting I4.0. In India, the 6th largest manufacturing country, the manufacturing industry is an essential part of the country's long-term vision, as evidenced by the government's strong focus on the Make in India campaign. (Kalaria, 2020)

The government focuses to increase the share of the manufacturing sector in GDP from the current 17 percent to 25 percent by 2022, which has been taken over by the government. India is currently lagging behind its global competitors in adopting I4.0. A significant part of India's manufacturing sector is still in the post-electrification phase, with technology limited to systems operating independently of one another. The core assumption of I4.0, the integration of CPS on cyber platforms, is still in its initial phase. Furthermore, due to the high-cost barrier, the Micro, Small, and Medium Enterprises (MSME) group has limited access to automation technologies. (Jadhav & Mahadeokar, 2019)

6. Discussion and Conclusion

Understanding the fourth Industrial Revolution and its disruption potential are critical for all nations and especially the developing countries. India has potential to become a global leader in terms of manufacturing by adopting digital technologies. Since the adoption of these technologies is in its infancy, the government and industries need to embrace them with open hands. An initiative like "Make in India" is also a point of attraction for foreign industrialists. If we look at the Indian population we find that it could be a favourite destination for the producers of capital and consumer goods. There is always been a good

scope of demand and market expansion. Further, India needs to work more on strategic planning for incentivizing the adoption of digital technologies and developing the requisite digital ecosystem, especially in regard to industrial manufacturing.

This paper primarily focuses on the concept of the fourth industrial revolution and also presents an overview of its components. The nine pillars of I4.0 explain the multiple dimensions of technology with examples to understand the application of I4.0. I4.0 allows smart, efficient, effective, integrated, autonomous, individualized, and customized production at a reasonable cost. In short, we can summarize that I4.0 is the future of global manufacturing due to having such unique features. Industries that require a higher a degree of flexibility due to having a high level of product variants, such as the automotive and food-and-beverage industries, will get the most benefit from these technologies.

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Envisaging Trends of Digitalization for Sustainable Tourism Business: Opportunities & Challenges

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Abstract

Digitalization is the doorbell of today's organisation. The economy today has revitalised with electronic mode replacing the manual operation. Incredible India campaigns information-communication-technology (ICT) on a global scale for tourism development in the coming days. The present study revolves around the ongoing avenues of digitalisation in the tourism business. The aim of this paper is to explore and investigate the prominent domains and items that may be considered in line with digitalization in the tourism sector globally. The literature of the study focusses on new technological development in the tourism sector through the adoption of robotic & automatic devices, innovation in digitalization, opportunities in internet technologies, IT-enabled HR practices in the tourism business, and the introduction of e-business systems for sustainable tourism. The paper attempts to reveal domains and items along with possibilities and potentialities of ICT for organisations operating in the Tourism sector. The coverage of the study is pertinent amidst fluctuating business environment and the scope of digitalization will lead to the flourishing of 21st century tourism business houses worldwide.

Keywords

Digitalization, Tourism, ICT, (Information-Communication-Technology), Innovation, Development.

1. The Emergence of Information Technology and Tourism Business

Information and communication technology is the indispensable foundation of today's industrial infrastructure which has transformed all the sectors of the economy globally. Information and Communication Technology (ICT) has revolutionised technological advances and the service industry by leaps and bounds. Technology supports man, machines at different levels of the hierarchy of the organisation ensuring

faster, smarter and speedy actions and optimising the efficiency, energy, time, and simultaneously value of money. ICT creates opportunities to utilise time, place, and energy resources at an optimum level. Technological development and tourism have close connectivity since steady growth is experienced in the respective domains during the last fifty years. Information and Communication Technology influences tourism technology on a large scale along with accelerated business practices and development strategies. Tourism and hospitality is the fastest growing industry in the present economy (Buhalis, 2008). The tourism industry is characterised by the work culture of professionalism and showcased as service-centric industry. In the last three decades rapid technological transformations in forms of computerisation, automation, hotel booking, global distribution system, rail applications, and developmental technological changes are inevitable in three directions viz radical changes in existing industries, destination travel, and many more which has transformed tourism business as an e-tourism sector. Development of new industries and increase of new market and industry in the fields of tourism innovation can be characterised by four key driving forces namely tourists, tour operators, technological changes and competition. Information and Communication Technology (ICT) has a wide impact since it changes the entire tourism structure and attempts to develop new avenues and confronts threats for all the participants in the tourism industry. The paper tries to establish the upcoming ICT opportunities and advantages for the tourism industry and focusses on new technological developments for tourism business in the coming days. Despite having the wide influence of ICT in all the sectors, tourism is being considered as the a highly sensitive sector. The manifold utilities of ICT representing accessibility of information, knowledge sharing, increasing efficiency, accessibility at minimal costs have crossed beyond boundaries and created a strong impact on the tourism sector at large. The issue of transparency and reliability at lower prices has been managed by the technological innovations which have a strong impact in the domains like internet, development of mobile and wireless telephony, multimedia inter-operability, accessibility for people with disabilities all contributing to the growth and sustenance of tourism business. The paper provides a substantial finding of the emerging trends of digitalisation with relevant sphere and the possibilities related to ICTs in the tourism sector to accommodate a better tourist destination for the tourists world-wide.

2. Objectives of the Study

The specific objective of the current paper is to identify and define a set of select domains and items in tune with the development of ICT in the Tourism business for sustainable development. The specific objective of the paper can be understood in the light of the following

- To define the domains
- To define the items relating to each domain based on literature review
- To ascertain the challenges in implementing ICT in Tourism Business

This is being done towards the preparation of a scale as a research tool in the area. The study hovers around in exploring the key constituents and major domains attributable to digitalisation in the tourism sector. The paper will highlight the main role of ICT in the tourism business and subsequently generate value with the usage and advancement of technology available worldwide. The central theme of the paper aims towards exploring varied technological features and to increase the level of information security for the organisations and in the tourism sector towards making maximum usage of the effects of the technological innovations.

3. Rediscovering the Impact of ICT on the Tourism Business

The world today has been witnessing accelerated, automated, and synergistic interaction between technology and tourism which has transformed the tourism business as well as our age-old perception of the world. The increasing pace of technology has stepped every corner of the economy and played a predominant role in building professionalism, completeness and efficiency for every sector of tourism companies and destinations at large. The gradual development of mobile communication, telecommunication devices, internet search engines, increasing transmission capacity, network speed has attributed to plan and program travels for every individual at large. The tourist industry stands on the platform of sharing domains where buyers can share information, production, specification, product processes regardless of geographical boundaries with the increased access of ICT worldwide. Internet-based pages characterised through the quality of service, the eagerness of friendly access usefulness, liability, personalisation have made tourism business more personal rather the regional. The up-gradation of mobile technologies enables tourists to avail all amenities like reservations booking, getting information, trip schedule with

improving efficiency and less time usage. The behavioural pattern of the tourists has undergone a revolutionary change with the advent and access of IT through manifold aspects viz facilitating information domains, qualitative tourist experience, price sensitivity, interactive communication, varied tourist product, online shopping, the impact of virtual community and many more. Rendering satisfied services is the belling tone of today's tourism. Tourist organisations need to concentrate on the collection of customer data and the details of the journey and trip with behavioural patterns of the clients backed by technological innovation skills, reorganised communication, and a digital framework. Hotel companies are on the queue for gaining appreciation, rewards, facilities by way of customisation and better contribution of IT generated products. Technology has become the nucleus of all economic activity which has shaped the core of all business activities. Every aspect of our life is changing and ICT acts as a bridgeway towards the survival and transformation of business linked with technological gadgets and varied mediums for prosperity, progress and potentiality. ICT has become the new horizon of a new 21st century generation designed with new applications and has become the strongest tool for the hospitality industry along with a large influence in the upcoming trends of the tourism business.

4. The Congruence of Information Technology and HR Element: An Overview

Organisations thrive on people. At the heart of all excellence at work, it is the degree and the potential of human commitment that matters most. The people factor at work is the most vital element of today's organisation. People today are largely acknowledged by business organisations as key resources and valuable assets at work. Tying knot with information and communication technology, human resource practices, and models can be upgraded, enhanced, and developed for organisational escalation. IT-enabled HR element acts as a backbone for qualitative performance and effective productivity with the generation of value system in the tourism business. The tourism industry essentially requires a significant amount of information on various domains. The impact of IT on tourism is vital for everyone as it is the information that is the source of all successful outcomes. The management of human resources at this juncture needs careful attention for its potential need and use of every employer of today's organisation. The congregation of human factor & information and communication technology focuses on

strategic objectives leading to the preparation of IT strategic plans with and that in turns into an appropriate strategic human resource plan in the IT arena. The epicentre of human resources application starts its journey where organisations aim to deliver state of – the - art human resource services through a developed model and systematic mechanism popularly as the Human Resources Information System (HRIS). HRIS basically aims to the systematic mechanism and processes at the intersection between human resource management (HRM) and information technology. It is a perfect blend characterising the elements to acquire store, analyse, retrieve and distribute pertinent information about an organisation’s human resources. The foremost challenges in the application and utilisation of this tech systematic mechanism in the fullest possible ways are embedded in the appropriate level of exploration and utilisation of potential human resources. The manifold wings of technology have spread their sphere in multiple ways and in wide dimensions throughout the world. It has become the most indispensable and essential tool for business growth in every organisational hemisphere. The effectiveness of IT-driven by successful HR practices in the tourism industry can be portrayed in the following figure depicting the core elements of human resources and their attributes towards effectivity of ICT.

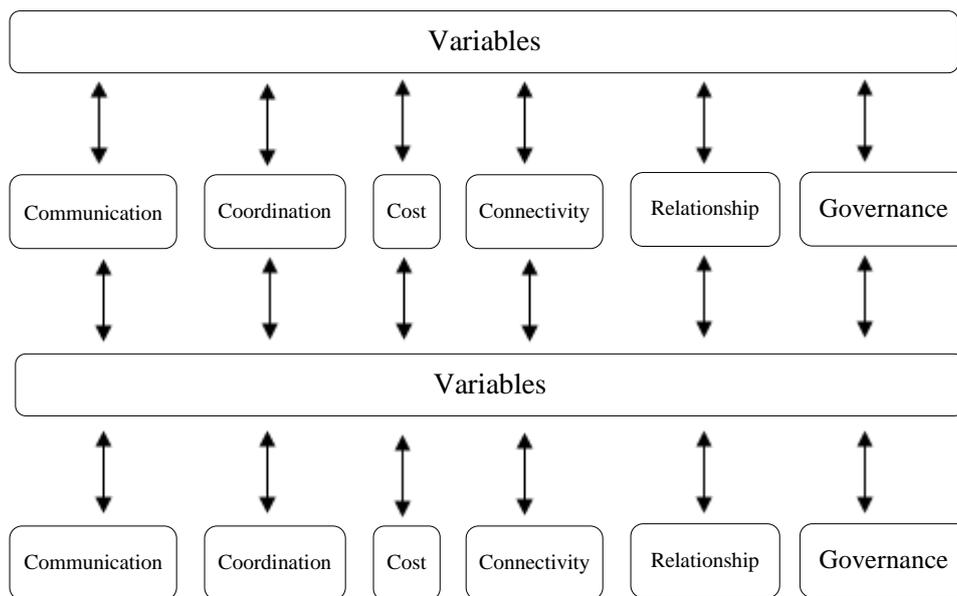


Figure 1: Inter-connectivity between HR & ICT

Tourism business digitalisation HR activities begin with recruitment, training, and development, personnel management of employees. Technological solutions have become the heartbeat of every organisation and tourism business functions its prime activity including tourism, travel, transport, leisure, hospitality all backed by HR and influence by the emerging capability of information technology appraisal. Human elements spawn through unique talents, performance, innovations comprising the essential ingredients for the growth and development of tourism. The entities of tourists are channelized with the HR potentials and possibilities for expansion of tourism globally. The three 'M's man-money-machine may be connoted as '3T's tourist-travel-tourism signifying the man in terms of tourist playing the pivotal role in the travel voyage of tourism escalation and survival.

5. Avenues in Internet and Related Technologies in Tourism Sector

Studies reveal that the recent trends for ICT infrastructure and development have reached the boom phase and its impact on gross domestic product (GDP) has a wide significance among various nations across the globe. The usage and the utility of broadband and related technologies are diversified in nature ranging from tourist authorities, tour operators, travel agents, hotels, tour guides, taxi operators, beach operators and ancillary service providers. The usage of broadband and related technologies has brought varying changes in the bargaining powers of stakeholders of the tourism industry and has transformed the business scenario of the tourism business. The internet is an integral component of digitalisation and its gradual development has created opportunities among millions. Access and usage to superfast broadband facilities have the potential to increase growth, innovation, and productivity in the tourism economy. Reinventing the power of the internet for day-to-day functioning is the prime issue for the stakeholders in the tourism sector. Broadband internet facility has become the essential input and has enabled the tourism sector to achieve a substantial share in the global marketplace. The advantages and rewards of the internet have crossed boundaries bringing more openness to the whole tourism chain. The dimension of the internet has changed the way people communicate, search information, takes decisions with a holistic transformation in the whole tourism business. With the internet tool, tourists and travellers can contact travel agents directly without any intermediate barriers to get better tourist amenities at a competitive

advantage. The ICT generates fundamental changes in the nature and application of technology in the business and creates immense benefit in promoting and strengthening competitiveness in the tourism sector. The dynamic nature of internet facilities can be outlined ranging from the bargaining power of suppliers, threat of new entrants, rivalry among existing competitors, threats of substitutes, and purchasing power of customers. Internet connection has been characterised by an online information system, online marketing system, online payment system with the domains viz. web hosting, social networks, websites, LinkedIn, Facebook - all have embraced and strengthened the tourism hemisphere. Despite having multifaceted utilities, challenges of ICT can be visualised in respect of speed and connectivity. Information overload is of prime concern of any economy and fast internet connections are highly desirable for easy access to all concerned for the tourism economy. The qualitative aspect of broadband facility needs to be taken care of where it has been seen that poor availability of internet connection and inadequate connectivity speed results in creating a question of commitment and reliability in the tourism industry.

6. Implementation of Robotic and Automated Service Mechanism in the Tourism Business: Prospects and Challenges

Despite a substantial advancement in the technological arena, the use and adoption of robotic machineries can be traced in the tourism business amidst wide arena of tourism business entailing hotels, restaurants, events, themes, amusement parks, airports, travel agencies, tourist information centres, museums, art galleries and many more - the usage and utility of robotic mechanism and automation services are quite insignificant in the present scenario. In the recent days, the world has been witnessing remarkable progress in artificial intelligence, robotic, and service automation which is primarily used in production houses, transport sector and automobile sector, warehouses and supply chain management. Studies reveal that the utility and the advantages of technological advances in the form of service automation and robots have gradually started their footstep in the travel – tourism – hospitality periphery. Robotic technologies have made their pathway into the tourism industry grasping major areas of hotel operations byways of self-service facilities, check-in kiosks, mobile applications trackers for the visitors benefiting the client and the customers with minimum time and maximum efficiency, faster pace and ultimately fostering improved

customer experiences. Robotic services can be broadly categorised as industrial robots and service robots wherein industrial robots are involved in the industrial tasks and on the other hand service robots are engaged and support individuals through human and social interactions. Tourism as the prime service industry has gained a mark in the usage of professional service through robots in hotels, robots in restaurants byways of the front desk, robots to deliver, portal robots in hotels where robots serve and robot chef, robot bartenders in the restaurant to entertain and satisfy various customers as per their convenience and comfort. Recent trends reveal that restaurant businesses have already launched automated food delivery methods with an updated mechanism of food delivery to the dining tables that looks like roller coaster tracks. Even so, the automated process of ordering, selecting, preferring, commenting, and accepting orders has taken the stage on a touch screen modes. Voice recognition equipped with artificial intelligence fosters communication with the customers are one of the prominent automation adoption modes of the tourism business. The hotel industry in the tourism sector has been touched by the automated cooking process where 3D devices are being used and varied dishes are cooked by the robots to serve the clients. The travelling experience has reached the height of pleasure and comfort while automation plays a significant role in the e-travel experience through speedy service, increased efficiency, and greater security. Self-service facilities, self-service gates are being managed operated, and regulated by the robotic mechanism through varied functions like scanning the boarding pass of the tourists, storing luggage, and many more to make the journey hassle free, risk free and joyous. In spite of having the robotic revenue in the tourism business it is the ability of the human being to envisage and visualise the ways and means that robots will be utilised in an efficient way in the days to come.

7. Technological Innovation of E-business System: Way towards Sustainability in the Tourism Sector

E-business strategy is the ringing tone of 21st century business houses. The ICT stands as a backbone for the organisations and businesses either small, medium, or large has stepped forward in the development of technological innovations and their impact on future business. The lifecycle of ICT in any organisations is based on the workload and the outflow of the structure on the online system and design with the IT assets and resources. The entire business operating in the tourism sector

has broadened its dimensions through management of various processes with an increasing drive for adopting reliable, safe technological know-how for a successful outcomes. Studies reveal that most of the business organisations operating in the tourism sector are confronting barriers in the formulation and adoption of e-business strategy resulting in an insufficient assessment of the impact of technological innovations and lack of insight. E-business strategy can be defined as an application of ideas that contributes to or shift in management thinking resulting in the introduction and growth for economic efficiency. It is based on the modular principle which guarantees multiplicity for organisational operations and performance of specific functions. Statistics reveal that in in recent times a large number of companies have engaged and involved their day-to-day activities through e-module i.e. carrying of communication, conferencing mail in order to establish a strong online structure accessible globally. The instant result and the outcome enjoyed by the potential users of e-business resources create opportunities for direct contact to potential customer partners and various stakeholders. E-business resources provided by the tourism industry through online management system, online customer management system acts as a tool to indulge the productive development and business. Unfortunately, a mammoth portion of the tourism economy comprising small & medium enterprises is deprived of the benefits of e-business resulting lack of innovations and technology in the area. The prime task of e-business solutions is based on providing access to online information systems and resources to consumers, employees, partners, and contractors which acts as a backbone of the service system. Largely in the tourism sectors, various mandatory operations like maintenance of websites, electronic catalogue, online booking tool, and payment tool, and feedback forms – e-businesses act as a bridgeway of activity to many. Ideally the financial base of the tourism industry needs to be regenerated and revitalised for the incrementation of e-business resources to the level of high-class server to the community at large. E-business resources used by the organisations is a mechanism that is used widely and available with open solutions at free of cost. E-business solutions use the existing network structures devoid of any additional installation of a new structures. E-business solutions can be used from one to many with their flexibility potential depending on the activity of the online users and business entity.

In the present turbulent, fluctuating business environment which has affected all the sectors of the economy, use and reuse of technology and stimulating the uses of e-business is a step forward for sustainable use of technology by the organisations for better prospect of tourism business in the coming days.

8. Innovations in Customer Relationship Dimension: Tourist Satisfaction Destination Link

Customer satisfaction is a business process intended towards improving service quality & satisfaction for the consumers at large. Tourism is one of the foremost contributing source of nation's GDP in recent years. The philosophy of Customer Relationship Manager (CRM) understands the needs of the tourists as customers and design integrated communication with them to create a qualitative relationship and satisfaction platform in the tourism sector. A commendable influx of tourists boosted the foreign exchange earning with the accelerating growth of annual growth and ranking 30th in the world tourist arrival as per the Indian tourism statistics. Tourism today is the most vibrant territory activity wherein understanding tourists and application of innovative models in the development of service quality in tourism is of prime significance. Service quality has been recognised as a critical prerequisite and determinant of competitiveness for ensuring the sustainable, satisfying relationships with the customers. Blending innovation, technology and quality attributes pave the way for tourism satisfaction. It is the level of satisfaction that is being characterised as one of the dominant variables influencing the revisit intention of the tourist amidst globalisation of the market, competitive pressure, brand multiplication, ever changing life satisfaction, and consumer behaviour. The key variable of tourist satisfaction and its loyalty destinations need to be reviewed and redesigned for tourism promotion. The hotels, restaurants, tour arrangers and down-the-line service providers coupled with technology play the key role to avail access services on virtual platform in the present scenario. Fulfilling the tourist's expectations at an optimum level has resulted a positive effect on destination loyalty. Experiencing high-end customer satisfaction in terms of quality creates avenues for promoting tourism business in the days to come. Experiences expressed by the tourists in terms of proper integration of tourist's people process and technology with personalised services & human touch establishes a strong foundation of tourism destination.

9. Research Methodology

The study has been based on secondary data sets on the tourism sector of India collected from December 2019 to January 2020. Based on the literature study and understanding essentially considered in the paper are rediscovering the Impact of ICT to the Tourism Business, The Congruence of Information Technology and HR Element: An Overview, Avenues in Internet and Related Technologies in Tourism Sector, Implementation of Robotic and Automated Service Mechanism in the Tourism Business: Prospects and Challenges , Technological Innovation of E-business System: Way Towards Sustainability in the Tourism Sector, Innovations in Customer Relationship Dimension: Tourist Satisfaction Destination Link. The research methodology was a qualitative one using secondary data. This would be considered as Independent Variable and the notion of Information and Communication Technology for Sustainable Development as Dependent Variables. The scale design thus is an attempt in this paper revolves around the identification of whether the independent variables (broad domains) affect the dependent Variables i.e $Y = f(X)$ and to what extent, if Y implies Information and Communication Technology and X implies the broad domains drafted in the scale.

10. Findings & Discussion

Finding I

From the literature explicated in the paper, a clear attempt has been made to identify the items under the broad domains revealed from the study. The five broad domains are:

Domain A: Integrating Information Technology & HR for Tourism Development

Domain B: Upholding Avenues in Internet Related Technologies for Tourism Development

Domain C: Implementing Robotic and Automated Services for Tourism Business

Domain D: Introducing Technological Innovation of E-business for Sustainable Tourism

Domain E: Managing Innovations in Customer Relationship for Tourism Progression

Each of the above domains can be independently considered to arrive at a handful of items. The items have been generated from the detailed literature study which has been a significant part of this paper.

Finding II

Defining Sub Domains/ Sub Scale under each domain

Table 1: Defining Sub Domains/ Sub Scale under each Domain

Domain	Sub Domain/ Sub Scale
A. Integrating Congruence of Information Technology & HR for Tourism Development	A.1 HR is considered as a key resource factor
	A.2 Integrating ICT & HR builds organisational escalation
	A.3 Strategic HR & IT Plans helps Tourism Development
	A.4 HRIS & HRM contribute Tourism Business Growth
	A.5 IT-driven HR practices enhance Tourism Business
B. Upholding Avenues in Internet Related Technologies for Tourism Development	B.1 Usage of Internet and related technologies transformed Tourism Industry
	B.2 Broad Band Internet facility created openness in Tourism chain
	B.3 Internet facilities create an immense facility in Tourism promotion
	B.4 Internet connections with online facilities creates access for all in Tourism Development
	B.5 Dynamic nature of Internet facilities fosters reliability and commitment in the Tourism business.
C. Implementing Robotic and Automated Services for Tourism Business	C.1 Usage of Robotic services creates avenues in the tourism business
	C.2 Robotic technologies create efficient self-service facility in Tourism Industry

	C.3 Automation services benefit clients and customers with minimum time and maximum efficiency.
	C.4 Robotic services create professionalism in the Tourism business
	C.5 Automated robotic services generate revenue with hassle-free and risk-free Tourism business
D. Introducing Technological Innovation of E-Business for Sustainable Tourism	D.1 E-business strategy is the future of Tourism business
	D.2 E-business results in the growth of Tourism economy
	D.3 Day-to-day E-module activities establish a strong online Tourism business
	D.4 Technological E-business create potential customers
	D.5 E-business solutions provides universal access to all the stakeholders
E. Managing Innovations in Customer Relationship for Tourism Progression	E.1 Customer satisfaction is the ultimate outcome of Tourism business
	E.2 Blending Service quality with customer satisfaction builds global tourism promotion
	E.3 Customer relationship destinations play a key role in tourism growth
	E.4 Virtual tourism platform integrates tourists and promotes tourism business

Finding III: Key ICT Tools for Tourism Development

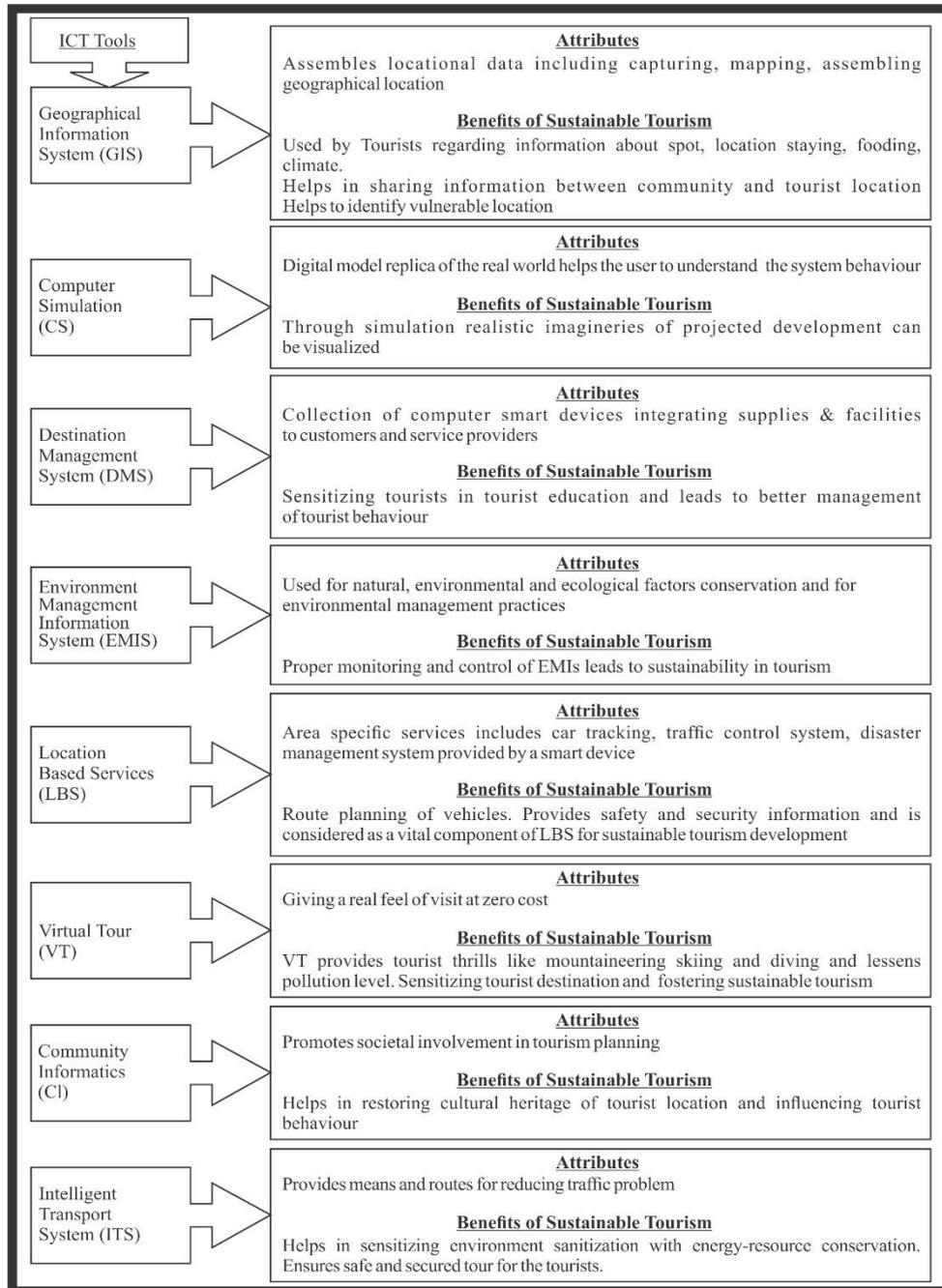


Figure 2: Key ICT Tools for Tourism Development

Finding IV: Challenges in Implementing ICT in Tourism Industry

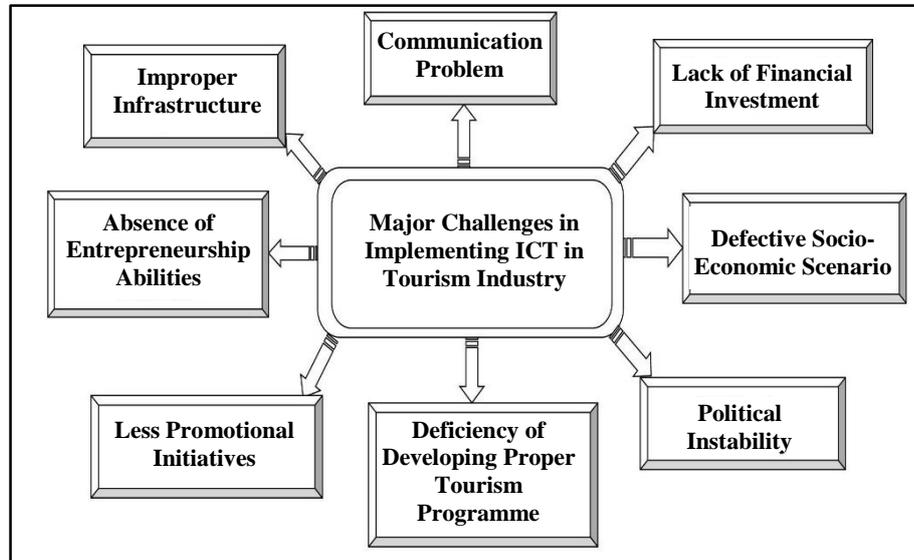


Figure 3: Challenges in Implementing ICT in Tourism Industry

11. Implications of the Study

The Indian tourism sector has come up as one of the key drivers of growth of the Indian economy. The age-old traditional concept of “Atithi Devo Bhava” meaning the “Guests are God” is the new dimension of Incredible India. India’s tourism Parampara (tradition) has undergone the voyage of experience and transformed itself with a fresh look of e-tourism. The crux of the tourism business lies in the understanding of its uniqueness and the trend from time to time. The present study highlights the prominent and upcoming domains of information technology and innovation potential to boost the tourism sector as well as create avenues in alternative tourism and ensuring sustainable tourism. The paper traces the recent trends and developments of tourism business with new system technology for tourism promotion and development both in the short and long-term destination. With the emergence of new terms and alternatives in terms of ICT, the need for infrastructure development is the call for the hour for tourism business. Tourism is the first growing sector in the post-globalisation era has the thrust to adopt and attitudes towards innovation and thus keeping in view the rich culture and heritage tourism in the nation’s tourism. Organisations are increasingly connecting equations

between sustainability and its impact on their organisations. Trust and reliability upon the dedicated trust force on the organisations have opened dynamic sphere of organisational sustainability. The paper thus upholds and attempts to identify the five broad domains and the items within. The essentiality of the study is in the fact that tourism development can be fostered through the digitalised pathway aiming towards business sustainability in the long run over time. Like every other business, the tourism business has to confront the problems posted by global financial crisis in the present fluctuating environment. Therefore, the vision and mission of tourism promotion may be followed in tune with innovation for sustainable tourism and economic development at large. The uniqueness of Indian tourism is the perfect blend of convention and innovation. Thus, India “a land for all seasons” should be envisaged to create an “Affordable Digitalized India” with the mission to visit India for tourism rejuvenation in the coming era.

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Customer Experience on Digital Marketing – Online Shopping Experience in “Pothys”, Chennai

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Abstract

Digital Marketing is the recent trend in marketing activities mostly depend upon digital channels, tools, and tactics. Particularly people started using the World Wide Web which widely recognize and impact line advertising, search engine optimization etc.,. Retailers with digital transformation will achieve swiftness, tractability, and receptiveness in this digital era. Especially in these Covid-19 Pandemic Retailers forced into digital transformation because customers are rooting for their favorite brands to provide better services in precaution of safety. Pothys is a Retail textile outlet in South India, with a chain of showrooms. Originally Pothys was meant for exclusive silk sarees, and stepped into selling more variety of garments at present. Pothys is a renowned store in Tamilnadu. In this article, we will be dealing with customer experience on digital marketing on Pothys. This study provides information on how the retail business was changing into digital after Covid-19 and how does it impacts digital customer experience and what actually customers need.

Keywords

Digital marketing, Covid-19 pandemic, Online advertising, Retailers, Pothys, Digital era.

1. Introduction

Digital Marketing also called online marketing is the promotion of brands to connect Business people with end-users using the internet and other forms of digital communication who access the internet and attracting the offline audience to an online platforms. It includes not only the email, social media but also multimedia messages and other digital channels. As of January 2021, there are 4.66 billion internet users in the

world today. The number of people using the internet is added up by 319 million in the past of 12 months almost 8,75,000 people exploring the internet every day. Internet users are on the rise at an annual rate of more than 7 percent, Almost global internet users spend almost 7 hours online each day. A recent survey states that 59.5 percent of active internet users across the globe on digital marketing.

Blend Technology and social interaction create an online environment where members of a virtual community can interact. Enables people to stake information about a subject of mutual interest through comments, pictures, and videos. Among all digital platforms, Social media is the effective tool for digital marketing and the use of social media as 53.6 percentage of the global population according to the recent survey done on online marketing. Technology is developed so that Social media marketers can develop content and maintain posts on their company's official page which will attract customers and keep them aware of updated news.

Adding interactive elements to add to the website such that users are very much interested to engage with the brand and learn more about them. It's a way of keeping customers on track related to the products and services. Other examples include Conducting quizzes, games, polls, etc. by the promoters to make the customers active. It enhances the Current users of any product can share the polls or quizzes in their social media to increase the views about the current product. A simple example is reviews and ratings about any product or service will make a customer understand and compare any product and service.

This paper discusses the experience of online customers of textiles. While many of the customers from and above middle age still want to purchase dresses in person so that they can feel the product, the current pandemic situation makes everyone technology savvy.

2. Review of Literature

1. Manvi, Ashok Sharma, Deepika Varshney July (2018) "Content is esigned according to the customer need" and provides information to benefit a customer. Based on the result they analyzed that digital content marketing has a high impact on customers.

2. Dimple Singh January (2020) Over the past decade, business organizations are working with technological change. Retailers are implementing new strategies to satisfy customer demand. The customer gets a lot of opportunities to find products online which aren't at the store. A positive customer experience will result in happy customers and it will generate additional revenue with their positive feedback they will refer to their family and friends.
3. Shenbhagavadivu Than gavel June (2015) Online shopping is the process of buying goods and services from merchants who sell on the internet. Online shopping eliminates the haunting, yet irritating music if customers want to shop more. People can purchase anything from companies that provide the details of the products online.
4. Jose line Steffi October (2019) "Assortment, Speedy management and downcast were three huge manners by which web-based shopping impacted individuals from everywhere throughout the world". Understanding customer needs towards web-based shopping improving in the buyers to shop on the web assist advertisers with gaining over advantage.
5. Alexandra Thusy and Langdon Morris (2004) Probe the ways and means to provide the consumers with a great and compelling customer experience which can create enduring memories and everlasting relationships.
6. Dave Chaffey (2002) Digital and e-commerce management is a structured way starting from strategy, implementation, monitoring, and continuous improvements.
7. Erik Stolterman and Anna Croon Fro (2004) They broadly assured that information technology has become part and parcel of our daily lives. They call this is radical digital transformation in our life.

3. Research Objectives

- Identify challenges of Digital marketing in Pothys.
- To study the market structure on Pothys online.
- To provide optimum solutions on quality and logistics on Pothys.

4. Limitations of the Study

- The study is restricted to Pothys which is located in the Chennai district only.
- The study is grounded upon customer experience in online shopping.
- The data collection for the research is entirely based on secondary data taken from Review pages and the official Facebook page of Pothys.
- Due to storage of time and other constraints, the study has been limited to 30 respondents only.

5. Research Methodology

The research design used for the study is descriptive research describing certain features of a particular product or service of an individual or group.

Population Size

The total population size is indefinite.

Sample Size

This refers to the number of samples to be chosen from the population. The sample size used for the study is 30.

Sample Design

The respondents are selected based on convenience sampling. It comes under Non-probability sampling technique.

Statistical Tools

Microsoft Excel is used in this research. Particularly to visualize the reviews pie-chart is effectively used in this research.

Source of Data

The secondary data has been collected from social media reviews on Pothys Facebook page and reviews from Mouthshut.com, Trust Pilot and, Indian Consumer Complaints forum and also on personal experience of the authors in online marketing.

6. Data Analysis and Interpretation

6.1 Categories Based on Gender

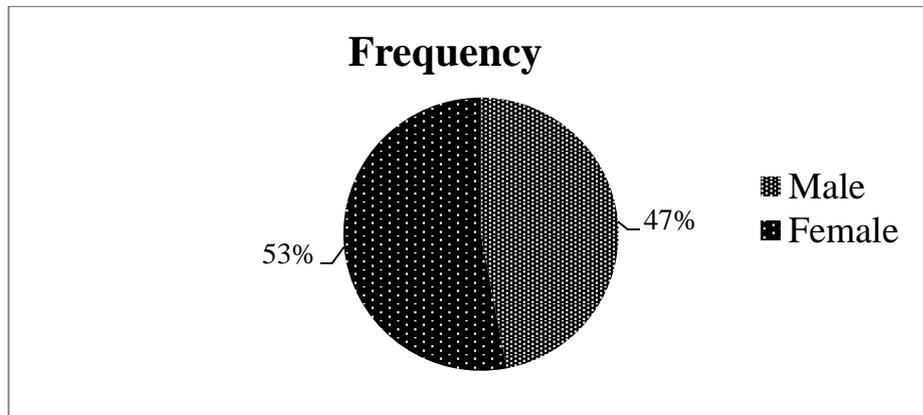


Chart 1: Categories Based on Gender

The above diagram, picture shows that female customers tend to buy more on online shopping compared to men. So, special features can be added to men's clothes in order to increase more men customers on online shopping.

6.2 Based on Online Customer Experience

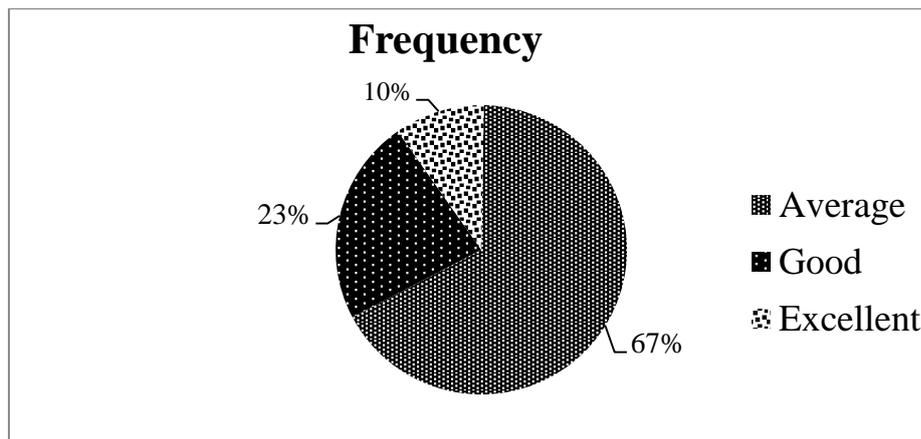


Chart 2: Based on Online Customer Experience

In the above diagram based on the data analysis done majority 67 percent of online customer experience was average, 23 percent of customer stated excellent and finally 10 percent of customers stated good. So here higher concentration to be required on the average

stated customer, Staffs should be provided with adequate amount training in technology and customers handling. Because positive experience will results in happy customers and it will provide more profit to the business.

6.3 Based on Quality Review

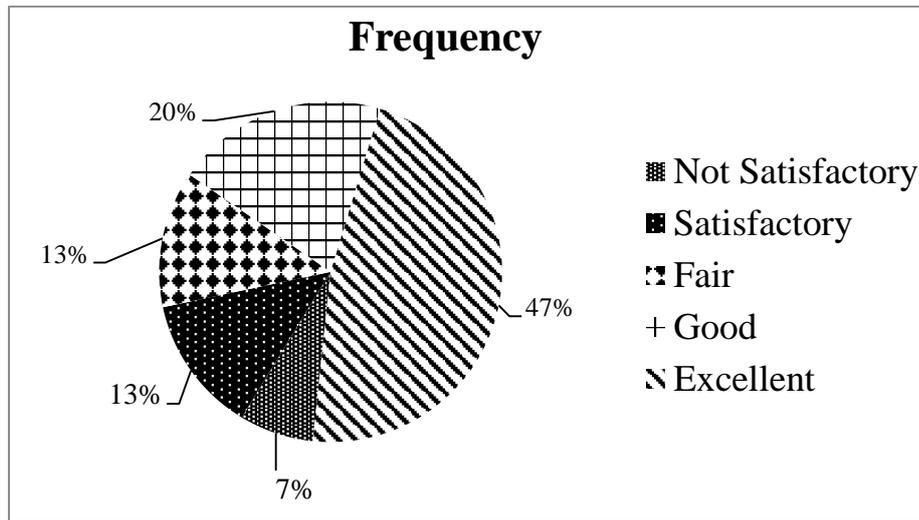


Chart 3: Based on Quality Review

In the above diagram based on the data analysis majority 47 percent of customers are not satisfied with the quality, 7 percent of customers are stated satisfactory, 13 percent are stated fair followed by another 13 percent are stated good and finally, 20 percent stated excellent. Here the higher amount of concentration is to be required on not satisfactory customers, by providing good quality of products ensures that customers will be satisfied. By adopting good quality service customers will get positive feedback and they will be referring to their society this generates additional revenue to the textile showroom

6.4 Based on Logistics Review Provided by Customers

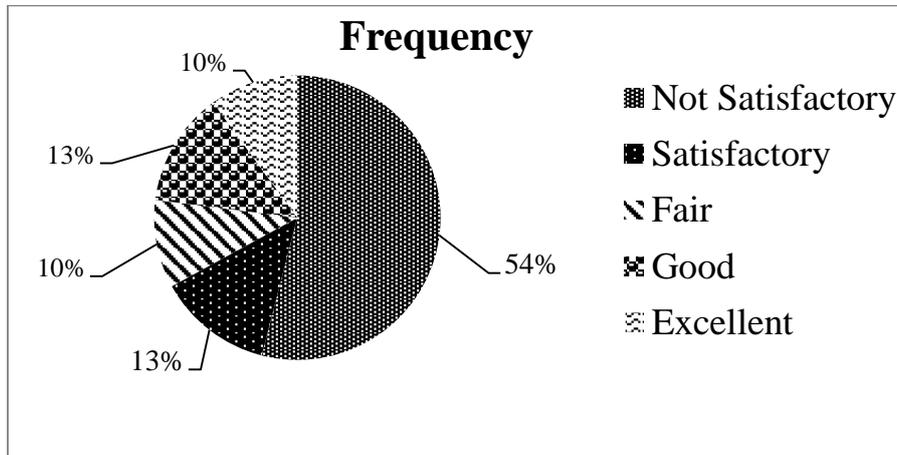


Chart 4: Based on Logistics Review Provided by Customers

In the above diagram based on data analysis, 54 percent of customers are unsatisfied with logistics, 13 percent stated that satisfactory, 10 percent stated fair and followed by 13 percent stated good and finally, 10 percent stated excellent. Here the higher concentration is required on that 54 percent of customers, by ensuring that customers product gets delivered on time and providing tracking ID's to the customers once they have made the payment that will help them track their package. In addition to this other reviews can be taken care of.

6.5 Based on National and International Customers

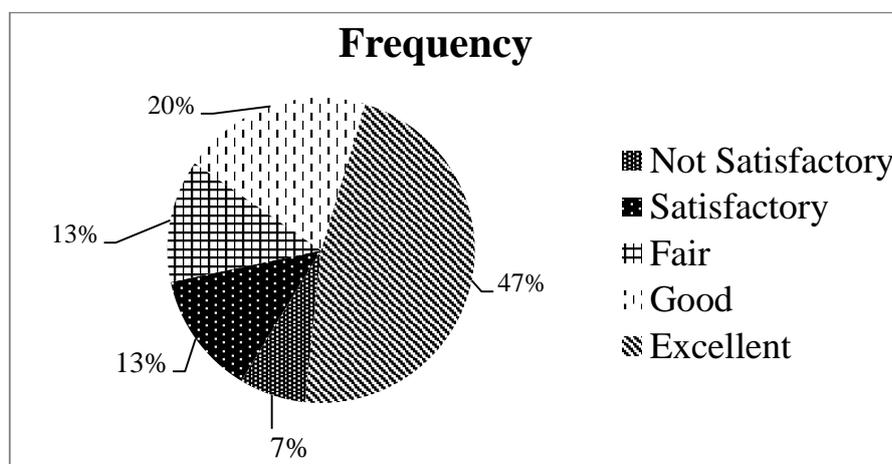


Chart 5: Based on National and International Customers

In the above diagram 73 percent are Indian customers, 7 percent are UK customers and finally, 20 percent are US Customers. It's very good to see that other countries are buying their textiles at Pothys Chennai showroom through online. But it should be expanded moreover globally in order to get revenue all over the world. By Analyzing their preference this can be achieved easily.

7. Result and Recommendations

As Pothys is an age-old wardrobe store where it is difficult to change to modern way, the shopping has now days changed from physical to digital mode. Whereas after covid lockdown the whole market structure is turned into digital.

The Pothys has a very large collection but the displaying in their website is very few which is need to be improved.

The Pothys also started a WhatsApp-based shopping but that was not helpful to them because of lack of human resources and also the people displaying the product is not customer friendly and are not having knowledge about WhatsApp.

The staff members should be provided with an adequate amount of training in technology and customers handling.

The main hindrance faced by the customers is the quality, logistics based. The quality which is shown online is not given is the customer complaint. This can be handled by just packing the same product when the customer in virtual mode so that the customer will be satisfied.

The customer is not aware of the package delivery time and it takes a very long time and also the product package is been destroyed for the customers. This can be avoided by giving the tracking id to the customers once they have made the payment this will help them track their package. Buy Back guarantee will also be an added advantage it will grab more attention from the customers.

8. Conclusion

Marketing depends on the digital channels, tools, and tactics in the current situation of Pandemic. Particularly after people started using the World Wide Web in this digital era which widely recognized and impacted online advertising, which provides the customers with digital transformation flexibility and responsiveness. Especially in these Covid-19 Pandemic Retailers are forced into digital transformation because customers are rooting for their favorite brands to provide better services in precaution of safety. This study on customer experience on digital

marketing on Pothys, a Textile showroom in Tamilnadu provides the information of how the retail business was changing into digital after Covid-19 and how does it impacts digital customer experience, and what actually customers need. Even though many Retailers start using technology and digital transformation, they have to give utmost importance for customer satisfaction which will keep the business surviving and retain the customers.

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Role of HRIS in Indian Companies: A Study of Current Scenario

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Abstract

HRIS which is also called Human Resource Information System is an intersection of information technology and human resources. The HR manager manages human resources in the organization electronically through HRIS. HRIS is a software or online solution for a company's data tracking, data entry, and data information needs in Human Resources, payroll, management, and accounting. The human resource manager's goal is to manage human resource functions such as recruitment, selection, training, performance management, etc electronically through the use of information technology.

The use of HRIS in the organization will facilitate the capability to make more effective plans, deal with HR costs regarding its controlling and management, and achieve goals in human resource manager's decision making. This will also improve the performance of the employees and would lead to overall productivity in the organization. The paper throws light on the role and importance of HRIS in today's current scenario for the companies.

Keywords

Human Resource Information System (HRIS), Human Resource Management (HRM), Human Resource, Technology, Organization, Development, Structure.

1. Introduction

In today's world which is ever-changing, technology is also at pace with it and is continuously being developed. This change needs to be adopted by the organizational leaders and managers which will enhance the organizational efficiency and effectiveness. HRIS has come a long way

since they were originally introduced more than 50 years ago, and they now serve a much broader role than simply transforming paper records into digital databases. In today's world, HR/payroll systems are capable of handling a variety of HR activities.

HR Software is also upgraded now and contains many new features and now it is no more just a data storage system that we used to know. HRIS, if used in the organization will aid the organization in storing employee data effectively, more formally and correctly which is very important because human resource is one of the most important resources in the organization and that is why the human resource is referred to as the knowledge bank of the organization. Modern HRIS is used by professionals on a daily basis to manage their employees.

Many businesses have recognised the need to deploy increasingly sophisticated computerised systems, such as Human Resource Information Systems, as a result of technology improvements. Companies that have shifted to HRIS are capable of keeping their records more accurately and up-to-date which will allow companies to prepare better for future challenges and opportunities leading to the future growth of the company. HRIS will aid the HR managers to make better decisions which will increase the efficiency of the organization.

The quality of the decisions taken should also improve, and as a result, employee and manager productivity should rise and become more effective. HRIS is defined as “the collection/ recording, storage, management, delivery, presentation, and manipulation of data for HR through the use of Hardware, Software, Computer applications, and Databases, (Broderick and Boudreau, 1992).

According to a 1998 poll (Ball, 2001), the HRIS is used by 60 percent of Fortune 500 organisations to assist with day-to-day human resource management (HRM) operations. During the last decade, there has been a remarkable increase in the number of organisations collecting, storing, and analysing HR data through HRIS (Ball, 2001; Barron et al., 2004; Hussain et al., 2007; Ngai et al., 2006). HRIS systems that aid in critical HR decision-making can provide strategic value (Farndale et al., 2010; Troshani et al., 2011). Strategic planners were able to forecast future labour demand and supply thanks to HRIS.

HRIS is evolving into its own sector of information technology (IT). Administrative efficiency is maintained using HRIS, which results in faster data processing, increased staff communications, and higher data

accuracy. (Overman, 1992; Beadless, et al., 2005), lower HR costs and overall HR productivity improvements (Beadles et al., 2005; Dery et al., 2009; Wiblen et al., 2010; Troshani et al., 2011). According to Hedrickson, 2003, HRIS is evolving into its own sector of information technology (IT). Administrative efficiency is maintained using HRIS, which results in faster data processing, increased staff communications, and higher data accuracy.

According to Hedrickson, 2003, "HRIS can be briefly defined as an integrated system used to store, gather, and analyze information regarding an organization's human resources." According to Tannenbaum 1990, Integrated systems are used to acquire, store, and evaluate information about an organization's human resources, "HRIS can be concisely defined as integrated systems used to gather, store, and analyse information about an organization's people resources."



Figure 1: Components of HRIS

Source: Google Images

2. Review of Literature

Bourini, Faisal, and Islam Bourini (2011) investigated the level of HRIS, or strategic capability. The research also investigated the relationship between HRIS and ESC in Jordanian organisations, as well as the impact of HRIS on ESC. The findings revealed a strong relationship between HRIS and strategic capacity. Jordanian businesses have a low level of HRIS installation due to the system's characteristics and applicability. Strategic capability, on the other hand, is extremely high.

Furthermore, the greater the utility of the system, the happier and more comfortable employees are, which reflects in their ability to improve in terms of decision-making, commitment, and so on.

According to Chakraborty, Ananya, and Abu Mansor, Nur Naha. (2013), HRIS assists the HR department in building the HRM process easier, faster, economical, and more effective, while also benefiting the organization's success. All of these advantages are only available if HRIS is implemented correctly and effectively in the organisation. In addition, several factors such as organisation size, management commitment, and so on influence HRIS adoption.

Davarpanah, Ashkan & Mohamed, Norshida Bourini, Faisal, and Islam Bourini (2011) investigated the level of HRIS, or strategic capability. The research also investigated the relationship between HRIS and ESC in Jordanian organisations, as well as the impact of HRIS on ESC. The findings revealed a strong relationship between HRIS and strategic capacity. Jordanian businesses have a low level of HRIS installation due to the system's characteristics and applicability. Strategic capability, on the other hand, is extremely high.

Furthermore, the greater the utility of the system, the happier and more comfortable employees are, which reflects in their ability to improve in terms of decision-making, commitment, and so on.

Sharma, Devadesh Nathawat, Sangram. (2014) Based on gender review it was seen that 70 percent of males and more than 72 percent of females accepted that HRIS will bring changes in the working system. In cases of working environment, the role of the manager in reducing resistance, switching to HRIS willingly and on the question of HRIS putting undue stress on the working system 74 percent males and 80 percent females out of (n=150) agreed to accept and adopt HRIS. On the other hand, in the case of IT sector companies where the respondents were technically skilled and were comparatively more comfortable in accepting HRIS,

indicated in gender review that 71 percent of males and more than 72 percent of females accepted that HRIS will make some modifications in the working system.

In cases of working environment, the role of the manager in reducing resistance, switching to HRIS willingly and on the question of HRIS putting undue stress on the working system 75 percent males and 85 percent females out of (n=150) agreed to accept and adopt HRIS. It is noted that the practical implication of this technology has evolved into an asset. The study should be made to bridge the gap between resistance and acceptance wherein the role of change implementers becomes very crucial and important in reducing resistance and making employees accept change.

Nawaz, Nishad & Gomes, Anjali. (2017) are sure that researching HRIS will be beneficial to HRIS and its application. With a deeper understanding, it will be easier to create more complete HRIS apps.

3. Objectives of the Study

- To get an understanding of HRIS.
- To learn about applications of HRIS in the workplace.
- To learn how to use a computerised HRIS system.
- To learn how to improve human resource management's ability to capitalise on developing business opportunities and challenges.

4. Role of HRIS in Companies in Current Scenario

What function does HRIS play in businesses helps a firm to maximise its human resources while remaining competitive in the market? It is the technological backbone that supports all HR operations in most large companies. In this capacity, it is a difficult role in the operations of HR. It is a collection of people, forms, procedures, and data that are used to store, analyse, distribute, and use human resource information. The purpose of HRIS is to deliver reliable data to people who make human resource decisions. Human resource planning can be done with a range of applications.

HRIS also keeps track of the training and learning programmes that employees have attended. HRIS makes it simple to manage performance appraisals, salary, benefits, competencies, and development plans. Employees can look for a new job inside the company and learn about upcoming training. Managers can track employee job performance and

planned vs. used hours for a specific assignment using HRIS. HRIS provides a variety of reports. Record of employee retention, and compensation are all part of a typical HR operation.

All of these programmes include a variety of HR tasks, which can be divided into three categories: Transactional, traditional, and transformational are the three types of transactions (Wright, Mc Mahan, snell, & Gerhart, 1998)

Transactional activities are day-to-day activities that generally deal with record keeping, such as inputting payroll information, changing employee status, and administering employee benefits.

HR programmes like planning, recruiting, selection, training, remuneration, and performance monitoring are all traditional tasks. If the outputs and outcomes of these activities are in the organization's strategic aims, they might have strategic value. Cultural or organisational change, structural realignment, strategic redirection, and increased creativity are examples of transformational actions that offer value to the organisation.

Performance appraisal: This system analyses employee performance on the job.

Employee skill inventory: It maintains the track of employee abilities and matches them to appropriate occupations.

Benefits administration: This system oversees the administration of employee fringe benefits. Job applicant tracking: This system keeps track of job candidates for the company.

5. Uses of HRIS

- **Planning and Analysis of Human Resources**
 1. Organizational Map
 2. Staffing
 3. Skills
 4. Turnover
 5. Absenteeism Analysis
 6. Restructuring Costing
 7. Internal Job Matching
 8. Job Description Tracking
- **Employees and Labour Relations**
 1. Union Negotiation Costing
 2. Auditing Records
 3. Attitude Survey Results

4. Exit Interviews Analysis
5. Employee Work History
- **Staffing**
 1. Recruiting Sources
 2. Applicant Tracking
- **Health, Safety, and Security**
 1. Safety Training
 2. Accident Records
- **Compensation and Benefits**
 1. Pay Structures
 2. Salary/ Wage Costing
 3. Flexible Benefit Administration
 4. Vacation Usage
 5. Benefits Usage Analysis
- **Human Resource Development**
 1. Policies of Training
 2. Training Need Assessment
 3. Succession Planning
 4. Career Interests and Experience

6. Benefits of HRIS in Companies

An effective HRIS provides information about everything the company needs to track and analyse about employees, previous employees, and applicants.

HR and other managers can employ an integration in administrative, operational, and strategic sectors. Human Resource information system data can be applied at the operational level to identify possible internal candidates for job openings, reduce external recruitment expenses, and assure staff of career options. The HR department can take a more active role in the organization's planning with the help of HRIS. Forecasting will become more timely, cost-effective, and efficient as a result of computerizations technical advancements. Intranet HR self-service is the most crucial HRIS functionalities. Today, several larger organisations utilise their intranet to do online appraisals, manage careers, conduct sentiment surveys, register for training, and post-people-related company information. Following the federal and state laws can be managed,

recruitment and selection processes can be streamlined, and analyses, data, and reports can be produced for external and internal use using an HRIS or HRMS monitored by qualified specialists who understand technology. Another benefit of an HRIS is the simplicity with which it can be applied to compute qualification.

Human Resources workers may utilise an appropriate HRIS to allow employees to update their benefits and handle changes on their own, freeing up HR personnel to focus on more important responsibilities.

Data for people management, knowledge development, career growth and development, and equitable treatment are also made more easily accessible.

Finally, managers may find the information which is needed to aid the accomplishment of the reporting staff legally, ethically, and successfully. These are some of the specific advantages of such systems:

- Faster information processing
- Higher information accuracy
- Better planning and development
- Improved employee communications
- Reduction in the cost of stored data in HR More meaningful career planning & counsel. Better ability to react to changes in the environment

7. Specific Benefits of such Systems

- Faster information process
- Greater information accuracy
- Improved development of program and planning
- Enhanced employee communications
- Reduction in cost of stored data in HR
- More transparency in the system
- More meaningful career planning & counselling at all levels
- Better ability to respond to environmental changes

8. Conclusion

Human resource information systems may play a significant role in the HR function of a corporation. After all, we are in the era of information, where we live, work, and play. Implementing efficiency may ensure that HR remains on the cutting edge in its quest to provide more effective and

simplified service. The key conclusion of this article is that the usage of computerised HRIS is more reliable than manual HRIS since it allows for more accurate data maintenance in less time. Furthermore, it is true that HRIS services indeed boost HRM in terms of administrative and analytical reasons.

HRIS functions as a critical component of the company, and a good HRIS will provide crucial information on human resource needs and skills, which will aid the management team in defining the business's mission and putting goals and objectives in motion. HRIS includes not only the technical components of the system, such as computer hardware and software, but also the people, rules, processes, and data needed to operate the HR function.

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The Role of Forensic Accounting in Fraud Investigation

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Abstract

Maurice Peloubet who was a New York based CPA, first coined the term “Forensic Accounting” in 1946. Forensic Accounting is viewed as a blend of Accounting, Investigation and Auditing. It is a practice of employing Accounting, Auditing & Investigative skills to obtain particular results. The increase in the number of fraudulent activities in world has emphasized the importance of forensic accounting. Nowadays most of the companies irrespective of their size have started appointing forensic accountants so that their assets are safe. Forensic accountants utilize economic theories, business information, accounting standards, and audit standards and procedures, data management & data analysis techniques and financial reporting systems for fraud detection and gathering evidences. The fraud investigation approach used by forensic accounting is significantly different from the traditional auditor/accountant. Forensic accountants possess an intuitive ability to investigate fraud and a traditional accountant may not have an experience to carry out an investigation.

Keywords

Forensic accounting, Fraud, Investigative auditor, Fraud auditor, Traditional accountants.

1. Introduction

1.1 Evolution of Forensic Accounting

The Meyer vs Sefton case in 1817, Canada is the first known case of using an accountant as an expert witness. The credit of emergence of Forensic Accounting is given to Frank Wilson, who was appointed to a task force to investigate the dealings of Al Capone that is America’s most notorious Chicago gangster in 1930 while working for the Internal Revenue Service as a CPA. Maurice Peloubet who was a New York based CPA, first coined the term “Forensic Accounting” in 1946.

Many institutions have been established so far. Some of them are as follows:

1887: The American Institute of CPAs (AICPA)

1992: The American College of Forensic Examiners was established.

1997: The American Board of Forensic Accountants was established.

2014: International Institute of Certified Forensic Accountants (IICFA) was incorporated.

2016: the Forensic Auditors Certification Board (FACB) of England and Wales was established.

1.2 Concept of Forensic Accounting

Forensic Accounting is a blend of Accounting, Investigation, and Auditing. It is a practice of employing Accounting, Auditing & investigative skills to obtain particular results. It is also called Investigative Accounting or Fraud Audit. Combined meaning of the word “Forensic Accounting” in the accounting profession deals with the application of financial data to legal problems. Forensic accounting is defined by Horty, “The science that deals with the relation and application of finance, accounting, tax, and auditing knowledge to analyse, investigate, inquire, test and examine matters in Civil law, Criminal Law and Jurisprudence in an attempt to obtain the truth from which to render an expert opinion”. Forensic accounting is closely connected to the legal process and has the potential to be involved in proceedings in the civil and criminal courts. In criminal court’s cases, forensic accounting plays a vital role to fight against white-collar crimes.

It is believed that a forensic accountant is like a bloodhound of bookkeeping that sniffs fraudulent acts in financial records and looks beyond the numbers with evidence. Forensic accountants utilize economic theories, business information, accounting standards and audit standards and procedures, data management & data analysis techniques, financial reporting systems for fraud detection and gathering evidence. The Forensic Accountants provide fraud investigation services to various institutions such as Bank, Insurance Companies, Police Forces and Government agencies, etc. Forensic Accountants have been given the training to deal with business affairs. They gather a lot of information for producing evidences in the courts. Their duties are the same as audit

but different from the audit that is planned on a one-year or two-year basis. Because frauds can be committed anytime and anywhere, so their role is important to prevent fraud. Forensic Accountants have knowledge of Accounting as well as Law, so it is easy for them to assess frauds as well as prove the actual amount of fraud in court. They not only detect frauds but also prevent frauds. Their letter of engagement depends upon the nature of their cases. Every case is unique as the frauds are pre-planned and to exposing such planning becomes too difficult. Their analysis can be considered as genuine evidence in court so professionalism is required in conducting their duties. They are also referred to as fraud examiners or inspecting officers to lay down evidence during the trial of cases. The main steps in analysing the frauds are (a) Developing a plan (b) Collection of information (c) Analysis on this information and (d) Opinions regarding the fraud.



Figure 1: Concept of Forensic Accounting

1.3 Forensic Accountants – Skills and Qualities Required

The following are the competencies that a forensic accountant must possess.

- Communication skills
- Interviewing skills
- Sound judgement
- Relevant experience
- Commercial awareness
- Detail-Oriented approach
- An ability to analyse data thoroughly
- Organisation and time management skills
- The ability to produce quality written reports
- Ability to collect documentary evidences
- Work with law enforcement officers and agencies
- Creative thinking and Problem-solving skills

1.4 Professional Bodies for Certification in Forensic Accounting

The table gives a list of professional bodies through which one can become a qualified Forensic Accountant. Apart from the above mentioned courses, there are many Certification programmes conducted online, on-campus and hybrid globally.

Table 1: List of Professional Bodies for Certification in Forensic Accounting

S. No.	Qualification	Granted By	Country
1.	Certified Forensic Accounting Professional (CFAP)	India Forensic Center of Studies	India
2.	Certificate Courses on Forensic Accounting & Fraud Detection	ICAI	India
3.	Certified Global Forensic Accountant (CGFA)	International Institute of Certified Forensic Accountants (IICFA)	USA
4.	Chartered Certified Forensic Accountant (CCFA)	International Institute of Certified Forensic Accountants (IICFA)	USA

S. No.	Qualification	Granted By	Country
5.	Certified Professional Forensic Accountant (CPFA)	Institute Certified Forensic Accountants (ICFA)	USA
6.	Certified Forensic Accountant Analyst	Institute Certified Forensic Accountants (ICFA)	USA
7.	Certified Fraud Examiner (CFE)	Association of Certified Fraud Examiner (ACFE)	USA
8.	Master Analyst in Financial Forensic (MAFF)	National Association of Certified Valuators and Analysts (NACVA)	USA
9.	Certified Forensic Auditors (CFA)	Forensic Auditors Board of England and Wales (FACB)	England and Wales

1.5 Various Users of Forensic Accounting

Nowadays most companies irrespective of their size have started appointed forensic accountants so that their assets are safe. Larger accounting firms as well as many medium sized firms and police and government agencies have forensic accounting departments. They have several kinds of services to be rendered to their client these may include services in the nature of insurance claim, personal damages and intellectual property rights etc.

Banks: Banks and other Financial Institutions are at risk of various fraudulent practices, such as fraudulent borrowers, cybercrimes, and identity theft. So they require trained professionals to mitigate these kinds of threats through risk assessment.

Insurance companies: The main motive of forensic accounting in Insurance Companies is to assess the economic loss of each case. Forensic Accountants evaluate a claim amount and make a recommendation on payment to the insurance company.

Courts: There are some cases where the forensic accountant can provide great assistance include shareholder/partner disputes, breach of contract, white-collar criminal investigations, and bankruptcy arena.

Police force: Forensic accounting helps police to solve crimes forces by using various methods.

Government agencies: Forensic accountants conduct financial analysis and provide litigation support in both civil and criminal matters.

2. Objectives of the Study

1. To study the evolution and concept of forensic accounting.
2. To study the skills and qualities required by forensic accountants.
3. To study the professional bodies that certifies forensic accountants.
4. To study the various uses of forensic accounting.
5. To study the role of forensic accounting in fraud investigation.
6. To study the approaches to forensic accounting assignment.

3. Research Methodology

Nowadays frauds prevail in each kind of business. Any fraud in business should be prevented and detected since it affects the parties involved in the business. Forensic accounting is helpful in detecting fraud. Keeping this in mind, the present study was carried to outline the role of forensic accounting in fraud investigation. This study is based on the existing literature. We have studied books and research papers related to forensic accounting to figure out the role of forensic accounting in fraud investigation.

4. Forensic Accountants, Investigative Auditors, and Fraud Auditors

The qualities of the forensic accounting might measure up to a well-prepared Pizza. Just like a pizza base there exists a base of forensic accounting too and that is the knowledge of accounting. A middle layer is the scattered information on auditing and internal control. It resembles the spread of the cheese in Pizza. The upper layer i.e. topping of pizza is just a beautification part a solid arrangement of relational abilities, both composed and oral. It is only the beautification part. The ideal blend of the Pizza base, Cheese spread, and topping make the pizza flavourful and forensic accountant perfect.

In the lexicon of accounting, terms such as fraud auditing, forensic accounting, and investigative auditor are not clearly defined. But there are some distinctions among the three.

Forensic accountants, fraud auditors, and investigative auditors measure financial transactions of various authorities. The accountant prepares the report and does not include an opinion on the findings. In an investigation, an evidence cannot be considered to be immaterial, even the smallest clue can be the largest evidence to the investigation process. Forensic accountants, Fraud auditors, and fraud investigators (i.e., all known as forensic accounting combinedly) set up things instead of taking them independently.

Forensic accounting goes beyond numbers while examining any kinds of financial data and Information Systems. Fraud audit involves assessment of risk, analytical procedures, and insuring compliance with standards of Auditing. Investigation audit deals with gathering evidences and clues through Scientific and Latest Investigation tools and techniques.

5. Role of Forensic Accounting in Fraud Investigation

Fraud is an intentional deception to gain illegally or not provide a person the right information. Frauds can contravene civil law or criminal law or sometimes it may not cause loss of money or rights but can still become a cause of civil or criminal crimes. The motive of committing fraud may be to obtain a gain of monetary or non-monetary nature. All the sectors of the economy are susceptible to frauds. The increasing incidence of financial frauds draws attention towards a very significant matter of concern as the Indian economy is continuously witnessing incidences of such frauds thus damaging the spinal cord of the Indian economy. Financial losses have been increasing day by day which shows that the financial sector is dealing with frauds, which needs thorough attention. There are various kinds of frauds such as securities fraud, insurance fraud, bankruptcy fraud, financial statement fraud, and tax fraud, etc.

Frauds can be classified on the following basis:

1. Beneficiary party:

- a. Frauds committed for only the benefit of the company.
- b. Frauds committed for the benefit of the individual.

2. Methods of committed frauds:

- a. Frauds done with the help of technology are covered under technological frauds. These kinds of frauds prevail in the bank sector.

- b. Frauds done by an employee of a company are covered under occupational frauds.

Forensic accounting provides analysis of financial information that provides evidences to the court that forms the basis for dispute resolution. In the context of fraud investigation, the knowledge and experience of a forensic accountant are useful as a consultant. Frauds generally involve complex accounting, tax and financial matters that require the specialized knowledge and expertise of highly trained accounting, finance and tax professionals. Forensic accountants play an important role in any investigation of fraud because they understand accounting systems and internal check and internal audit systems and fund flow into and out of the company. As an expert assists in case strategy, the accounting professionals know the rules of obtaining evidence, what documents to be required, whom they should interview, and, in civil cases, how to quantify the damages arising out of a particular situation. Good forensic accountants must know fraud practices both in the general industry and specific industry because some specific industries such as insurance and banking are prone to fraud. Forensic accountants are not legal practitioners rather they seek evidences in conducting their examination unbiasedly and objectively. The task of the forensic accountant is not only restricted to an investigation but also to an expert witness that assists in litigation. Forensic accounting provides help of an accounting nature in any kind of fraud. A typical fraud investigation assignment involves calculating the economic loss resulting from a breach of contract. In this capacity, the forensic accounting professional quantifies losses suffered by parties involved in legal cases and can assist in resolving disputes even before they reach the court. Every forensic accounting case does not necessarily end up in court. But if a matter reaches the court, the forensic accountant acts as an expert witness. The duty of an expert witness is to help the court to reach on a conclusion on matters. The contribution of a forensic accountants to fraud investigation will depend substantially on the nature of each case because fraud investigation involves a procedure to determine the fraud's nature and the extent and also determines the affected party. Forensic accountants are appointed to make an assessment of the financial losses involved. The appointment relating to civil disputes may be categorised into several categories- calculating and quantifying financial losses and economical damages, whether caused by a breach of contract, disagreement relating to company acquisitions,

breach of warranties, and business valuation. Forensic accountants assist in claims related to professional negligence too where they scrutinize the work of other professionals. It provides the help of an accounting profession in pending cases.

Evidences can be obtained from two primary sources by forensic accountants. The first source of evidence is the accounting document and vouchers. The forensic accountant's experience will decide what issues are clearly supported by accounting records only and which ones need some additional evidence. The second source of evidence is an interview. Interviews are conducted with key personnel, outsiders, and ultimately the suspected ones. The attributes of the interviews will depend on the nature of the fraud. The forensic accountants must also be a psychologist that can be able to determine the possibility that any given suspected one is a fraudster.

Forensic accounting and traditional audit are similar in nature, but the analysis done by the forensic accountant is considered to be superior. Fraud investigation approach adopted by forensic accounting is significantly different from the traditional auditor/accountant. Forensic accountants possess an intuitive ability to investigate fraud but a traditional accountant does not have the experience to perform an investigation. The methodology applied by forensic accountants is broader hence detection of fraud becomes easy. Forensic accounting controls all possible frauds what a traditional audit fails to do. Forensic accounting is stronger than traditional audit to control fraud.

In summary, a forensic accountant can assist in fraud investigation in the following ways:

- Providing the key document that should be made available as evidence. This is very necessary to support a claim.
- Review of the necessary documents at the initial stage of the case in order to identify possible areas of committing fraud.
- Advising lawyers on the matters.
- Review of the opponent expert's report.
- Assistance in dispute settlement.
- Prepare a detailed report on evidences in a language that can be readily understood by a person of non-accounting background.

6. Approach to the Work

Each assignment of a forensic accountant is unique in its own way. A forensic accountant will adopt different procedures to complete an assignment according to the nature of the assignment. The basic approach that the forensic accountants follow is given below:

- **Meeting with the client:** First of all, a forensic accountant will meet the client so that he can have a better understanding of the assignment. So that he can take the necessary steps to resolve that matter.
- **Preliminary investigation:** A preliminary investigation should be done before determining the actual procedure. It will to develop a detailed plan.
- **Develop a detailed plan:** This plan will be prepared based on preliminary investigation and the conclusion of meeting with a client. It will determine the objectives to be achieved and the methodology.
- **Gather necessary evidences:** The forensic accountant will gather necessary evidences as per the requirement of the case. For this purpose, he will conduct an inquiry and it will help the auditor to gather evidences about the employees involved in the particular transactions and enable him to obtain more detailed information about the case. This procedure also has its own purpose. It also assists the auditor to obtain information from other related parties and assists the auditor to observe what wrong might have occurred. In this stage, the forensic auditor can know if the fraud or any inappropriate activities have happened. This procedure seeks help from the management and employees of the company. However, the inquiry provides the knowledge for the forensic auditor to have an understanding of the facts.
- **Analytical procedure:** Before the analytical procedure a forensic auditor should always pay attention to the evidences to ensure that the data they use for analysis is accurate. Otherwise, the result of the analytical procedure cannot be used as evidence and it can lead to make a wrong conclusion.
 - Quantify the loss
 - Tracing of assets
 - Utilizing the computer application of data analysis
 - Utilizing various tools to explain the analysis

- **Report:** At the end, he will prepare a report. A report consists of a lot of information about the assignment, that are given below:
 - The nature of assignment
 - Scope of fraud investigation
 - Methodology adopted
 - Conclusion
 - Limitation of the analysis

6. Conclusion

Nowadays frauds are increasing in business at an alarming rate. That's why it has become essential to prevent and detect such frauds. The traditional auditors are not experienced enough to identify and report such frauds. Increasing frauds have created career opportunities to this profession. Forensic accounting is the rapidly growing area of accounting that enables a business to enhance the chance of success and reduces frauds. Thus several businesses need to employ forensic accountants to install fraud proof internal control systems in their organizations. This study has given an outline the role of forensic accounting in fraud investigation. The role of forensic accounting is extraordinary in fraud detection and fraud prevention.

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Cloud-burst in Covid Times

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Abstract

This paper discusses the changes and transformation witnessed on the digital platform due to the outbreak of pandemic. Fluctuating strategies and techniques are required to be competitive in this new commercial and economic environment. Most executives perceive technology's strategic value as a crucial component of the business, not only a source of cost reductions. Data from various companies was observed and mentioned that have dealt in the crisis showing a variety of technology capabilities in comparison with other businesses, including reaching technology talent gaps during the crisis, using advanced technologies, and experimenting and innovating quickly in accordance with the demands.

Keywords

Cloud computing, Digital transformation, Covid-19, Software as a Service(SaaS), Platform as a Service(PaaS), Infrastructure as a Service(IaaS).

1. Introduction

Pre covid scenario included the digital transformations of entities in a defined and set pace with its own specific journey. Each and every organization was working on its vision and missions and techniques to achieve those at their own particular speed. However, the outbreak of the pandemic in late 2019 and early 2020 accelerated the growth and outreach of digital revolution in ways that were unimaginable earlier. Social distancing, lockdowns, quarantines, rising covid cases, all of it acted as a catalyst in the digital learning and transformation. Advent of demand of digital channels in every sector made people realize the core importance and use of such facilities when all the other traditional things were not functional. The years of change that were yet to be observed were witnessed within a short span of time due to the rising need and requirement.

There was already a shift from physical marketing channels to the digital channel in view of the customers, however the dramatic movement in covid times paved way for new and emerging opportunities and trends in the market. Not only at an organizational level but the shift was seen on an industrial level as well. The health crisis proved to be a prospect for the cloud market, in accordance with the reports of Gartner, following the Covid-19 issue, global end-user spending on public cloud services is expected to rise 18.4 percent to \$304.9 billion in 2021. (Aggarwal, 2021).

2. Emergence of Cloud

Cloud computing is the availability of computing resources which are accessible on- demand without the direct involvement and management of the user. Different kinds of services are distributed and delivered through the internet via tools like servers, networking, databases, software, etc. Organizations began using the cloud for data backup, virtual desktops, software development, and big data analytics from the year 2006 as it was then that the concept newly emerged in an industry conference. (Regalado, 2011). However, today this concept and approach has transformed the entire outlook of every sector around the globe, from business and education to healthcare and medicine, the essence has been explored and utilized universally. Following types of cloud computing are observed in industries:

2.1 Infrastructure as a service (IaaS)

The basic infrastructure of the information technology is included in this in the form of storage, servers, and resources for networking. As the name suggests it is the form of basic structure i.e., the infrastructure of an entity (IT). A provider hosts and provides the components which are otherwise present in any data centres. According to the reports of Gartner spending on the infrastructure as a service increased to approximately 41 percent in 2020 which was worth \$64.3 billion. (Saran, 2021). The largest IAAS provider in recent times is Amazon, followed by other organizations like Microsoft, Alibaba, and Google. The revenue garnered by Amazon due to its business in IAAS in the year 2020 was \$26.2 billion, the second-largest grosser in this context was Microsoft which earned a revenue of \$12.7 billion in the year 2020, this increase was 60 percent of the company as compared to the previous year. The

major reason for the increment was the pandemic that drove people to opt for the digital replacement for every workload possible. The customers of Microsoft Azure chose options assisted by Artificial intelligence along with the retail and manufacturing in the healthcare and other sectors. In China, Alibaba remained as the prime IaaS provider pre and post covid era.

2.2 Platform as a Service (PaaS)

The management of the underlying infrastructure of hardware and software is replaced by deployment and usage of applications. The difference with IaaS lies in the fact that PaaS offers flexibility with the usage of operations more easily and conveniently. The requirement for remote workers to have access to high-accomplishment, content-rich, and scalable infrastructure to fulfil their jobs, which primarily takes the shape of reorganized and cloud-native applications, is driving the rising use of PaaS. (Gartner, 2020) PaaS is expected to grow with a margin of 26.6 percent due to the abovementioned reasons.

2.3. Software as a Service (SaaS)

It is a cloud model where users connect and pay for the services, they use on cloud-based applications. These applications offer solutions on the as pay as you go basis from the various service providers. The user only is concerned with the application and its features rather than with the underlying infrastructure, middleware, etc. SaaS has witnessed the largest digital transformation in post covid times. Here are several reasons for the same:

2.3.1 Companies living in the future

Applications like Zoom, Slack, and others have understood the requirements of the customers and business approach. Management is trying to evolve and produce better results which augments sales and customer satisfaction. Start-ups and other new business ventures are trying to bring forth the best SaaS providing platforms so that the customers adopt and use the same.

2.3.2 Expectations of the customers

There is too much pressure on the companies to produce a product and service that is chosen by the customer amongst the available options. Whatever new things that technology

is offering is being accepted without contemplating the use of the same in the present scenario. There is too much competition in the market which is blurring the lines between understanding and using a certain application.

2.3.3 Shift in focus from short term priorities to long term priorities

Businesses are discovering that increasing their client base is the most cost-effective way to expand. Many companies are refocusing their sales teams to focus on account expansion and account health. To increase Net Retention, they are collaborating even more closely with Customer Success. They're even redeploying Account Executives as temporary Customer Success Managers in some circumstances. They will recognise that these tactics are more effective than the previous model. They'll also become addicted to this new manner of working.

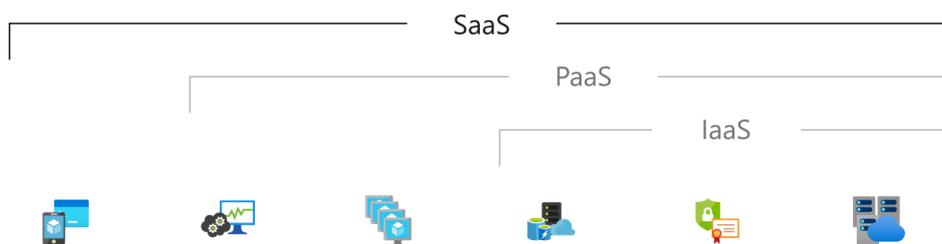


Figure 1: The Model of Cloud Computing

3. Trends observed in Cloud Computing (Luxner, 2021)

3.1 92 percent of enterprises consist of multi-cloud strategy, whereas 82 percent of the enterprise now consists of hybrid cloud strategy. Multi-cloud refers to a heterogeneous construction where there are multiple cloud computing services, it includes applications, software which are distributed and delivered across various hosting platforms. Hybrid cloud refers to the mixture of the public and private cloud systems.

- 3.2 36 percent of businesses spend more than \$12 million on public clouds each year.
- 3.3 Due to COVID-19, 90 percent of businesses expect cloud usage to exceed previous projections.
- 3.4 For the fifth year now, 61 percent of firms expect to optimize existing cloud usage (cost savings), making it the most important endeavor. The top providers are Amazon, Azure, and Google.
- 3.5 The system of multi-cloud has almost universally been adopted by businesses, with 92 percent of users claiming to have a multi-cloud strategy. Eighty-two percent of users are using a hybrid approach, combining public and private clouds. (Luxner, 2021).

COVID-19 had a substantial impact on cloud adoption in 2020, according to the Flexera 2021 State of the Cloud Report. Multi-cloud continues to be the most popular strategy, with nearly all of the companies polled using it. A mix of numerous public and private clouds is the most popular multi-cloud strategy used by businesses. According to the survey, businesses are getting more comfortable storing even critical data on the cloud.

In multiple companies, the use of public clouds is rapidly increasing. This expansion has resulted in a huge increase in public cloud spending, which may have been boosted even further by the COVID-19 outbreak. For the seventh year in a row, as cloud spending continues to rise, optimizing existing cloud usage (cost reductions) remains the top cloud goal for all enterprises. Organizations are using automated processes to scan and optimize their cloud expenditures on a regular basis. The front, middle, and back-offices automation help businesses save money and increase productivity by supplementing human talents. They can also allow certain occupations to perform with little or no human touch, which is important in an age when health is a priority.

4. Report by various Organizations (KPMG, 2020)

Organizations identified eight fundamental competencies that are inherent in a 'connected enterprise,' where functional boundaries are torn down and every component of the company is focused on meeting customer expectations, creating economic value, and driving long-term success. Developing into a digitally linked business may help organizations become more resilient to future shocks and disruptions, as well as provide them the speed and agility to respond to changing client

needs. According to research, companies who invest moderately or significantly in all eight capabilities are 2.1 times more likely to create a superior customer experience and achieve ROI on one or more metrics. (KPMG, 2020). The eight capabilities are as follows: responsive operations, insight-driven strategies and operations, innovative deals in the form of products and services, integrated ecosystem, empowered workforce of the organization, digital technology and architecture, experience, and interactions with the customers.

4.1 Steps are to be taken in the future for digital transformation

- **Operations:** To boost innovation and flexibility, invest in real-time, predictive models, rethink the roles of each participant in the supply chain, and establish a more collaborative relationship with suppliers.
- **Customers:** The customer should be treated as a priority, their preferences should be chosen and worked upon in the first and foremost manner.
- **Digital transformation:** If companies don't align with the digital transformation, they will be left behind. To quickly adapt to the new technologies and flexible, modular — and in some cases virtual, organizational structures, the digital aspect should be integrated with a broader approach
- **Working mannerisms:** The working of the organization should be in accordance with the need and plans of the enterprise. Partnerships of the firm with other businesses, digital thinking skills, the balance between human resources, and digital skills are also maintained in working mannerisms.
- **Flexibility:** The technology that can bring the organization closer to the customers while also assisting in managing a continual, high-risk environment, such as cyber security, governance, and ethics, etc. The IT investments should be in line with the overall strategic goal of customer priority, which involves focusing on the eight connected enterprise capabilities.

5. Conclusion

Whatever happens in the aftermath of the crisis, there is no doubt that digital technology will continue to change the way we live and work. The rise of 5G and the Internet of Things will amplify data generation, making ongoing policy concerns about data governance, privacy, and security even more urgent. These challenges may become even more serious as businesses assess the costs and advantages of increased automation – particularly in manufacturing facilities – to improve the stubbornness against future health crises while also increasing the relevance of data flows between businesses. (OECD, 2020)

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