

Integration of Artificially Intelligence and Data Analysis In Transforming Future Human Resources

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Abstract:

Artificial Intelligence (AI) is a science that is concerned with the development of robots that participate in the activities that people engage in. The notion of Machine Learning, which is seen as a science and technology of creating intelligent devices, particularly smart computer programmes, is defined as follows: Many scientists have been persuaded for a long period of time, before the invention of digital processors, that devices may be programmed to demonstrate intelligent behavior and decision-making. It is only logical that as quickly as computers were available, researchers sought to programme them to do tasks that were previously only conceivable with the human intellect, such as: It is only logical that as quickly as computers were available, researchers sought to programme them to do tasks that were previously only conceivable with the human intellect, such as Reading and comprehending literature in English and Participation in sports and activities. Examples include the predicting of meteorological conditions and the simulation of remarkable cosmic occurrences such as the birth of a star using today's technology. Solving these complicated issues requires a large amount of computing labour, which places a significant load on the human intellect. Scientists discovered that the human mind could not be stretched beyond that point and started working on the construction of systems that could possess levels of intelligence that were comparable to those of the human brain. Because of this, the notion of Ai Technology has progressed through time. It covers the fundamentals of machine learning as well as some of the most essential parts of the field, such as Expert Systems, computational linguistics, Neural networking, and robotics, among other topics.

Keywords: Artificially Intelligence, Integration, Human Resources, Machine Learning

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I. Introduction

Contemporary world more so business world is ridden with staff competitions to gain the mind space of consumers, in their efforts towards this manufacturers are hard pressed to reduce the product to market time, wasting or bad quality products, operation cycle times, inventory etc. Manufacturers today are more obsessed with quality in all aspects of meeting consumer needs efficiently. Towards this end all efforts of manufactures aim at automation whether be it in production, distribution, sales etc. Consumers are enjoying the convenience of automation implemented by manufacturing in form of paint shops in automotive plants, automated workshops conducting welding, turning, milling, boring and fitting operations in many industries.

Intelligence

In intelligence, the capacity to obtain, recover, and use information in an effective manner, with both basic and polished information, as well as the ability to retain and recall facts, as well as the ability to communicate emotions, is defined as follows: Human intelligence, according to psychological science, is considered to be a singular capacity inside the thinking activity. The current research in Artificial Intelligence is primarily concerned with the reasonably sure of intelligence:

- Learning
- Reasoning
- Understanding
- Creativity
- Intuition

Researches around the world are aiming to develop computer systems exhibiting the above features and have been successful too. The system has been developed to solve complex mathematical programs, plans, strategies for military purpose, diagnosing medicine for diseases and many more.

Requirements of artificial intelligence System

- Predictability of the system behavior.

- Detection and treatment of transient overheads.
- Supervision of timely process execution.
- Avoidance of deadlock.

A Brief History of Artificial Intelligence

In 1956, John Mc Carthy invented the phrase "Artificial Intelligence," which means "computer intelligence." Scientists and experts have introduced the concept of Artificial Intelligence in more recent years. Making computer programmes to solve complicated issues via the use of methods that are equivalent to human thinking processes is referred to as program development. Information, Reasoning, Intelligence, Information Symbols, and so on are all components of Artificial Intelligence. All from the above massive advancements that have occurred in such a short period of time are the result of the following factors.

Practical Artificial Intelligence

In a nutshell, artificial intelligence is concerned with the creation and deployment of autonomous algorithms. Artificially intelligent tools and methods for search, information retrieval, and training are required, as is their implementation to issues addressing, management, and designing. These processes and methods are also required for acquiring knowledge and discoveries. The majority of current machine learning research, according to some, involves the reduction of complex problems requesting intellectual ability into simple search problems, which are then solved using suitable forms of expression and showing the knowledge required to solve the issues in question. It is an unintended side effect of this that a large number of virtually helpful features have emerged.

Knowledge representation

Any intelligent system has to know a great deal about the environment in which it is situated. It is generally accepted in artificial intelligence and cognitive science that knowledge has to be represented in some form in order for it to be used. Much effort in Artificial Intelligence is devoted to finding ways to acquire and encode such knowledge in a form that can be used by the machine. This is free of any commitment as to how a particular piece of knowledge is internally represented. However, implicit in this view is a commitment to use some language (e.g. first order logic, production rules, lambda calculus or List Processor) to express and manipulate knowledge. Expressions in any such language can be syntactically transformed into any other sufficiently expressive language - this follows from the University of the Turing frame work. This is tantamount to saying that systems that use knowledge are simultaneously describable at multiple levels of description. And systems (such as living brains for robots) that exist in the physical world would have physical descriptions — just as the behavior of a computer can be described at an abstract level in terms of data structure and programs, or in terms of machine language operations that are carried out (thereby making the function of the hardware more transport) or in terms of the laws of physics that describe the behavior of the physics medium which is used to construct the hardware.

Implementation of AI in HR functions in Corporate

The study used an interview method where questions were asked to the HR professionals to understand on the extent to which AI has been adopted in the HR functions. From the findings it was determined that most of companies have implemented AI extensively in recruiting and selection process as it is the most time-consuming function. They also have agreed that with implementation of AI, process like recruiting, initial screening, scheduling of interview and further process are all made online with the help of AI. With this the efficiency levels of HR have increased to a very extent. The next function in which AI is seen is. The on boarding process which is yet again a long process which involves a lot of paper work and time. With the help of AI these functions are automatized and the functions are made faster with the help of online platform. With respect to other functions most of the companies are at the testing stage.

Relation of Artificial Intelligence to other disciplines

The invention of digital (and analog) computers in the 1940s and 1950s and the work in the theory of computation, information theory, and control that accompanied it provided the experimental tools and the theoretical underpinnings of Artificial Intelligence research. Much related work has taken place in related fields addressing similar questions (e.g. bionics, cybernetics, neural networks, statistical pattern recognition, syntactic pattern recognition, expert systems, computer vision, robotics, computational linguistics, decision theory, cognitive psychology, artificial life, computational neuroscience, computational organization theory etc.) Artificial Intelligence broadly interpreted is closely intertwined with, and often substitutes much of the work in most of these fields.

Artificial Intelligence is often regarded as branch of computer science, Artificial Intelligence's special relationship with computer science is due to the fact that the language of computations is to the study of mind. Artificial Intelligence (and more recently , cognitive science) continue to develop their own experimental tools and theoretical frameworks. In the process, Artificial Intelligence has contributed over the years. A wide variety of concepts and tools to computer science - List Processor one of the earliest high level programming languages, the first multi — tasting operating system, logic programming , constraint programming, heuristic search, object oriented programming, neural net works, computational learning theory, temporal logic, deductive database, high - dimensional grammars, evolutionary programming name a few. Artificial Intelligence problems have stimulated research in other areas of computer science massively parallel architectures for vision, theoretical research in complexity of reasoning and learning and so on. Artificial Intelligence is occasionally viewed as a sibling of psychology. Psychology's concerned with the formulation and experimental verification of theories of behavior with human or animal subjects. Artificial Intelligence is concerned with computational models that exhibit aspects of intelligent behavior. It is not generally committed to any particular (e.g. Human - like) set of mechanisms or any particular ways of implementing the chosen mechanisms. Yet, the information processing models coming out of Artificial Intelligence research have strongly influenced contemporary research in human and animal psychology and neuroscience.

Insofar as intelligent behavior is normally associated with living systems, Artificial Intelligence shares some of the concerns of the field of study that has been provocatively, and misleadingly labeled artificial life. Artificial Intelligence can also be thought of as applied epistemology (the branch of philosophy that is concerned with the nature of knowledge). Artificial Intelligence research has brought to light entirely new questions and new ways of looking at old problems in epistemology.

Artificial Intelligence is often treated as a branch of engineering that is concerned with the design, implementation, and evaluation of intelligent artificial. Artificial Intelligence research has resulted in a number of useful practical tools (programs that configure computer systems, dialogue faults in engines, software agents that scour the Internet for information on demand etc.).

Artificial Intelligence attacks a long standing mix of problems from a number of more established disciplines like philosophy, psychology, linguistics, anthropology, engineering, and neuroscience. While freely borrowing from these disciplines, it brings to the study of intelligent behavior, a unique approach and a unique set of tools and in the process, sometimes raises entirely new questions due to its use of computation as a substrate for theory construction and experimentation. This has led to arguably one of the most important scientific developments of this country, the birth of cognitive science (which attempts to integrate insight and results from its constitute discipline better than most (thought by no means all) of the work in Artificial Intelligence. All of this gives it's a new perceptive on some of the long standing questions about the nature of mind. But it does not make the questions themselves necessarily any easier!

Every discipline has a domain of enquiry. For Artificial Intelligence, it is the entire range of human and non — human intellectual enterprise spanning the entire space of actual and possible intelligent adaptive systems. As a result, Artificial Intelligence gets deeply involved in the conceptual and methodological questions in any area in which it is applied: The use of Artificial Intelligence in synthesis of artistic objects (e.g. drawings and paintings) necessarily has to involve an understanding of the specification of ways of representing the knowledge used by an artist as well as theories about creativity in the domain of art; the use of Artificial Intelligence tools to model the process of scientific exploration in some area (say molecular biology) necessary entails an understanding of the scientific method and is likely to yield new insights on hypothesis formation, experimental design, and theory selection in that area. As a consequence, Artificial Intelligence is one of the most interdisciplinary fields of study currently taught in our universities.

II. Review Of Literature

(George & Thomas, 2019) stated that without a doubt, AI is taking over many HR functions, but it does not mean that AI is taking over the HR jobs and replacing HRs, which is not true. There is a lot of administration related work for HRs which is significant and repetitive such as job posting, sourcing, screening, scheduling meetings and interview, preparing timesheets, recording and verifying accounts and other expenses. Of course, if this can be fully automated through AI, it will hugely benefit the HRs by relieving them from these routine tasks and ensuring they dedicate more time in strategic thinking, creativity, relationship building, emotional intelligence and better problem handling.

(Kullar, 2021) examined that the entire subject of Human Resource Management (HRM) is complex as it deals with unpredictable aspects of human behaviour, either individually, as a team or as an entire organisation. Human Resource managers find it difficult to predict various complex trends, like relations between aspects of employee satisfaction, employee turnover and manpower attrition, employee engagement and employee motivation levels and likewise. It is believed that “Human resources activities and their impact on the bottom line could—and should— be measured”. Earlier specialists in Organisation Development and

Analysis used various data-based tools to identify aspects requiring interventions to enhance productivity levels, employee satisfaction, work-life balance methods etc.

(Johansson, 2019) discussed that in today's globalized world, the traditional ways of how business is conducted are being challenged. There are no longer only local firms as competitors, but organizations have to compete constantly on a global level as new technology is making the world smaller. This implies that for an organization to stay up to date and keep a competitive advantage, embracing these new technological developments is key. HRM involves many different aspects, such as training employees, recruitment, employee relations and the development of the organization. Humans work as a source of knowledge and expertise which every organization can and should draw on. Therefore, acquiring and retaining these types of employees through recruitment play a big role today.

(Singh & Shaurya, 2021) studied that in human resources, the data sets have tendency to keep low concerning the dynamics of data science. The strength of employees in a large organization is trivial than to the number of purchases made by their customers. Additionally, most of the preferred consequences are rarely observed, such as employees fired for incompetency. Data science tools and techniques perform adversely when forecasting comparatively rare consequences. These have such critical outcomes for individuals and community that focuses on both distributive and procedural justice. Elaborating legal frameworks oblige how employers must go make those decisions.

(Premnath & Chully, 2020) summarized that AI in HR within companies functioning in India also have not seen an equal amount of growth and integration. In the HR domain, many professionals are still sceptical about AI as they doubt its ability to produce satisfactory results in areas which they believe predominantly require empathy and intuition. HR in many companies in India still believe that employees can only be dealt with effectively through human intervention as many decisions taken by HR in an organization are not just purely driven by data. The focus on aspects such as the ethicality of basing decisions only on AI and other technologies seems to be driving resistance.

(Matsa & Gullamaji, 2019) concluded that human resource management is the way of maintaining people in the organization and it is about dealing with people and their attitudes in the organization, it mainly deals with recruitment, selection, training, development etc.,(Margaret rouse),Human resource management mainly deals with compensation management and their payrolls, performance appraisal ,it encourages employees to do their best in the organization and to achieve a productivity so that company's goals and objectives as well as vision and mission can be achieved, employees should understand the importance of organization purpose and its existence in the society, it is the responsibility of every sub department in the organization to achieve organizational success and also human resource management mainly supports employee views towards organization.

(Time, oracle, 2018) found that AI can enable organizations to realize the full potential of talent management by creating an environment that meets employee needs and improves retention. Such technology can personalize career development, optimize succession planning, close skills gaps, and steer compensation strategy— supporting managers, leaders, and managers in developing and deploying talent, which in turn creates strategic advantages for the business. For example, AI can equip an employee with intelligent suggestions for courses or reading that will aid in day-to-day job duties. As a positive deviation from the traditional one-size-fits-all approach, employees will feel the difference in an experience that accounts for their personal goals, needs, and well-being, and organizations will find investing in employee growth and satisfaction easier and more effective.

(Yadav & Sharma, 2019) expressed that artificial Intelligence is defined as —an ideal intelligent machine that is a flexible rational agent that perceives its environment and takes actions that maximize its chance of success at some goal. In the Modern aged competitive industrial world, collecting the right and correct data and its analysis for the growth of companies in various terms is essential. Artificial Intelligence undoubtedly helps the corporate premises to work in more effective and efficient way to complete the task with almost negligible error. Artificial Intelligence is almost in use by various departments like Human Resources, Finance, Marketing and Production - Operations department.

(Abdeldayem & Aldulaimi, 2020) presumed that artificial intelligence is representing a real breakthrough in business management and will have a profound impact on the way employees work, especially in the human resources and employment departments. Artificial intelligence (AI) technologies have an impact on the management of human resources in a deferent way. For instance, design training and development plans for each employee from background processes, based on big data or data analytics related to employment practices in real time. Artificial intelligence refers to technology used to do a task that requires some level of intelligence to accomplish. In other words, a tool trained to do what a human can do.

III. Objectives Of The Study

The Objectives of the study are.

- 1 To Research Artificial Intelligence in Production Management.
2. To research the use of computer program at Praga Tools Limited.
3. Propose acceptable strategies for successful AI implementation in Praga Tools Limited.

Significance Of The Study

Artificial Intelligence

Expert systems form a major area of research in a hybrid field known as artificial intelligence (artificial intelligence). Artificial intelligence brings together computer scientists and engineers. Psychologists and linguists with workers in various areas of its potential application. Such a convergence of many backgrounds and viewpoints is necessary to grapple with three of the main unsolved problems of expert-systems research.

1. How can the user of such a system communicate the problem to the computer in a natural way. The problems of making computers deal with everyday. Language in spoken or even written form are enormous. A very large amount of implicit knowledge is needed for speech understanding. Pending fundamental developments in natural language understanding. Current expert systems assume perfect understanding and a willingness on the user's part to 'play the computer's game'.

2. How should the computer deal with the stated problem. This is also a fundamental question — it leads to further questions of the internal representation of knowledge. The organization of the selected representation to facilitate the search for a particular item and the addition of new items. And the use of common-sense general rules for reasoning. Deduction and problem-solving. These are, of course, the questions that psychologists have been asking themselves in relation to human thinking, planning and learning. One aspect of artificial intelligence research is the mutual benefit that can result from psychological research and work on 'knowledgeable' computers.

3. How can people control and check the operation of an expert system.

This is also a crucial question — if the user is presented only with a recommendation, without knowing the reason for that advice. Then the system is not really functioning as an aid, but more like a dictator. On the other hand, if the computer automatically presents all the decision points and subsidiary information used to produce the recommendation, this may be too tedious. The program, therefore, needs to adapt it self to the routine needs of its current user. But have the facilities to give a complete account of its 'reasoning' if that is required. In addition to these three basic questions, research on expert systems also links to work on computer vision and speech input and output as means of acquiring data and providing a response to requests; These requirements reinforce the search for new computer structures and software methods that underlie the current work on 'future generations' of information systems.

Statement of the Problem

The review of the literature presented above clearly states that there is no study exclusively on application of Artificial Intelligence in Production Management. Hence, it is felt that there is a need for study on application of Artificial Intelligence in Production Management As such; the study aims at a comprehensive analysis of implementations of Artificial intelligence systems in Production Management to bring out their effect on production efficiently in the context of changing IT scenario. In the changing complex and dynamic IT environment there is imminent need for an in - depth analysis touching upon Fuzzy logic, Knowledge representation, robotics, automation, and computer numerical control (CNC) machines and on various form of important machine tools for

Research Methodology

In order to achieve that above stated objectives both primary and secondary sources of information are used. The primary information has been collected by using structured schedule. It has also been collected through interviews had discussions with the executives concerned.

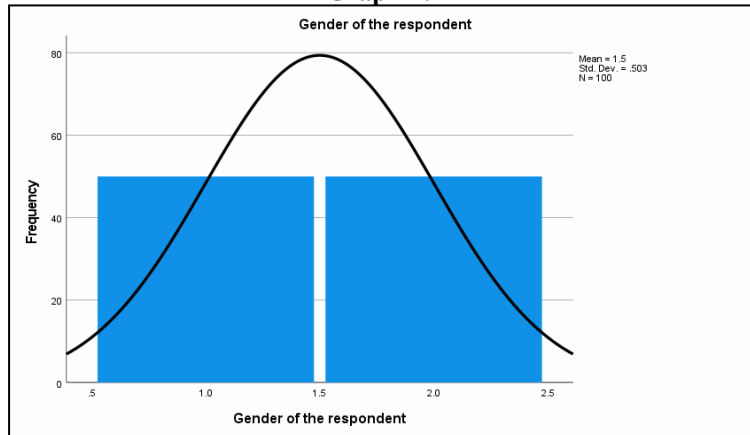
The secondary Data has been collected, from the records and reports of the company. The journals, magazines, new papers, websites have also been relied upon for information. The researcher has visited libraries of different Universities and Institutions of repute for the collection of information and literature on the topic.

IV. Data Analysis:

Table-4.1

Gender of the respondent					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	50	50.0	50.0	50.0
	Female	50	50.0	50.0	100.0
	Total	100	100.0	100.0	

Graph-4.1

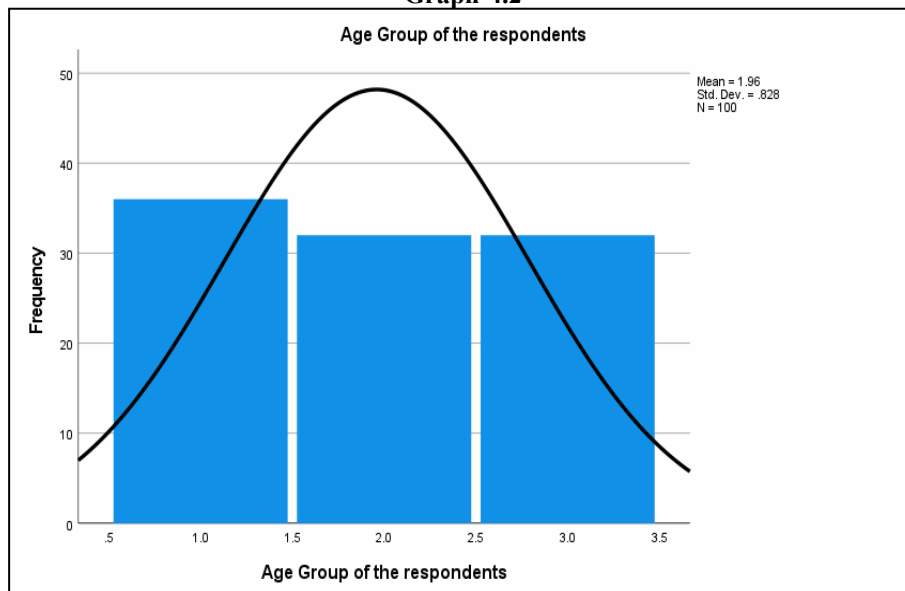


Above table includes the details of respondents as per their gender. As per above data, 50% are male respondents while 50% are female respondents.

Table-4.2

Age Group of the respondents					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30	36	36.0	36.0	36.0
	31-40	32	32.0	32.0	68.0
	41 and Above	32	32.0	32.0	100.0
	Total	100	100.0	100.0	

Graph-4.2

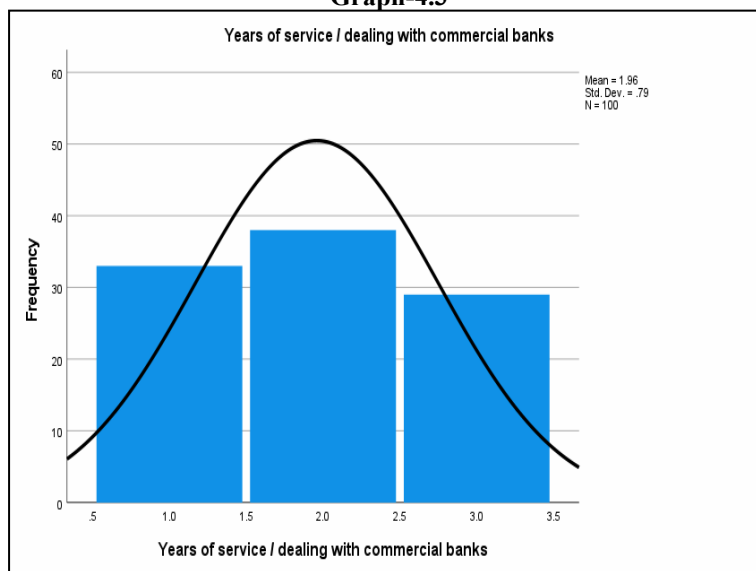


Above table includes the details of respondents as per their Age. As per above data, 36% respondents came from the age group of 20-30 years while 32% respondents are from the age group of 31-40 while 32% respondents are 41 and above age group.

Table-4.3

Years of service / dealing with commercial banks					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than a year	33	33.0	33.0	33.0
	1-5 years	38	38.0	38.0	71.0
	More than 5 years	29	29.0	29.0	100.0
	Total	100	100.0	100.0	

Graph-4.3

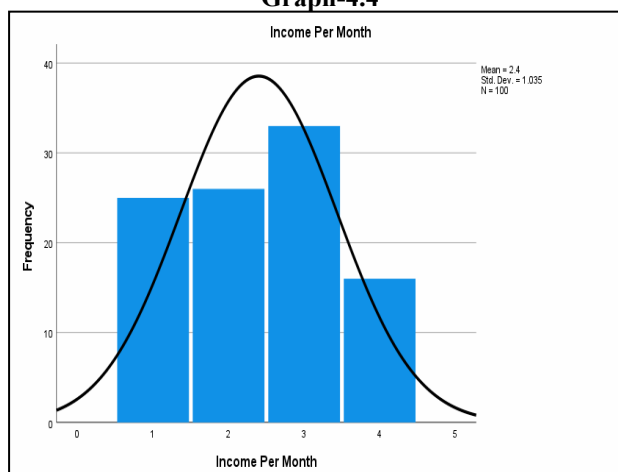


Above table includes the details of respondents as per their service / dealing years with commercial banks. As per above data, 33% respondents give service / dealing with commercial banks less than a year while 38% respondents give service / dealing with commercial banks 1-5 years and 29% respondents give service / dealing with commercial banks more than 5 years.

Table-4.4

Income Per Month					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21k-40k	25	25.0	25.0	25.0
	41k-60k	26	26.0	26.0	51.0
	61k-80k	33	33.0	33.0	84.0
	Above 80k	16	16.0	16.0	100.0
	Total	100	100.0	100.0	

Graph-4.4

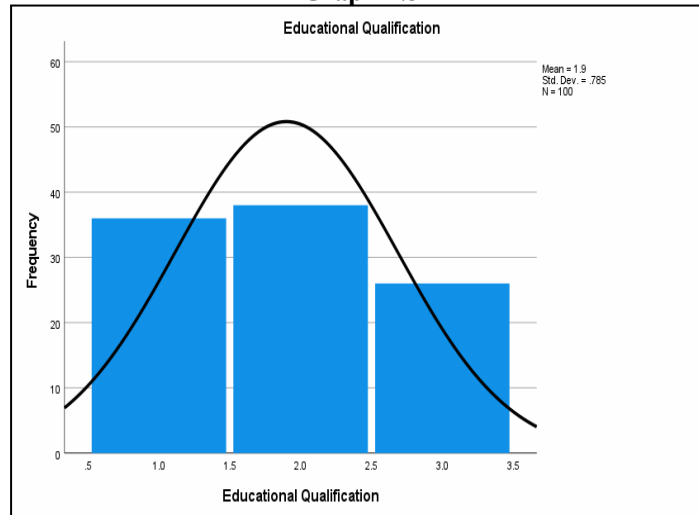


Above table includes the details of respondents as per their monthly income. As per above data, 25% respondents earn 21k – 40 k per month while 26% respondents earn 41k – 60 k per month while and 33% respondents earn 61k – 80k per month while 16% respondents earn more than 80 k per month.

Table-4.5

Educational Qualification					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Graduate	36	36.0	36.0	36.0
	Masters	38	38.0	38.0	74.0
	Illiterate/below 12th	26	26.0	26.0	100.0
	Total	100	100.0	100.0	

Graph-4.5

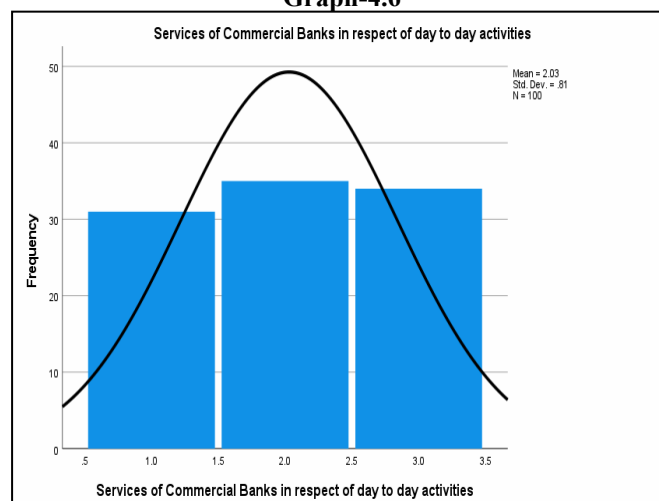


Above table includes the details of respondents as per their educational qualifications. As per above data, 36% respondents are graduates while 38% respondents has been completed their masters and 26% respondents are Iliterate/ below 12th.

Table-4.6

Services of Commercial Banks in respect of day to day activities					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Satisfied	31	31.0	31.0	31.0
	Dissatisfied	35	35.0	35.0	66.0
	Neutral	34	34.0	34.0	100.0
	Total	100	100.0	100.0	

Graph-4.6



Above table includes the details of respondents as per their Services of Commercial Banks in respect of day to day activities. As per above data, 31% respondents are satisfied while 35% respondents are dissatisfied and 34% respondents are neutral.

V. Major Findings And Discussion

The empirical results from the information analysis section are listed below.

1. According to the dissertation scholar's examination of financial factors in this research work, the returns on assets ratios is favourably associated to liquidity, competitiveness, and solvency position ratio, while it is adversely connected to asset values.
2. According to this consumer satisfaction surveys, the three key elements that contribute to consumer satisfaction in indian commercial banks are expediency, effectiveness, the bank's workforces, and also the bank's physical setting. These variables have been linked to total customer satisfaction in a favourable and meaningful way.
3. An examination of employee engagement in indian commercial banks disclosed that job-specific variables, management behaviour, working conditions, training and developments opportunities, interpersonal relationships, and remunerations and some other advantages are all important factors that influence workers satisfaction. All of the aforementioned characteristics have a favourable and considerable impact on total employee satisfaction in Indian commercial banks.
4. According to the study scholar's findings, there is no significant variation in customer and staff satisfaction levels based on the geographical placement of branch network in various parts of the nation.
5. Based on the findings of the preceding research and analysis, it has been determined that there is still a considerable disparity in customer and staff satisfaction levels based on banker ownership arrangements in India.
6. According to the scholar's studies, a comparison of public, corporate, and international banks in the form of overall consumer satisfaction indicated that public banks were all on pinnacle in terms of consumer satisfaction, with the exception of tangibility variables like ambience, infrastructural facilities, hygiene, and destination. Workers of international banks are much more pleased with work organization, status, self - determination while performing routine tasks, responsibilities and authority, adaptivity to stabilise life and work problems, remuneration as well as other economic advantages, apart from job security, according to a contrasting study of public, commercial, and international banks in terms of overall staff morale. In terms of managerial behaviour and workplace atmosphere, public banks dominate, whereas private banks leads in terms of learning & growth possibilities and interpersonal relationships.
7. According to the researcher scholar's findings, there is a considerable variance in consumer satisfaction levels across consumers of various ages, work fields, occupations, and yearly income groupings. Nevertheless, there really is no substantial variation in consumer satisfaction levels related to gender differences or educational qualifications.
8. That the study researcher also examined and discovered that there is indeed a substantial variation in employee happiness levels across various age groups and employment tenures, but no disparity in worker satisfaction levels owing to gender differences.
9. The study researcher also said that, based on a review of corporate social responsibilities in Indian commercial banks, it was discovered that public banks dominate in CSR, whereas international banks lag significantly behind either public or private banks in "CSR". Banking also do well in social welfare initiatives, whereas their lowest effectiveness is in CSR processes related to female's welfare.
10. The study researcher also discovered that human factors are more vital and essential than financial factors. Corporate social responsibilities, client satisfaction, and staff satisfaction are the three aspects of human aspect that were considered to be more significant and important than consumer satisfaction and staff morale. When evaluating customer and staff happiness in banks, it's been shown that client satisfaction is much more responsive and crucial than staff morale.
11. That the study researcher also noted that the entire performances of the banks in India has indeed been assessed utilising both the financially and human components of banks. Banks that perform much better in terms of human resources also perform much better globally. Corporate social responsibilities, customer happiness, staff satisfaction, budgeting process, human aspect, and entire bank performance were all proved to have a +tive and substantial relationships.

Thus, depending on the methodologies used in the analytical section and the previous chapters, it has been determined that current research on the production of Indian banks really isn't thorough and have a very restricted scope.

They didn't look at all of the scheduled commercial banks, instead focusing on one or 2 ownership categories (public sector banks, commercial banks, and international banks) or some few banks from each of these categories.

Furthermore, the majority of the research only looked at a short amount of time. Earlier studies only looked at a small amount of productivity measures and factors, therefore our study will be considerably wider.

Future research should concentrate on tracking relative changes to analyse efficiency trends in Indian commercial banks. This will generate basic data in the desired structure and quantity, which will not only be useful to key decision - makers including bank administrators but will also aid in the development of a synchronized execution evaluation plan.

This aspect's examination would help to clarify all concepts of worker productivity, branch output, and overall performance. Academics, banks, and government officials will all benefit from the research of this inquiry. They may benefit from the findings and recommendations if they refer to this investigation and focus in the future.

Academics and research scientists are eligible for rewards for academic reasons. The banks, too, if they believe they can carry out the proposals for improving labour, branch, and other components' performance and efficiency.

In the financially services business, particularly in banking activities, globalisation increased management's need for performance evaluation.

This article presents a comprehensive approach for assessing the banking system's efficiency and productivity using both financially and non-financially performance metrics.

The constructed models was uses to identify the performances requirements, and the model was used to evaluate the efficiency of Indian commercial banks.

In banking, the human factor is clearly more essential than the financial side, according to the research. Overall good achievers are banks that thrive in 3 human factor: "corporate social responsibility", "customer happiness", and "employee satisfaction".

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