

A STUDY ON ADOPTION AND APPLICATION OF HR ANALYTICS AMONG HR PROFESSIONALS WITH REFERENCE TO DLK TECHNOLOGIES

Submitted in partial fulfilment of the requirements for the award of
MASTER OF BUSINESS ADMINISTRATION

by

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SCHOOL OF MANAGEMENT STUDIES

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited with Grade "A" by NAAC | 12B Status by UGC | Approved by AICTE

JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119

MAY 2023



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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the Bonafide work of **KEERTHIVASAN S 41410169** who carried out the project entitled "**A STUDY ON ADOPTION AND APPLICATION OF HR ANALYTICS AMONG HR PROFESSIONALS WITH REFERENCE TO DLK TECHNOLOGIES**" under my supervision from January 2023 to April 2023.

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Sub: Letter of Project Acceptance

This is to certify that **MR KEERTHIVASAN S (REG NO: 41410169)** that final year student of has accepted his Project Work duration from **05th January 2023** to **01st May 2023** under the domain "**Human Resource**". During the internship, all information and data collected from you should be kept confidential.

Topic: A study on Adoption and Application of HR ANALYTICS among HR PROFESSIONALS with reference to DLK TECHNOLOGIES.

We appreciate your interest in **DLK CAREER DEVELOPMENT**

Yours Sincerely,


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DECLARATION

I **KEERTHIVASAN S (41410169)** hereby declare that the Project Report entitled “**A STUDY ON ADOPTION AND APPLICATION OF HR ANALYTICS AMONG HR PROFESSIONALS WITH REFERENCE TO DLK TECHNOLOGIES**” done by me under the guidance of **Dr. DHIVYA SATHISH ,MBA.,M.phil., PH.D.**, is submitted in partial fulfilment of the requirements for the award of Master of Business Administration degree.

DATE: 06/05/2023

PLACE: CHENNAI

A handwritten signature in black ink, appearing to read 'Keerthivasan S', with a horizontal line drawn underneath it.

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ABSTRACT

This study explores the adoption and application of HR Analytics among HR professionals with specific reference to DLK Technologies. The study aims to understand the factors that influence the adoption of HR Analytics and the extent to which HR Analytics is used in decision-making processes. A mixed-methods approach is utilized, involving a survey of HR professionals at DLK Technologies and follow-up interviews with select participants. The findings reveal that while the majority of HR professionals are aware of HR Analytics, only a small percentage have fully adopted it. Factors influencing adoption include the availability of data and resources, organizational support, and the perceived usefulness of HR Analytics. The study also identifies a range of applications for HR Analytics, including talent management, recruitment, and employee engagement. However, challenges to effective application are also noted, such as a lack of skills and knowledge among HR professionals and the complexity of HR Analytics tools. The study concludes with recommendations for HR professionals and organizations to effectively adopt and apply HR Analytics to enhance HR decision-making processes.

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LIST OF ABBREVIATIONS

S.NO	ABRREVATION	EXPANSION
1.	UTAUT	UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY
2.	SPSS	STATISTICAL PACKAGE FOR SOCIAL SCIENCES
3.	SAS	STATISTICAL ANALYSIS SOFTWARE
4.	AC	ANALYTICAL COMPETENCIES
5.	SI	SOCIAL INFLUENCE
6.	PE	PERFORMANCE EXPECTANCY
7.	EE	EFFORT EXPECTANCY
8.	VIF	VARIANCE INFLATION FACTOR
9.	FC	FACILITATING CONDITIONS

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Human Resource (HR) analytics is a data-driven approach to managing people at work. It involves using data and analytical methods to understand, measure, and improve HR processes, strategies, and outcomes. HR analytics has become increasingly popular among HR professionals in recent years as a way to gain insights into workforce trends, identify potential problems, and make informed decisions about HR policies and practices.

The adoption and application of HR analytics have several benefits for HR professionals. By analysing HR data, HR professionals can identify patterns and trends, predict future outcomes, and make data-driven decisions that are more likely to be successful. For example, HR analytics can be used to identify areas of high turnover and to develop retention strategies, to analyse employee engagement levels and to develop initiatives to improve engagement, and to identify skills gaps and to develop training programs to address them.

However, the adoption and application of HR analytics also come with challenges. HR professionals need to have the necessary skills to analyse and interpret HR data, and they need to ensure that data privacy and security are maintained. In addition, HR professionals need to be able to communicate the insights gained from HR analytics effectively to key stakeholders, including senior management and employees.

Despite these challenges, the adoption and application of HR analytics are likely to continue to grow in importance in the coming years as HR professionals seek to leverage data to make more informed decisions and to improve the effectiveness of HR policies and practices. As such, it is important for HR professionals to develop the necessary skills and knowledge to effectively use HR analytics to support organizational objectives.

1.2 BACKDROP OF HR ANALYTICS

HR Analytics, also known as People Analytics, is the use of data analytics to make strategic decisions related to human resources (HR) and workforce management. It involves collecting, analyzing, and interpreting data to gain insights into employee behavior, performance, and overall productivity.

The concept of HR Analytics has been around for several decades, but it has gained more popularity in recent years due to advancements in technology and an increased focus on data-driven decision-making in organizations. The use of HR Analytics has become particularly important as businesses have grown more complex and competitive, and the need for accurate and timely insights into workforce trends and performance has become more critical.

HR Analytics can be applied to a wide range of HR functions, including recruitment, talent management, employee engagement, retention, and development. By leveraging data, HR teams can identify areas for improvement, optimize HR processes, and make data-driven decisions to improve overall business performance.

1.3 ANALYTICS AND LEVELS OF ANALYTICS

Analytics refers to the use of data and statistical methods to gain insights and make informed decisions. It involves collecting, analysing, and interpreting data to identify patterns, trends, and relationships that can be used to improve business performance.

In the context of HR, there are several levels of analytics that organizations can use to gain insights into their workforce and make informed decisions:

Descriptive Analytics: Descriptive analytics involves using data to describe what has happened in the past. It provides a historical perspective on workforce trends and can be used to identify patterns and trends. Examples of descriptive analytics include headcount reports, turnover analysis, and performance metrics.

Diagnostic Analytics: Diagnostic analytics involves using data to understand why something happened in the past. It involves identifying the root causes of workforce

trends and can be used to identify areas for improvement. Examples of diagnostic analytics include regression analysis, correlation analysis, and predictive modelling.

Predictive Analytics: Predictive analytics involves using data to make predictions about future workforce trends. It involves analysing historical data to identify patterns and using that information to make predictions about future behaviour. Examples of predictive analytics include workforce forecasting, attrition modelling, and talent pipeline analysis.

Prescriptive Analytics: Prescriptive analytics involves using data to make recommendations about how to improve business performance. It involves using a combination of historical data, predictive models, and business rules to make recommendations about what actions to take. Examples of prescriptive analytics include workforce optimization, talent development planning, and succession planning.

Each level of analytics builds on the previous level, with prescriptive analytics being the most advanced and requiring the most sophisticated data analysis techniques. By leveraging analytics, HR teams can gain valuable insights into their workforce and make data-driven decisions that improve overall business performance.

1.4 CONCEPT AND DEFINITION OF HR ANALYTICS

Techniques to make data-driven decisions related to human resources (HR) and workforce management. It involves collecting, analysing, and interpreting data to gain insights into employee behaviour, performance, and overall productivity.

The primary objective of HR Analytics is to optimize HR practices and policies, improve employee engagement and retention, and align HR strategies with overall business objectives. It can help organizations to identify patterns, trends, and relationships in workforce data, which can be used to make informed decisions that positively impact the bottom line.

HR Analytics can be applied to various HR functions, including recruitment, talent management, employee engagement, retention, and development. By leveraging data, HR teams can identify areas for improvement, optimize HR processes, and make data-driven decisions to improve overall business performance.

The use of HR Analytics has become increasingly popular in recent years due to advancements in technology and an increased focus on data-driven decision-making in organizations. With the growing importance of HR Analytics, businesses can gain a competitive edge by leveraging the power of data to drive workforce optimization and business success.

1.5 TRANSCENDENCE OF HR ANALYTICS OVER HR METRICS

HR Analytics and HR Metrics are both important tools for HR professionals to measure and monitor various aspects of their workforce. However, HR Analytics goes beyond HR Metrics in several ways.

HR Metrics are typically quantitative measures of HR activities, such as headcount, turnover rate, or time-to-fill. These metrics provide valuable information about specific HR functions but don't necessarily provide insight into the underlying causes of workforce trends or how to address them. Metrics are essential for tracking HR performance, but they don't tell the whole story.

HR Analytics, on the other hand, involves analysing and interpreting data to gain insights into workforce behaviours and performance. It goes beyond the numbers to identify patterns and relationships that can help organizations make more informed decisions. HR Analytics can help organizations understand why certain trends are occurring, predict future workforce trends, and prescribe actions to improve performance.

HR Analytics can be used to optimize HR processes, identify high-performing employees, and develop strategies to retain top talent. It can also help organizations identify skill gaps and develop training programs to improve workforce skills and productivity.

In summary, while HR Metrics provide valuable data on HR functions, HR Analytics takes data analysis to the next level by providing insights into the underlying causes of workforce trends and offering strategies to address them. HR Analytics is an essential tool for HR professionals to help organizations optimize their workforce and drive business success.

1.6 HISTORICAL EVOLUTION OF HR ANALYTICS

The concept of HR Analytics has been around for several decades, but its evolution can be traced back to the early 20th century when Frederick W. Taylor introduced the concept of scientific management. Taylor believed that business processes could be optimized through scientific methods, and this idea was later applied to HR practices.

In the 1950s and 1960s, the use of HR data and statistical methods for decision-making began to gain popularity. The first HR information systems were developed during this time, which enabled organizations to collect and analyse data related to their workforce.

In the 1980s and 1990s, advancements in technology and the growth of data analytics led to the development of more sophisticated HR information systems. This led to the emergence of HR Metrics, which provided organizations with quantitative measures of HR activities such as headcount, turnover rate, and employee satisfaction.

In the 2000s, the concept of HR Analytics began to gain more popularity as organizations started to recognize the potential of data-driven decision-making in HR. The emergence of cloud-based HR software and the growth of big data analytics further accelerated the adoption of HR Analytics.

Today, HR Analytics has become an essential tool for HR professionals to optimize HR practices, improve employee engagement and retention, and align HR strategies with overall business objectives. The use of HR Analytics is expected to continue to grow in the future, as organizations recognize the value of data-driven decision-making in HR and workforce management.

1.7 GROWING IMPORTANCE OF HR ANALYTICS APPLICATIONS

The growing importance of HR Analytics applications can be attributed to several factors:

Data-driven decision-making: Organizations are increasingly relying on data-driven decision-making to optimize their workforce and drive business success. HR

Analytics provides valuable insights into workforce behaviours and performance, enabling HR professionals to make informed decisions about talent acquisition, retention, and development.

Cost savings: HR Analytics can help organizations reduce costs associated with turnover, absenteeism, and low productivity. By identifying patterns and trends in workforce data, HR Analytics can help organizations develop targeted interventions to address these issues and improve overall performance.

Improved employee engagement and retention: HR Analytics can help organizations identify the factors that drive employee engagement and retention. By developing targeted strategies to improve employee satisfaction and motivation, organizations can reduce turnover and retain top talent.

Talent acquisition: HR Analytics can help organizations identify the skills and characteristics of high-performing employees, enabling them to develop targeted recruitment strategies to attract top talent.

Compliance: HR Analytics can help organizations ensure compliance with labor laws and regulations. By monitoring workforce data, organizations can identify potential compliance issues and take corrective action to address them.

Competitive advantage: HR Analytics can provide organizations with a competitive advantage by enabling them to make more informed decisions about their workforce. By optimizing HR practices and aligning them with overall business objectives, organizations can improve their overall performance and gain a competitive edge.

In summary, the growing importance of HR Analytics applications can help organizations optimize their workforce and drive business success by enabling data-driven decision-making, reducing costs, improving employee engagement and retention, attracting top talent, ensuring compliance, and gaining a competitive advantage.

1.8 CHANGES IN HUMAN CAPITAL TRENDS AND SKILLS OF HR PROFESSIONALS

Human capital trends and skills of HR professionals have evolved over time to keep pace with changes in the workplace and society. Some key changes in human capital trends include:

Emphasis on employee well-being: There is a growing recognition that employees' well-being is critical to their productivity and job satisfaction. HR professionals are increasingly focusing on promoting work-life balance, mental health, and creating a positive workplace culture.

Remote work: The COVID-19 pandemic has accelerated the trend towards remote work, making it necessary for HR professionals to adapt to managing a virtual workforce. HR professionals need to develop skills in managing remote teams, ensuring employee engagement, and maintaining company culture in a remote setting.

Diversity, Equity, and Inclusion: Organizations are recognizing the importance of creating a diverse, equitable, and inclusive workplace. HR professionals need to have the skills to promote diversity, eliminate bias, and ensure fair hiring practices.

Technology: Technology is rapidly changing the workplace, and HR professionals need to keep up with the latest tools and trends. HR professionals need to have skills in data analysis, social media management, and the use of HR technology tools.

As human capital trends have evolved, the skills required of HR professionals have also changed. Some essential skills for HR professionals today include:

Communication: HR professionals need strong communication skills to communicate effectively with employees, management, and stakeholders.

Emotional Intelligence: HR professionals need to be empathetic and emotionally intelligent to support employees' well-being and manage conflicts in the workplace.

Strategic thinking: HR professionals need to be able to think strategically and develop long-term plans to support the organization's goals.

Data Analysis: HR professionals need to be able to use data to make informed decisions, measure the effectiveness of HR programs, and identify areas for improvement.

Adaptability: HR professionals need to be adaptable and able to respond quickly to changing workplace dynamics and human capital trends.

1.9 ANALYTICAL COMPETENCIES – A MUST-HAVE FOR HR PROFESSIONALS

Analytical competencies are becoming increasingly important for HR professionals to have in order to succeed in their roles. Here are some reasons why analytical competencies are a must-have for HR professionals:

Data-driven decision making: With the rise of HR technology, HR professionals now have access to a wealth of data that can be used to make informed decisions. Analytical competencies allow HR professionals to effectively collect, analyze and interpret data to make informed decisions that benefit both the organization and its employees.

Measuring the effectiveness of HR programs: HR professionals need to be able to measure the effectiveness of their HR programs, such as employee engagement initiatives or training programs. Analytical competencies allow HR professionals to track key metrics, evaluate the success of their initiatives, and make data-driven improvements.

Understanding workforce trends: HR professionals need to have a deep understanding of the workforce and the trends that are shaping it. Analytical competencies allow HR professionals to identify patterns and trends in workforce data, such as demographic changes or shifts in skill requirements that can inform HR strategies and decision making.

Aligning HR strategies with business objectives: HR professionals need to be able to align their HR strategies with the broader business objectives of the organization.

Analytical competencies allow HR professionals to identify areas where HR can make a strategic impact on the organization, such as talent acquisition or workforce planning.

Proactively identifying and addressing workforce issues: Analytical competencies allow HR professionals to proactively identify potential workforce issues, such as high turnover or low engagement, and develop solutions to address them before they become bigger problems.

In summary, analytical competencies are a must-have for HR professionals because they allow them to make data-driven decisions, measure the effectiveness of HR programs, understand workforce trends, align HR strategies with business objectives, and proactively identify and address workforce issues.

1.10 NEED FOR STUDY

Due to its emergent nature, HR analytics came into the research limelight very recently. There are no significant studies to understand the adoption of HR analytics at the individual level. Though the concept of adoption of technology innovation is regarded as universal (Wejnert, 2002), several factors are different in each country's context. Majority of studies on HR technologies and information systems were based on developed nations (Panayotopoulou, Vakola, & Galanaki, 2007). Countries in the Asian region have got limited exposure to these studies. In the case of Indian context also, there is a dearth of comprehensive studies on the HR technologies, particularly HR analytics.

Reviews of the research agenda on HR analytics have stressed the need for carrying out large-scale, expensive and ambitious sample surveys (Wall & Wood, 2005) and longitudinal quantitative analysis (Guest, 2011). On these premises, an attempt is made to verify the current state at which the HR professionals are in terms of their analytical competencies, and to assess how readily HR professionals are adopting HR analytics, and also, to investigate the extent of HR analytics applications in the organisations.

1.11 STATEMENT OF THE PROBLEM

HR analytics roles are increasing in India as the organisations are increasingly turning towards the usage of analytics in the HR domain. There is a growing demand

for HR specialists who can handle the analytics roles in HR area. Companies aim at increasing overall organisational effectiveness by using talent analytics in place. Studies could establish linkage between HR analytic culture and overall business performance. A CIPD study in 2018 found that, globally, 65 per cent of people who work in a strong HR analytic culture found their business performance to be strong. The importance of increasing acceptance towards enabling a people analytics-friendly culture is evident through this. At the same time, only 32 per cent of those in weak HR analytic cultures reported strong business performance (Houghton, 2018). Promoting strong people analytics culture is essential in this context.

With the increased emphasis placed on analytics in the domain of HR, organisations want to adopt HR analytics and gain strategic advantage. A key element for this successful adoption is the readiness of HR professionals. To what level HR professionals are proficient in analytical skills is going to facilitate the usage of HR analytics. As cited in earlier reports, though there is some improvement in the analytical skills of HR professionals, it is not considerable enough to meet the requirements. Thus, it becomes imperative to understand what factors at the individual level are influencing the HR professionals to adopt HR analytics. It is to be examined whether the issues are more related to the demographics and efficacy levels, or any other conditions prevalent around the HR professionals. Besides, HR analytic applications across the organisations is not the same. So, to what extent the organisations are applying HR analytics to gain an advantage is yet to be known. In this context, the present study attempts to study the adoption and application of HR analytics among HR professionals by examining the demographic and psychographic factors. In this process, it is attempted to know whether analytical competencies or the adoption of HR analytics at the HR professional's level are reflected in the overall application of HR analytics in the organisations.

1.12 OBJECTIVES OF THE STUDY

The primary purpose of the study is to understand the adoption and applications of HR analytics among HR professionals in India. In accordance with this, the following objectives are set up.

- To conceptualise analytical competencies essential for HR professionals;
- To assess the level of analytical competencies among HR professionals;

- To identify the level of adoption of HR analytics among HR professionals;
- To investigate the extent of application of HR analytics by the HR professionals

1.13 SCOPE OF THE STUDY

- Considering the objectives of the study, time, and proximity considerations, the study is confined to HR professionals working.
- Generally, HR analytics framework works well in organisations with a considerable size of human resources. Hence, to participate in the study, organisations having at least 500 or more employees were only considered.
- The study is limited in understanding the adoption of HR analytics within the framework of UTAUT, as this theory is well-grounded in explaining the technology adoption behaviours.
- The analytical skills of HR professionals and the application of HR analytics are studied based on expert opinion on widely accepted variables and previously available studies.

1.14 SIGNIFICANCE OF THE STUDY

Theoretically, the current study would pave the way to use UTAUT as a support tool to study the adoption of HR analytics or any such technologies by employees. The study will also guide in developing a framework to learn about the analytical competencies of HR professionals and the applications of HR analytics essential for carrying out studies in organisations.

Practical and managerial implications of the present study will assist organisations to realise the state of adoption of HR analytics among HR professionals across the industries. These implications would enable them to compare, enhance, and benchmark their HR analytics practices. A light on the analytical competencies of HR professionals will guide the organisations to find the areas in which the HR professionals can be trained to be capable to use HR analytics regularly. Also, the organisations can look forward to moving to the next level of analytical adoption.

1.15 INFORMATION TECHNOLOGY INDUSTRY IN INDIA

In India, the first IT Company was established in 1960s. The IT industry in India has accentuated its development by concentrating on the export of software and IT enabled services. This industry has linked the Indian economy to the global economy with substantial linkages to local, regional and national economies. The IT industry has produced social and cultural ramifications in the country. It has brought global image to India and prepares it as a rising economic power in the world. For instance, "In a report in the New York Times, Edward A. Gargano noted that the Indian software industry is breaking new ground, with the Indian operations of Motorola achieving world-class quality certification of SEI level 5. Worldwide, only the IBM project at NASA has achieved this unique distinction. The maturity of the Indian software industry in terms of quality can be measured from the fact that already 50.

Indian software companies have acquired ISO 9000 certification and about 97 more companies are in the pipeline. The Indian software industry has the maximum number of ISO 9000 certified companies in the world for the software sector. The quality standards in Indian software companies are so high that users are choosing to outsource to India, mainly on quality considerations.”¹

The IT industry has stimulated transformation of the urban middle classes people of India. The Indian IT industry exemplifies the market forces due to expanding market opportunities, exponential growth prospects, access to the latest technology, enhanced income, and good corporate governance over the years. The Indian information technology industry is influencing the global business on the following aspects:

1. Increasing E-enablement of businesses.
2. Greater interaction between customers and marketing channels.
3. Rapid convergence of the IT, telecommunication and entertainment medium.
4. Proliferation of numerous mobile devices, resulting in a slow decline of the personal computers.
5. Greater cost cutting initiatives and de-risking of businesses will result in a proliferation in outsourcing activities.

6. Application Service Providers will revolutionize the software industry by changing the pricing dynamics, and the rapid generation of data and the rising importance of the same will propel the growth in the storage segment.

The Government of India has introduced the new software policy of 1986 in order to promote software industry. In the policy discussions, it emerged that there is a need for creating a centralized house infrastructure scheme. According to NASSCOM, more than 158 companies out of 500 companies outsourced their software requirements to India. The international companies operating in India are IBM, Microsoft, Novell, Oracle, Fujitsu, Motorola, Digital and Hewlett Packard. The manufacturers like Philips, General Electric, IBM, Reebok, Fujitsu, British Aerospace, General Motors and Sears are using the software companies in India due to second largest English-speaking scientific manpower pool in the world.³

IT sector is chosen as the vital career option by the young educated Indians. The IT people working in India or abroad as engineers, BPO workers, and others employed in IT related occupations are the workforce of highly educated, well paid, mobile, and closely linked into the global services economy. The IT industry has changed their lifestyles, family structure, self-identity and that is linked to upward socio and economic development of people working in this industry. This industry occupies a vital position in India's developmental agenda and it depends on State supported investments in higher education.

The software exports from India grew from \$4 million in 1980, generated by 21 companies to \$16,941,500 (excluding ITES), generated by 6,500 companies. This not only increased the number of companies in operation but also improved the technological sophistication of the software development work done within India as more and more foreign companies entered the scene.

India's GDP is growing at a massive rate of 8.9 percent during 2010-11. It is expected that the share of IT/ITES industry in this GDP will be 6.1 percent as against 1.2 percent of 1998. For the past 10 years, GDP of India has grown on an average 6-7 percent every year. The revenue of IT/ITES of India for 2010 is 71.3 billion USD compared to 6 billion USD in 2000. The growth in number of employees for the past ten years has been 26 percent, making it largest employer in the organized private sector. The direct employment by this sector is 2.3 million. In the total exports, 26

percent is the share of this sector for 2010 as compared to 4 percent in 1998 in India.

The IT industry has recorded phenomenal growth over the last decade. The compounded annual growth rate of the Indian IT services industry has been over 50 percent during 1992-2001. The software sector in India has grown at almost double the rate of the US software sector. The software industry in India accounted for \$8.26 billion in 2001 while it was \$100 million 10 years ago.

The IT industry is contributing Rs.63 billion in 1994-95 in the GDP of India and it has increased to as Rs.1276 billion in 2004-05. The IT/ITES industry has been growing at a outstanding pace since 2001-02. The total IT/ITES exports and domestic industry revenue is estimated as US \$ 10.2 billion in 2001-02. It has reached to US \$ 58.7 billion in 2008-09, the CAGR of about 26.9 percent. IT/ITES revenue of Indian software and services industry have contributed from 74.5 percent in 2001-02 to 78.9 percent in 2008-09. They are estimated as US \$ 7.6 billion to US \$46.3 billion in 2008- 09 with a CGAR of 28.6 percent. The contribution of ITES/BPO exports has increased from US \$ 1.5 billion in 2001-02 to US \$ 12.7 billion in 2008-09 a CGAR about 39.2 percent. BPO now accounts about 27 percent of total exports. However, the fastest growing segment is software products. It is growing at a CGAR of 48.5 percent. The domestic market is also significant in the contribution of total revenue of IT industry. The revenue from the domestic software and services market is estimated to have grown from US \$ 2.6 billion in 2001-02 to US \$ 12.4 billion in 2008-09 with a CGAR of about 22.2 per cent.

The Government of India and the State Governments gives priority to IT and ITES industries which causes this sector to flourish and also it enables the country to gain formidable position in offshore services in the world. The Government of India provides fiscal incentives to this sector by establishing Export Oriented Units (EOU), Software Technology Parks (STP), and Special Economic Zones (SEZ).

Indian economy has gained a lot from the development of IT/ITES sector. It is observed that out of every one job created in this sector, indirectly 4 additional jobs are created, 75 percent is for those who are SSC/HSC or less qualified, 15.85 billion spent by this sector in the domestic economy generated an additional output of 15.5 billion. India competes with the global market and IT/ITES companies have adopted

high quality standards. The Indian IT products are becoming a quality brand. Listing of Indian IT/ITES companies in various global stock exchanges, which requires abiding by strict global accounting norms, has helped build a strong image of companies and sector outside India. Indian IT/ITES industry is taking a key role in different acquisitions and mergers of overseas companies.

MAJOR IT HUBS IN INDIA

Ranking	City	Description
1	Bangalore	Popularly known as the capital of the Silicon Valley of India is currently leading in Information Technology Industries in India. It leads the pack of outsourcing destinations in the world. Recently the city has become an international hub for software R&D as well
2	Chennai	It is the second largest exporter of Software in India (City-wise). Chennai is the largest center for TCS, Cognizant, HCL, L&T Infotech and second largest for Infosys and Wipro. Almost every major software company in India has a presence in Chennai.
3	Hyderabad	Hyderabad is called as Cyberabad. Hyderabad is the head- quarters of Microsoft India and many multinational companies. Currently the city is the third largest exporter of software after Bangalore and Chennai.
4	Pune	Pune, a major industrial point in India. It is also referred to as Education Hub of India. It was declared as Gamma-Global City recently. As one of the largest cities in India, and as a result of its many colleges and universities, Pune is emerging as a prominent location for IT and manufacturing companies to expand.

5	Kolkata	The state of West Bengal has promoted foreign direct investment, which has mostly come in the software and electronics field. Kolkata is a major hub for the IT (Information Technology) industry in India. With construction underway of New Town at Rajarhat and extension of Salt Lake's Sector-V, Kolkata is rapidly turning into a preferred IT/BPO destination.
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The major IT hubs in the country with their ranking given in the table shows that Bangalore, Chennai, Hyderabad, Pune and Kolkata have occupied first, second, third, fourth and fifth places respectively. The development of this sector has not limited itself to Tier-I cities like Bengaluru, Chennai, Hyderabad or NCR. It is going deep into Tier-II or III cities. In Bhubaneswar, a Tier-III city where all 4 major Indian IT companies: Infosys, Satyam, TCS and Wipro are present, to promote this sector, SEZs are being built around with improvement in roads, retail, entertainment and housing facilities. The ratio of employees' technical to non-technical is 80:20, 4 percent come from economically backward class, while 58 percent of total employment is from Tier-II/III cities, and 30 percent are in the age group of 18-25 years. These data show how this sector is penetrating the national economy and enhancing it right from the root.

1.16 COMPANY PROFILE



INTRODUCTION OF THE COMPANY

DLK Career Development Centre is part of DLK Technologies PVT Ltd is one of the leading Research & Development Centre in Chennai. We introduce ourselves as

one of the most credible Software Development Products and also Faster Development organizations in software project development & Technology Training. We are a qualitative partner to provide complete Business Solution in People consulting Services and Talent Hiring.

We Provide Best inplant/Internship training for students to enhance their knowledge on Software Training, Hardware Training and Networking Training.

We also give them exposure in real time industry knowledge Training Depends upon Various Departments. Our Trainers are delivering, a relevant and guided learning experience that combines lecture and practice to deliver what you need to know about a product or technology.

Established in the year 2013, Dlk Career Development in, Chennai is a top player in the category Computer Hardware Training Institutes in the Chennai. This well-known establishment acts as a one-stop destination servicing customers both local and from other parts of Chennai. Over the course of its journey, this business has established a firm foothold in its industry. The belief that customer satisfaction is as important as their products and services, have helped this establishment garner a vast base of customers, which continues to grow by the day. This business employs individuals that are dedicated towards their respective roles and put in a lot of effort to achieve the common vision and larger goals of the company.

In the near future, this business aims to expand its line of products and services and cater to a larger client base. In Chennai, this establishment occupies a prominent location in Vadapalani. It is an effortless task in commuting to this establishment as there are various modes of transport readily available. It is at Arcot Road, Opposite Forum Mall, which makes it easy for first-time visitors in locating this establishment. It is known to provide top service in the following categories: Computer Training Institutes, Tally Training Institutes, Institutes for Distance Education, Institutes, SAP Training Institutes, Computer Software Training Institutes, Computer Training Institutes for Java, AUTOCAD Training Institutes.

We Also provide training and projects guidance for all different BE and ME students as well as for BSc, BCA, MCA, MSC students to their final year projects on all major technologies with IEEE or Non-IEEE domains.

HISTORY OF THE COMPANY

2017 our company was renamed as DLK Technologies Pvt Ltd., legally with permission granted by the ministry of corporate affairs.

Moreover, our company is implemented by the principles of ISO quality standards and we underwent a quality audit by an ISO auditor and our company is ISO CERTIFIED in 2016.

Our 1Crore Projects flooded with lots and lots of projects and our team accomplished everything like a charm and gained a recognition among various college students across the country & number of experts pledged to work in our team for the betterment and growth of our company.

By 2014 we started to cross horizon we caught attention in the international market and we started working on the projects with many overseas company's project like Versatile Limited., etc...

In 2013 we collaborated with Mr.J. Velmurugan who is brother of J. Satheesh Kumar (CTO OF DLK TECH) and his company 1Crore Projects where they undertake many engineering and tech-related projects

In the new year of 2012 hoping to shine among lots of start-up company around us and started marketing our company online and in the local market to get projects and to gain recognition.

Everybody struggles with establishing and running a business. Everyone including us. Back in 2010 we had a bright business plan to build a company and a concise vision, passion and determination to be successful.

ACTIVITIES OF THE COMPANY

DLK Career Development Centre, Chennai. Internship for BE/B.TECH & MCA. DLK Career Development Centre is an objective to develop quality IT professionals to meet this ever expanding requirement of Hardware Networking and Software professionals for the IT sector.

The Objective of the Project Internship is to enrich the student knowledge in real time projects

Time technology exposure by DLK CDC experts delivering relevant guided learning. Experience that combines lecture and practice on projects.

The Projects can be developed in Java – J2ee and Dot net technology, Embedded, VLSI, Matlab.

PLACEMENTS IN DLK

The placement cell provides active assistance to students in finding jobs. Placement assistance is provided to them on successful completion of the programme. The placement cell has successfully placed many students in top 20 IT organizations. Apart from technical training in various software & hands-on project work, DLK helps to get a foothold in the booming IT & ITeS industry. DLK assists its students in finding a job. Here's how:

WORKPLACE SKILLS TRAINING

INTERNSHIP

As part of its Career course, places students with various companies. The 1-year work experience gives students a chance to be in an office/ workplace & work on the company real projects. Students who perform well during the internship are often offered a full-time job by the company later on.

PLACEMENT WORKSHOPS

Dlk Career Development conducts workshops on handling job interviews, aptitude tests & Group Discussions. Useful skills like resume writing, presentation skills & time management are also developed.

JOB FAIRS

Last year Dlk Career Development organized job fairs in Delhi, Mumbai, and Kolkata & Kochi. Many firms from IT & ITES fields participated in these fairs & short-listed 1300 participants for various IT job roles.

From time to time, Dlk Career Development conducts such job fairs all over the country to connect students with companies looking for talented students.

100% PLACEMENT ASSISTANCE

Dlk Career Development offers 100% placement assistance to students. In 2012, LTD Dlk Career Development placed students with many top companies in India & overseas.

- Recruit_from us
- Student/ alumni_feedback
- Become a business partner

PLACEMENT CYCLE



WORK PROCESS

STRATEGIES APPLIED FOR ACHIEVING THE TASK ASSIGNED

• CLIENT SEARCH

For placement of the students in different companies first we search for the different companies from internet from various sites.

• COLD CALLING

Cold calling means to approach the clients without taking prior appointments. I have done lots of cold calling. I visited different companies and industries. I got a great experience as I interacted with different kind of peoples. Even I learned lots of things regarding convincing the clients.

- **CLIENT VISIT**

I visited different companies and industries to get contact details from them and to convince them to place our students in their companies. I got to interact with many HR of different IT companies.

- **ROLE PLAYS**

Role play is a kind of play or say drama which is been presented in front of a group of peoples and that is even in rural areas where people don't understand the face-to-face interaction or any another explanation. Role play is done basically in local language and we are planning to do the same as our role play is all set to do.

- **DATA COLLECTION**

My third strategy is to collect data as many as possible from different sources. So for this data collection I have visited different colleges to get the data of retired people. I went to colleges to get the data of the graduate students who would be the good prospect for our company.

- **CONDUCTED TEST**

There were three rounds first was written test, technical round, group discussion followed by personal interview. With the help of my seniors I conducted admission tests of Cjet candidates.

- **CONDUCTED GROUP DISCUSSION ROUNDS**

Then after the written test I suggested few group discussion topics and conducted group discussion rounds and on the basis of this we were able to analysis the communication skills of the candidates.

- **DONE SURVEY TO TAKE STUDENTS FEEDBACK**

I made questionnaire to take feedback from the students for the betterment of Dlk Career Development. I went to different classes and interacted with the students to know about their problems and suggestions.

- **CANOPY**

Canopy is the kind of activity in which we do arrange a small Business Opportunity Presentation. We select particular area and in this area we give invitations to the people residing in this area and then we arrange the presentation. We did our canopy in the areas like Park street, Garia, and Konnagar and tried to cover as many areas as possible to promote Dlk Career Development.

- **RECRUITMENT ASSISTANCE FOR COMPANIES**

DLK CAREER DEVELOPMENT EDUCATION AND TRAINING DEVISION has Placements Team which has helped hundreds of IT companies across the country find talented candidates for IT jobs.

- **SHORT LISTING CANDIDATES**

Dlk Career Development has a full-fledged Placements Team operating from offices across India. The Team is in touch with graduating students at all Dlk Career Development E&T centres. On receiving recruitment request, the Team screens & shortlists candidates & sends them for tests interviews to the company.

- **JOB FAIRS**

From time to time, Dlk Career Development organizes job fairs to connect companies with students. Students are interviewed & often get spot offers for jobs with these companies.

- **CAMPUS PLACEMENTS**

Recently, Wipro, HCL, India's largest third-party offshore Business Process Outsourcing service provider, conducted campus placements at Dlk Career Development Computer Education.

- **WORKPLACE SKILLS**

Apart from IT education, Dlk Career Development also trained students in English language & communication skills, how to make presentations, how to work in a team, and other workplace skills.

2.7 VISION AND MISSION

- **VISION**

“Customer Satisfaction” is their motto. At DLK, they are committed to exceed their customer expectations and add value to the services they receive.

- **MISSION**

They highly value their clients, and are dedicated in enabling them succeed. With their cutting-edge technology and services, they are sure that will certainly avail the maximum gains and have an edge over their competitors.

CHAPTER 2

LITERATURE SURVEY

In the present chapter, various research publications related to study topic are reviewed. Brief summary of the reviewed articles is presented in a sequential form on the three significant aspects of the study, analytical competencies of HR professionals, adoption of HR analytics, and application of HR analytics in sections 2.1, 2.2, and 2.3 respectively. The key ideas and issues relevant to the present study are tabulated and presented at the end of each section. Research gap identified through the appraisal is presented in the last section.

2.1 Analytical Competencies of HR professionals – a review

Using a technology demands certain competencies. Analytical competencies are essential for better application of HR analytics. Hence, the literature pertaining to analytical competencies of HR professionals is reviewed first.

To leverage analytics advantage in HR, a right mix of skills to handle data, perform statistical operations and understand business dynamics are essential (Banerjee, Bandyopadhyay & Acharya, 2013). Davenport et al. (2001) have determined the analytical skills to cover a range of data administration, analysis, and outcome management skills. According to Davenport et al. (2001), the essential analytical skills are: “identifying data requirements, validation, quality; performing descriptive statistics, multi-dimensional modelling, regression, factor/cluster analysis, data presentation and reports; analytic conceptualisation, interpretation of findings and limitations of statistical analysis”

Ramlall (2006), in their study, found that HR function is not focusing on the transformational activities, and considerable time is spent only on the low-value transactional works. HR professionals’ technical competencies in HR is also rated as important among the other competencies. The study found that there is a need to bring HR metrics as an integral part of the HR strategy.

Jeanne G. Harris J. G. and Elizabeth Craig (2011) attempted to categorise and define different types of analytical talent based on analytical proficiency. According to them, analytical professionals should have a broad set of quantitative skills and

be able to design statistical models as well as make use of optimisation and simulation techniques.

Popovska and Latkovikj (2015) in their study to explore competency framework for HR professionals identified nine competencies, namely, mediation, HR expertise, leadership and direction, consultation, communication, ethical practice, global action, knowledge of the business, and argument-based decision making. Among these nine competencies, argument-based decision-making points to utilising data analytic techniques to rightly interpret information and support business decision making. This study listed several skills related to research and data analytics as the sub-competencies of argument-based decision making.

SHRM (the Society for Human Resource Management) has been continuously evolving the competency models for HR professionals from time to time with extensive research backed by HR professionals across the globe and validated by subject matter experts. (SHRM Competency Model, 2016) The SHRM's Competency Model for HR professionals 2016 has outlined nine competencies. The nine competencies are: HR expertise, ethical practice, leadership and navigation, business acumen, consultation, critical evaluation, communication, global and cultural effectiveness, and relationship management. Among these competencies, the critical evaluation competency is defined as "the ability to interpret information to make business decisions and recommendations." The sub-competencies of critical evaluation competency include measurement and assessment skills, research methodology, objectivity, decision-making, critical thinking, auditing skills, problem-solving, knowledge management, curiosity and inquisitiveness.

Continuing over three decades of research in redefining HR competencies, **Ulrich et al., (2017)** have developed the '2016 HR competency model' with nine categories. Among the nine categories, three competencies, namely, strategic positioner, credible activist, and paradox navigator are labelled as 'core drivers.' Another three competencies, Culture and Change Champion, Human Capital Curator, and Total Rewards Steward are labelled under 'organisational enablers.' The remaining three competencies, Technology and Media Integrator, Analytics Designer and Interpreter, and Compliance Manager are labelled under 'delivery enablers.' As an analytics designer and interpreter, the HR professional should be capable of using analytics for better decision making. Getting the right data and

interpreting the business data are the sub-domains within analytics designer and interpreter. Ulrich et al., (2017) define some of the ways through which HR professionals display the analytics designer and interpreter competencies as: “accurately interpreting statistics, excluding low quality data from decision processes, understanding the limitations of data in ambiguous situations, incorporating rigorous data analysis when interpreting information, effective usage of HR analytics to create value for organisation, Identifying organisation's problems that can be solved with data, translating data into useful insights, and using data to influence decision making in organisation.”

Kremer K (2018) reviewed 39 articles published between the years 2004- 2017 to describe the factors that moderate HR analytics. The review refined five main directions of understanding the moderating factors and named them as identify problems, data infrastructure, information technology, analytical skills, enterprise approach. Of the 11 most relevant articles listed by the author for comparison, six articles highlighted the moderating effect of analytical skills of HR professionals on HR analytics.

A McKinsey Quarterly study by **Gardner et al. (2011)** discussed how some companies discovered novel means of utilising HR analytics to produce value. It may be difficult for all HR executives to have the quantitative skills required to use HR analytics. However, that should not act as a hindrance. While beginning to acquire analytic prowess, HR leaders ought to be driven to get analytical resources from all places of existence (Gardner, McGranahan, & Wolf, 2011). They ought to detect associated issues and structure problems initially. At the next level, while dealing with business leaders, they should be able to carry out advanced data collection and perform statistical analysis.

Levenson (2011) presented different models of applying people management in organisations, along with the use of analytic data. The study presented several cases of organisations explaining how they were making use of HR analytics. The author also presented comparative data on the applications of people analytics and the extent to which it is used for decision making in organisations under study. Besides case studies presented, the study used percentages and averages of responses to present the quantitative data. There exists gap between the analytical skills HR professionals have and those expected by the organisations (Levenson,

2011). A smaller segment of HR professionals is only equipped with the skills needed to perform analytics. Many organisations rely on analytical professionals outside the organisation to perform basic statistical analysis tasks and communicate the results effectively. This scenario creates difficulties in developing the right insights on the HR data.

Harris (2016) is of the opinion that post-2016, HR professionals need to enhance their quantitative skills by jointly working with IT experts, data scientists, and the technology suppliers in order to make a big leap in promoting HR analytics and meeting the challenges (Harris, 2016). They must expect diverse teams and experts working in collaboration with HR professionals to get HR analytics into action. Organizations should try to improve analytical literacy among HR practitioners. Analytics should not be stopped at developing insights alone but need to be taken forward to produce results. Thus, the focus now should be on building HR professionals who understand and make the best use of HR analytics.

A Deloitte study found that many organisations (nearly 75 per cent) recognised HR analytics as a critical issue. However, their readiness to meet the requirements is not upto the mark. Very few (only 8 per cent) consider themselves “strong” in the area as per the study. Surprisingly, these trends did not vary much from 2014 to 2015. Analytics functions in HR cannot be performed by the people outside the HR function. If such an attempt is made, HR may lose relevance in sustaining in the organisation. To keep the HR function abreast, HR needs to own its analytics capability too. Several works highlight the potential of HR analytics practice in its growth phase. HR professionals are in the process of creating and using the relevant data. However, this is not sufficient. Non-HR professionals also need to recognise the possible gains from HR data. With the overall acceptance, HR analytics can occupy a central position and establish HR as an evidence-based profession (CIPD, 2018)

2.2 ADOPTION OF HR ANALYTICS AMONG HR PROFESSIONALS - A REVIEW

This section is focused on reviewing works directed on preparedness of HR professionals to adopt HR analytics. HR professionals' readiness to accept HR analytics and use it for the organisational purposes is reflected in their behavioural

intention, which is also termed as adoption. Few studies on technology adoption in the premises of HR are presented below.

In their empirical study on differences in analytic applications in organisations, the authors **Malladi and Krishnan (2013)** studied the drivers of business intelligence and analytics usage across a large sample of firms. Their study was based on the TOE (Technological-Organizational-Environmental) framework. The authors used BIA (Business Intelligence and Analytics) usage as an ordered variable providing summative index of the extent of BIA usage in organisational business activities. The study highlighted use of sophisticated data-related infrastructure as a promoter of analytics per se. On the flip side, managerial challenges, integration and talent management issues were found to be hampering the usage of business intelligence and analytics. Usage of technologies such as business intelligence and analytics implies the need to acquire professionals with the skills to operate on these technologies before making large-scale investments.

Suresh Malladi (2013), in their research, used the TOE (Technological-Organizational-Environmental) framework to study the contextual factors that can influence adoption. Their study has thrown light on the adoption of BIA systems. In their research, the authors attempted to test whether factors such as i) perceived benefits (technological), ii) organisation size and organisational readiness in terms of data infrastructure sophistication (organisational), and iii) industry knowledge intensity and lack of industry standards (environmental) may have an influence on the level of adoption. The emergence of industry standards and industry knowledge intensity can influence the levels of adoption (Malladi, 2013). For HR analytics, this implies that a wider acceptance and application of HR analytics can increase the industry knowledge intensity on HR professionals.

Falletta, B. S. (2014), in their study, covered over 3,000 respondents from the HR field. The study used a combination of different scale items to gather information from the participants. Sample required for the study was drawn from Fortune 1000 companies. The study revealed that in about half (49.5%) of the companies in the study, HR analytics has no critical role to play in formulating HR strategy. However, few inputs are considered. Only about 15 per cent organisations reported HR analytics' central role, whereas in nearly 37 per cent of the sample, HR analytics is characterised as playing little or no role in HR strategy formulation. However, all

organisations surveyed were reported to perform HR research and analytics at some level. HR professionals involved in the analytics and research should contribute their own expertise to HR intelligence. Individuals with the HR background can rightly interpret the data and demystify the predictive insights at individual, group, and organisational behavioural contexts (Falletta, 2014)

Alex Linley (2015), in their study, presented the case of Nestle on how the organisation was able to use HR Analytics as a best practice to identify the hidden talent. The study revealed that the process of screening could be simplified and made more focused for the use of volume recruiters by considering insights and analytics from recruitment data (Linley, 2015). The approaches used were helpful in identifying hidden talent. Without the use of data analytical capabilities HR professionals may land in making decisions that do not justify fulfilling the organisational needs. Roslyn Vargas (2015), in their study on adoption factors, discussed the variations in the organisation's intent to use HR analytics and the HR professionals' readiness to accept it for the benefit of the organisation. It is a recent study which has thrown light on the response of HR professionals on the developing paradigm towards HR analytics.

It is a kind of exploratory study in understanding the readiness of HR professionals to adopt HR analytics in the US. The study is formulated using UTAUT developed by Venkatesh et al. (2003). Besides the core constructs of UTAUT, self-efficacy and quantitative self-efficacy facilitating individual adoption of innovation have been additionally tested in this research. The study used self-reporting style of responses to be opted by the respondents. Though many studies by consultancy and software firms have highlighted the growth and expansion of HR analytics field in recent times, they could not capture the HR professionals' readiness and adoption towards HR analytics. The study has been validated in terms of involving the HR professionals' opinions and presenting their competency to make use of HR analytics. Availability of appropriate tools for adoption substantiates the HR professionals' intention to use HR analytics (Vargas, 2015). Also, the HR professionals' understanding of relative ease of use of analytics affects their intention to adopt HR analytics. The study also measured the critical issues affecting the execution of HR analytics. This study involved 302 respondents from the HR profession as a part of the primary study

Sjoerd Van den Heuvel and Bondarouk (2017) made a qualitative assessment of HR analytics' future from the point of view of Dutch HR analytics practitioners. The study used the method of the analytical hierarchy to analyse the 70 data. The study presented the state of HR analytics in 2015 and projected HR analytics' future in 2025. A sample of 20 respondents was only involved in the study. According to the authors, to handle HR analytics, many of the HR professionals are spending considerable amounts of time on simple reporting and computation of metrics (Heuvel & Bondarouk, 2017). It is important that the HR professionals move forward and make use of advanced techniques of applying HR analytics to get better insights for HR decision making. The study could not capture the basis for the present state of HR analytics and the factors that are responsible for it. The study was seeking the opinion of the HR practitioners about only the future application, value, structure, and systems support, yet could not establish the reasons or the potential developments that may lead to such situation in 2025.

Jessica M Barriere (2016), in their study, focused on the effect of employee attitudes towards HR analytics, and whether trust influences such attitude of employees. The study used the ABC (Affective-Behavioural-Cognitive) model of attitude (Muran et al.) and modified it to measure the attitude of employees. This study proposed that trust in management and trust in the organisation lead to the attitude towards HR analytics. Attitude towards HR analytics among HR professionals is regulated more by their trust towards the organisation than the management (Barriere, 2016). Further, trust in management was assessed using three forms of viz., Calculus-based, Knowledge-based, and Identification-based. The study used stratified random sampling among two Dutch organisations and involved 47 non-managerial employees in the study. The results were analysed using PLS-SEM (Partial Least Square) as the variables chosen were of ordinal (Likert) scale. The study found the effects of circumstances of varying degrees in terms of experience with HR analytics, age, gender, level of education, and trust in the organisation in the formation of the attitude towards HR analytics. The study could not establish the linkage between the trust and the attitude of employees towards HR analytics. How can the individual's attitude be reflected on the basis of trust in management remained inconclusive. The study ignored certain factors that may be affecting the attitude towards HR analytics.

Negin Chahtalkhi (2016) carried out a study focused on identifying the challenges that organisations face while implementing a change programme like HR analytics. The profile of HR practitioners' profile is now required to have data affinity and knowledge of statistics (Chahtalkhi, 2016). A qualitative investigation was carried out, and data from HR analytics employees of three companies were captured using open-ended interview based on the eight steps model of Kotter proposed in 'Leading Change'. The results obtained were codified using the analytical hierarchy method. Altogether Six different sets of challenges were categorised. The challenges were related to lack of business/management support and interest, data and tools, legal and compliance, roles, training and skills, and communication. The study offered some suggestions to the companies to overcome the challenges. The study is limited in focus to gather data pertaining to the HR analytics' implementation. By way of implementation, the sample organisations considered were at the preliminary phases. The study portrayed HR analytics as a change programme being implemented in organisations. The cases of three companies are not comparable enough to draw the general challenges of implementing HR analytics.

L. Witte (2016), in their research work, focused on exploring the strategic role and involvement of HR function in adopting HR analytics. Organisations are considering adoption of HR analytics to be a value-addition. The organisations have their own reasons for the adoption of HR analytics, and the organisations also expect positive results from their investments (Witte, 2016). Qualitative data pertaining to six companies were collected through semi-structured interviews, from one or two members working on HR analytics in the sample organisations. The cross-case analysis method was employed for data analysis by applying variable-oriented analysis, which focuses on the variables and coding rather than cases. The study was aimed at identifying HR's strategic partner role using HR analytics. In addition, the study covered the reasons and motivations to start HR analytics and the outcomes achieved. However, the motivations and outcomes were not clearly drawn but were presented conceptually. The study has involved six organisations, limiting the ability of the study to generalise and draw conclusions. Also, the interviews conducted for data collection were mere perceptions of HR employees and had a lesser factual base.

John Boudreau (2017), in their Harvard article, discussed the results of a Harvard Business Review study of 230 executives. The study identified the current prospects and future potential of using predictive analytics on HR data and debated on the 'push' and 'pull' factors of HR analytics. The paper summarised the use of LAMP (Logic, Analytics, Measures, Process) framework of 'push' factors to present the human analytics data. A good balance among the four push factors will help the HR analytics message to reach the potential decision-makers. The necessary conditions to enable the HR analytics and metrics information to reach the key people are enlisted as part of the pull factors. HR analytics is required to have a more user-focused perspective to work more effectively (Boudreau, 2017). The author stressed the need to have continuous monitoring of HR analytics, and to tweak its features to meet the users' needs

Krista Jensen-Eriksen (2016), in their research, used inductive reasoning (bottom-up) to describe conclusions from the collected data and form the theory for deeper understanding. The work used the online blogs and communities of HR professionals and analysed the available data related to HR analytics of around 510 blog posts using textual analytics. The quantitative phase of analysis was done using a software tool Leximancer. The focus of the study is to present HR analytics as the main source for data-driven HRM. The actual implementation of HR analytics is not much discussed, but it is more focused on financial implications. Though HR professionals are clear about HR analytics' potential, they are unclear how the different HR analytics tools can be used and what are their practical applications. HR professionals assume an important role in data-driven HRM through human judgment (Jensen-Eriksen, 2016). Through the data analysis, the authors presented a concept map of nine distinct themes identified by the textual analytics software: "organisation, employees, HR, data, social media, learning, culture, change, and marketing". Corresponding connectivity between nine themes and related concepts is also presented in the study. The study is vague in converging the many discussions and themes identified through the online blogs and the keywords that are familiarised. Only the members and posts which are actively available online are considered for the study. The study could not establish either the expertise of the HR professionals or the experience to be realistic and valid to draw conclusions.

Lismont et al. (2017) have carried out a descriptive study using the DELTA (data, enterprise or organisation, leadership, targets or techniques and applications and the analysts) model as the base to assess the level of maturity gained by the organisations in using analytics. They explored the organisations using DELTA dimensions. The study clustered the surveyed organisations at four levels of analytic maturity: “no analytics, analytics bootstrappers, sustainable analytics adopters, and disruptive analytics innovators.” The study found that analytics has still many unexplored opportunities in several fields, including HR. Organisations that started recently to catch up analytics have still not been applying HR analytics widely. Those organisations implementing analytics with innovative long-term perspective were only having HR analytics in common. Further, HR analytics will gain even better acceptance and become prominent with the collection of the right data (Lismont et al., 2017).

Though the concept of adoption of technology innovation is regarded as universal (Wejnert, 2002), several factors are different in each country's context. Majority of studies on HR technologies and information systems were based on developed nations (Panayotopoulou, Vakola, & Galanaki, 2007). Countries in the Asian region have got limited exposure to these studies. In the case of Indian context also, there is a dearth of comprehensive studies on the HR technologies, particularly HR analytics. Reviews of the research agenda on HR analytics have stressed the need for carrying out large-scale, expensive and ambitious sample surveys (Wall & Wood, 2005) and longitudinal quantitative analysis (Guest, 2011).

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

A research design describes various procedures followed to collect, analyse, and interpret the data. The research design for the current study has gone through several phases. The study initially followed the exploratory mode in its research design. As the HR analytics area is still emerging, it is not entirely clear that what falls under the gamut of HR analytics. The exploratory stage helped in developing better insights on exactly the defining variables that are to be studied. In the latter part, the major part of the primary study is carried based on descriptive research design.

3.2 RESEARCH GAP

The review of the literature clearly brings out the existing gap in the literature. Most of the earlier studies emphasised the spread of HR analytics and their different dimensions. The major areas covered by them include factors influencing HR analytics, key metrics used in HR analytics, trust factors, strategic role etC. As HR analytics is an emerging area, it has become difficult to set the base for study and create an appropriate framework for the study. There is a dearth of literature in establishing the constructs that are essential to draw inferences about the field of HR analytics. Studies are limited to capture progress of HR analytics. Existing studies conducted in HR analytics context were found to be having conceptual orientation and discussions that are largely motivated by divergent opinions and thoughts. The review of literature brings out many gaps in the existing literature in this context. There are very few studies which had thrown light on the readiness and perceptions of the HR professionals, on this relatively new technique of HR management and the possible impact of the same on key HR functions in various organisations. The present study is a modest attempt to fill the existing gap in the literature by focusing on the adoption of HR analytics among HR professionals and the application of HR analytics by them.

3.3 DATA SOURCES

The present study collected the required data from primary as well as secondary data sources. The chief sources for secondary data include various articles, news items, interviews and reports published on the internet, journals, magazines, newspapers, textbooks, and industry reports. Some of the critical data sources considered for the study purpose are cited in Table 3.1. Published literature on HR analytics, available through physical documents as well as electronic records and webpages has been collected and reviewed. It is found that there is a limited amount of literature available in this area of HR analytics, and much research is developing.

Table 3.1: Sources of the Secondary Data

Online Sources	Business Publications	Industry/ Consultancy Reports	Offline Sources
• Emeraldinsight.com • Taylorandfrancis.com • Springer.com • Scholar.google.com • Sciencedirect.com • Sagepub.com • ProQuest.com • Ebsco.com • Onlinelibrary.wiley.com • Jstor.org • Inderscience.com • Shodhganga.inflibnet.ac.in	Newspapers • Business Standard • Economic Times • Business Line Magazines • Indian Management • Business Today • Business World • Business India • The Smart Manager • HBR • MIT Sloan MR	• CIPD • SHRM • NHRDN • E&Y • Deloitte • PWC	Textbooks Journals

3.4 RESEARCH MODEL

The current research work is mainly focused on two important dimensions of HR analytics among HR professionals. First of them is understanding the individual level adoption of HR analytics and secondly, the application of HR analytics among HR professionals. Hence, the two important dimensions are studied, to begin with. Literature support from a few previous studies is used to study the analytical competencies of HR professionals. It is a challenging task to precisely define the statistical and analytical skills that form the required HR analytics competencies. Also, developing a rigorous list will lead to an unnecessary mix-up (Levenson, 2011). By matching and updating the analytical and statistical skills used in HR

analytics, a set of skills that form the core analytical competencies has been developed for the present study.

Several theories emerged in the context of the adoption of technology by individuals. Among the theories and models that promulgated technology adoption at the individual level, Unified Theory of Acceptance and Use of Technology (UTAUT) has brought together the essence of several former theories, particularly about information systems, and presented effort expectancy, performance expectancy, social influence and facilitating conditions as four important constructs leading to individual-level adoption of technology (Taherdoost, 2018). In the present study, the core idea of adoption of HR analytics is studied using the UTAUT model proposed by Venkatesh, Morris, Davis, and Davis, (2003). This theory is a notable contribution to study the progress of technology. As per the propositions of UTAUT, users' behavioural intention and usage are dependent on four important variables (performance expectancy, effort expectancy, social influence, and facilitating conditions). The four variables are having exposure to gender, age, experience, and voluntariness of use with moderating effects. UTAUT, as presented initially by Venkatesh et al. (2003), is presented in Figure. 3.1.

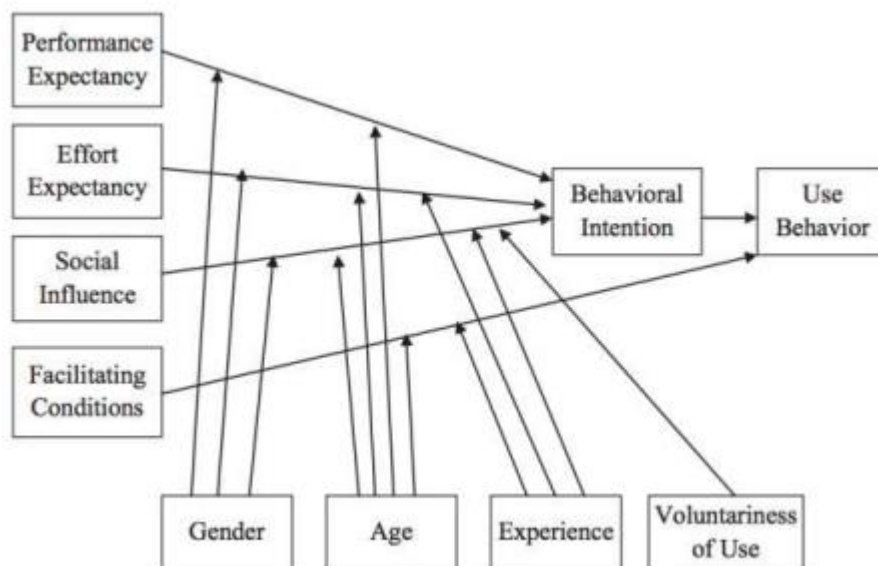


Figure. 3.4 Unified Theory of Acceptance and Use of Technology (UTAUT)

3.5 HYPOTHESES OF THE STUDY

- H1 Analytical competencies positively mediate performance expectancy and application of HR analytics.
- H2 Analytical competencies positively mediate effort expectancy and application of HR analytics.
- H3 Analytical competencies positively mediate social influence and application of HR analytics.

3.6 DESIGN OF THE QUESTIONNAIRE

While designing the questionnaire, at first, the overall questions to be asked to map the variables under study are listed. Then each question is verified carefully for the type of question and appropriate wording that elicits the response from the respondent. Once the total questions are listed, the sequence of questions and the layout is fixed accordingly. During the exercise of questionnaire design, the guidelines outlined by Miller and Salkind (2002), Rowley (2014), and Bell et al. (2018) are followed. The questionnaire is presented to a few HR professionals and academic researchers for scrutiny, and minor modifications are made accordingly to improve the presentation of questions.

3.7 SAMPLING DESIGN

In this section, aspects related to sampling design are presented. The important issues such as the target population, sampling frame, sampling technique, sample size, and data collection procedure are explained in detail.

- **Target population**

As the adoption and application of HR analytics among HR professionals is studied in the present research, the target population is confined to HR employees. Those employees in organisations handling HR functions are the end-users of HR analytics. Hence, the population for the present study comprises of HR professionals working in India. Due to the time and other resource constraints, accessing the entire target population of HR professionals in India is not practicable. In line with the objectives of the study, and time and proximity considerations, the study is confined to HR professionals working. Thus, the HR professionals working

in the organisations situated in the city of Hyderabad, India are chosen as the accessible population for the current study. The vibrant and emergent nature of business growth in the Hyderabad region is also another important reason for this choice.

- **Sampling frame**

The current study is targeting the population of HR professionals. Hence, it is unmanageable to accurately define the sampling frame. Also, there are no reliable and complete sources of data to locate all HR professionals in the population. Moreover, due to confidentiality issues, the contact information of HR professionals in the organisations is not always made available to the public. Practically, reaching out to all organisations in the study area is a cumbersome task. Hence, a combination of methods is used to access the targeted sample of HR professionals.

- **Sampling technique**

To access the target sample non-probability sampling is employed in the current study. A variant of chain-referral sampling is used for the present study. The current study uses combinations of snowball sampling, respondent-driven sampling, and targeted sampling using social media (Salganik & Heckathorn, 2004) to reach the maximum number of respondents. While using this process, a few selected recruited samples help to reach the remaining portion of the sample. This process is continued till the required sample is contacted. These methods are particularly suitable to conditions similar to the present study where the sampling frame is not available, and sample respondents are hard to reach.

- **Sample size**

In the present study, Structural Equation Modelling (SEM) is employed. To use SEM and get reliable estimates, adequate sample size is required (Hair et al., 2013). When SEM is employed, the sample size is to be determined based on the number of observed variables. Tabachnick and Fidell (2013) consider 300 as a good sample size to carry out factor analysis. For inexact population sizes, with increase in population size, the representative sample size increases at a decreasing rate. Moreover the sample size stays relatively the same at just above 112 380 cases (Small sample techniques, 1960; Krejcie & Morgan, 1970). Considering the nature

of the sample for the current study, a representative sample was drawn accordingly to meet a sample above 380.

- **Data collection procedure**

In the current study, variants of chain-referral sampling are employed to reach the desired sample respondents. To connect to the respondents, the researcher used the professional networking platform LinkedIn. LinkedIn was the prime choice for the present study purpose, as it offers access to network with professionals in realtime. Also, “LinkedIn is regarded as the most important cross-industry professional network” (Duffy, 2013). Though there are some more social media choices to network with professionals, LinkedIn offered more credibility and authenticity. LinkedIn is a distinct source which brings professionals from different fields together; thus, offers higher target reach (Dusek et al. 2015). When using snowball sampling techniques, LinkedIn groups are apt to target the required professionals initially (Goodman, 2011; Handcock & Gile, 2011). The researcher has initiated networking with HR professionals and people in HR analytics profession from the early stages of problem definition of the study. n). Only the 113 professionals working in the HR and allied activities are considered as the target population, so other professionals were not contacted. The survey instrument was converted into a web form to collect data. Initial contacts were made with respondents who are familiar with the study topic, and they were requested to suggest that professionals in their network be a part of the study. The number of contacts of professionals on the researchers LinkedIn profile was nearly 600, which crossed 1000 by the time the data collection phase reached to an end. The researcher gained LinkedIn premium access during the phase of data collection for increased interactions with key HR professionals to take the study further. Considering the technological disadvantages of spamming and wilful neglect by the social media users due to the proliferation of irrelevant content, the messages sent to participants in the study were regularly monitored and modified accordingly to reach the sample respondents

3.8 DATA ANALYSIS

To achieve the objectives of the present study, various statistical methods are employed in the study. The details of the data analysis methods are demonstrated below:

- At first, preliminary data analysis is carried out after data cleaning for invalid and totally incomplete responses, and then by handling missing responses.
- To confirm the suitability of the collected data for further study, normality tests, and outlier analysis was carried out. Absence of normality in data may lead to unreliable Chi-square values or underestimate fit indices. Skewness and kurtosis were examined for normality. The data is found to be having normality properties. Outliers could falsify the nature of data through extreme values. For identifying univariate outliers, box plots are used with the help of SPSS. To examine multivariate outliers, Mahalanobis distance (D2) is analysed. The results did not indicate any presence of outliers. · The demographic properties and other attributes of the respondents are presented. Using the descriptive statistics option in SPSS, frequencies, percentages, mean, variance, and standard deviation are examined.
- To verify the presence of differences if any in analytical competencies of HR professionals and adoption of HR analytics by demographics and other organisational factors, one-way analysis of variance (ANOVA) test is used in the present study. Also, ANOVA is used to verify the differences in the application of HR analytics by other organisational factors.

CHAPTER 4

DATA ANALYSIS

4.1 DEMOGRAPHIC PROFILE OF THE RESPONDENTS

Respondents for the study represent diverse demographics and different organisations. This section presents the demographic profile of the respondents. 390 valid responses are processed for analysis. The important respondent characteristics presented in this section are gender, age, educational qualifications and other factors including work experience, position, HR functional area handled by the respondents, industry, workforce size, training received, and analytic software used.

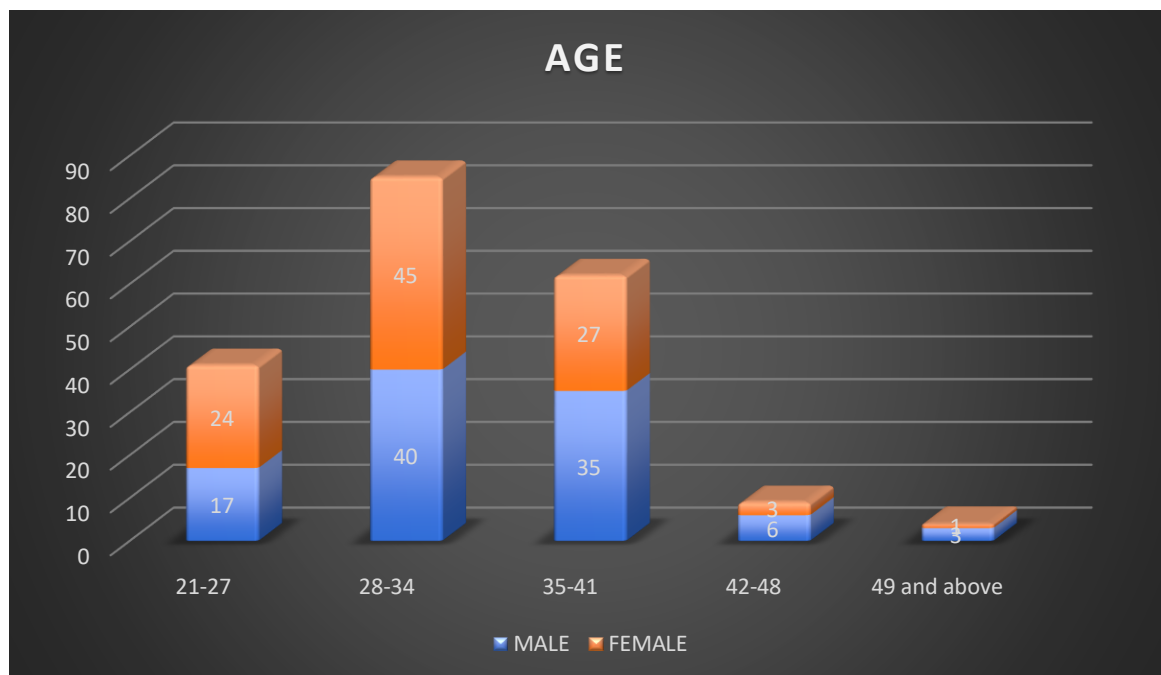
Of the 390 respondents, 71.8 per cent are males. Female respondents in the study are 28.2 per cent.

Table 4.1 shows that 3/4th of the respondents are in the 28-41 years age group. More precisely, around 41 per cent are in 28-34 age group and around 33 per cent are in 35-41 years age group. Of the 280 male 118 respondents, 40 per cent are in the 28-34 years age group, and 35 per cent are in 35-41 years age group. Similarly, 45 per cent of the 110 female respondents are in 28-34 years age group, and 27 per cent are in 35-41 years age group.

Thus, a large proportion of the respondents are relatively young and hence capable of acquiring required analytical skills for HR management. Having a higher proportion of HR professionals in the relatively younger learning age groups is an asset for any organisation.

Table 4.1: Gender wise and age-wise distribution of respondents

Variable (Gender →)	Male	Female	Total
Age Group (Years ↓)			
21 – 27	48 (17)	26 (24)	74 (19)
28 – 34	111 (40)	50 (45)	161 (41.3)
35 – 41	97 (35)	30 (27)	127 (32.6)
42 – 48	16 (6)	3 (3)	19 (4.9)
49 and above	8 (3)	1 (1)	9 (2.3)
Total	280 (100)	110 (100)	390 (100)



4.1.1: Chart showing Gender wise and Age wise distribution of the respondents

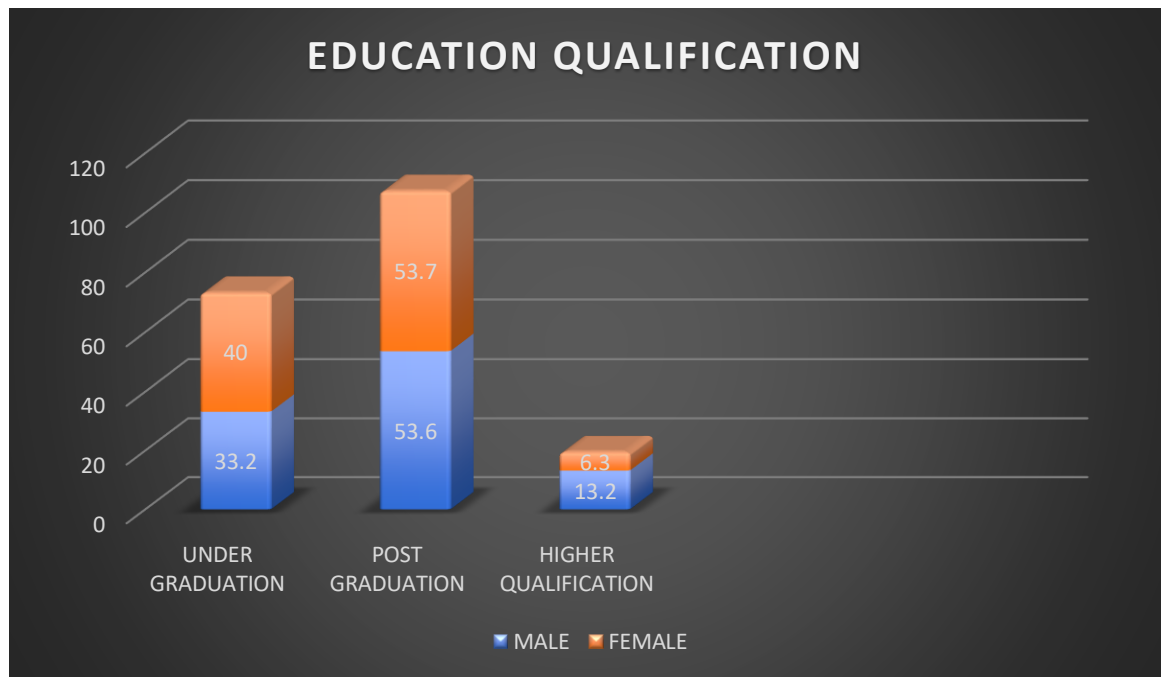
Table 4.2 presents the distribution of respondents as per their educational qualification and gender. Around 54 per cent of the respondents have a postgraduate qualification. The proportion having post-graduation qualification is same across the genders.

While 40 per cent of the female respondents have an undergraduate qualification, around 33 per cent of the male respondents have the Undergraduate qualification.

While most of the respondents having graduation as highest qualification are engineering graduates, most of the respondents having post-graduation qualification are from management stream. It is surprising to find that the HR profession is still not being managed by professionally qualified individuals.

Table 4.2: Distribution of respondents by educational qualification and gender

Variable (Gender →)	Male	Female	Total
Educational Qualification ↓			
Under Graduation	93 (33.2)	44 (40)	137 (35.1)
Post-Graduation	150 (53.6)	59 (53.7)	209 (53.6)
Other Certification/Higher Qualification	37 (13.2)	7 (6.3)	44 (11.3)
Total	280 (100)	110 (100)	390 (100)
<i>Note: The figures in parentheses indicate percentage to total</i>			



4.1.2 : Chart showing distribution of respondents as per their educational qualification and gender.

Table 4.3 presents profile of the respondents distributed by gender and work experience. As is clear from the table, a large proportion of the respondents have less than or equal to five years of experience only. While 54 per cent of females have less than or equal to five years of experience, this proportion for males is 45 per cent.

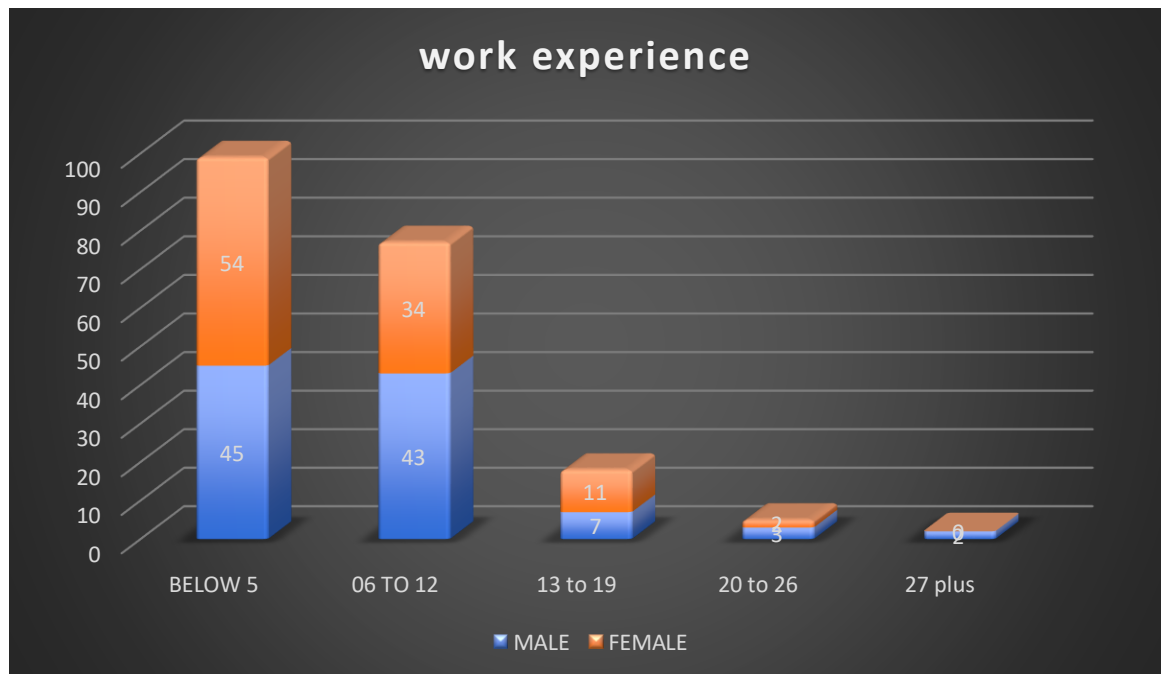
Thus, it can be inferred that female HR professionals are having lesser years of work experience than their male counterparts.

A little more than 40 per cent of the respondents have work experience between 6-12 years. 43 per cent of the male respondents and 34 per cent of female respondents fall in this category.

Table 4.3: Gender wise and work experience wise distribution of respondents

Variable (Gender →)	Male	Female	Total
Total Work Experience (Years ↓)			
≤5	127 (45)	59 (54)	186 (47.7)
6 - 12	120 (43)	37 (34)	157 (40.3)
13 - 19	20 (7)	12 (11)	32 (8.2)
20 - 26	8 (3)	2 (2)	10 (2.6)
27+	5 (2)	0 (0)	5 (1.3)
Total	280 (100)	110 (100)	390 (100)

Note: The figures in parentheses indicate percentage to total



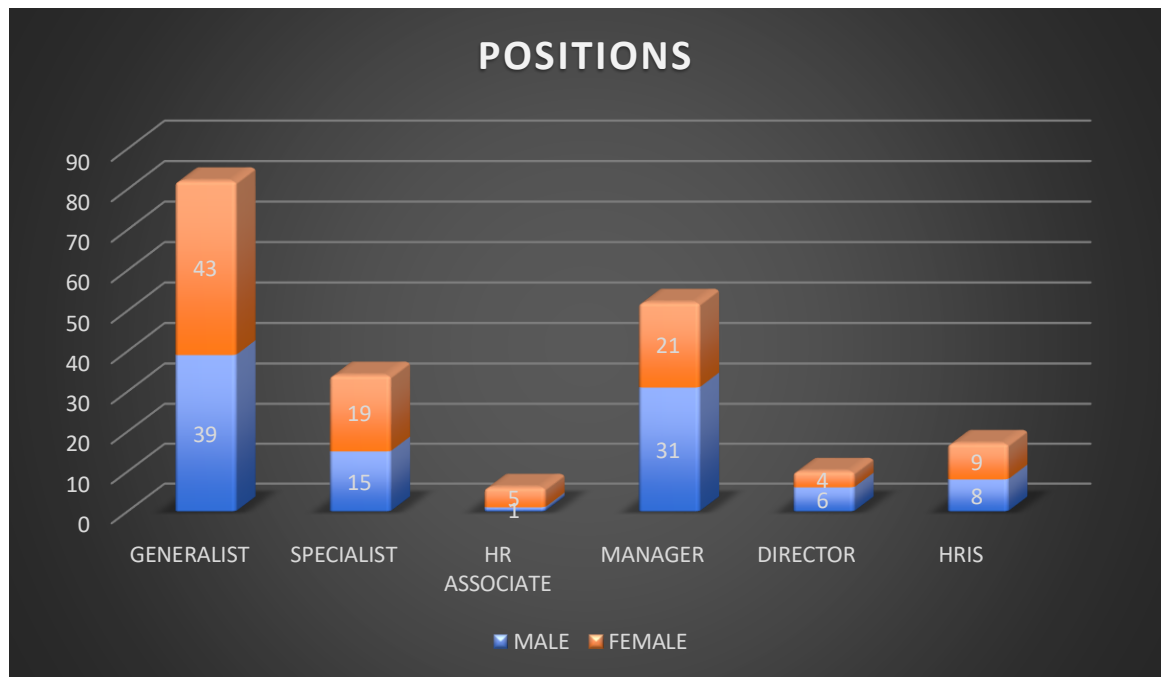
4.1.3: Chart showing respondents distributed by gender and work experience

The distribution of the respondents by gender and position held is presented in **Table 4.4**. HR professionals have been categorised into six categories, from generalist to analytics specialist. Of the 390 respondents, around 40 per cent are generalists. Forty-three per cent of female respondents and 39 per cent of male respondents are generalists; next higher representation is from the category of managers. Of the 111 managers, 88 are male, and 23 are female. Only 8 per cent of the respondents are analytics specialists. This proportion has not varied much by gender.

The industry represented by the respondents is profiled and presented in Table 4.5. The respondents in the present study represent around 20 different industries. Around 30 per cent of the respondents are from the IT industry. It can be observed that 11.8 per cent of the respondents are representing the banking/financial/insurance services. Respondents from manufacturing (heavy) industry represent around 8 per cent. The proportion of respondents from health care services, education, and public sector/govt. stood at 6.7 per cent from each category.

Table 4.4: Gender wise and position wise distribution of respondents

Variable (Gender →)	Male	Female	Total
Position ↓			
Generalist	108 (39)	47 (43)	155 (39.7)
Specialist	43 (15)	21 (19)	64 (16.4)
HR Associate	3 (1)	5 (5)	8 (2.1)
Manager	88 (31)	23 (21)	111 (28.5)
Director	16 (6)	4 (4)	20 (5.1)
HRIS/Analytics specialist	22 (8)	10 (9)	32 (8.2)
Total	280 (100)	110 (100)	390 (100)



4.1.4: Chart showing Gender wise and position wise distribution of respondents.

Out of 390 respondents, only about 48 per cent received training in HR analytics **Table 4.5.** About 55 per cent of female respondents and 51 per cent of male respondents did not receive any training in HR analytics. It shows a large-scale training deficit in HR analytics. Of the 187 respondents who received training either within the organisation or outside the organisation, 137 are male, and 50 are female. These 187 respondents seem to have the inclination to acquire competency in HR analytics. Hence, they are trained both internally as well as externally.

TABLE 4.5:- Distribution of respondents by the training received in HR analytics and gender

Variable (Gender →)	Male	Female	Total
Whether Training was Offered			
Yes	137 (49)	50 (45)	187 (47.9)
No	143 (51)	60 (55)	203 (52.1)
Total	280 (100)	110 (100)	390 (100)
No. of Training Programmes Attended Within the Organisation			
1	33 (24)	10 (20)	43 (22.9)
2-4	94 (68.6)	35 (70)	129 (68.9)
5-6	6 (4.3)	2 (4)	8 (4.2)
More than 6	4 (2.9)	3 (6)	7 (3.7)
Total	137 (100)	50 (100)	187 (100)
No. of Training Programmes Attended Outside the Organisation			
1	108 (79)	28 (56)	136 (72.7)
2-4	24 (18)	14 (28)	38 (20.3)
5-6	3 (2)	6 (12)	9 (4.8)
More than 6	2 (1)	2 (4)	4 (2.1)
Total	137 (100)	50 (100)	187 (100)

Table 4.6:-Distribution of respondents by gender and functional area

Variable (Functional area →)	Talent Planning & Acquisition	Training/ Development	Appraisal	Compens ation/ Benefits	Employee Engagement/ Well-being/ Relations	Information Systems/ Analytics	Succession Planning/ Career Planning	Other HR Functions	Total
Gender ↓									
Male	176 (72.7)	120 (77.4)	32 (66.7)	116 (78.4)	105 (73.4)	90 (75)	105 (80.8)	3 (60)	280 (71.8)
Female	66 (27.3)	35 (22.6)	16 (33.3)	32 (21.6)	38 (26.6)	30 (25)	25 (19.2)	2 (40)	110 (28.2)
Total	242 (100)	155 (100)	48 (100)	148 (100)	143 (100)	120 (100)	130 (100)	5 (100)	390 (100)

An attempt is made in the following table (Table 4.6) to capture the distribution of respondents by age and the functional areas. Of the 242 respondents who reported in the primary functional area of HR i.e., talent planning and acquisition, relatively younger HR professionals are engaged. Around 43 per cent are in the age group of 28-34 and another 20 per cent are in the age group of 21-27. Thus, around 64 per cent of the respondents are below 35 years are handling the talent acquisition function. This holds good even in the case of training and development functional area, as of the 155 respondents, 100 are in relatively younger age group. Of the 48 respondents who are involved in the appraisal domain, 30 are between 21-34 and 14 are between 35-41. In the case of compensation and benefits function, of the 148 HR professionals, 52 belong to 35-41 age group and 68 belong to 28-34 age group. Of the 143 respondents involved in employee engagement, 52 belong to 35-41 age group, another 59 belong to 28-34 age group and 25 belong 21-27 age group. It is noteworthy that of the 120 candidates engaged in information/analytics area, 63 per cent are between 21-34, giving hope that they will be learning to master the HR analytics function. More than half of the respondents involved in the succession planning are spread in the first two age groups. A good number of respondents handling the functional area are in the age group of 35-41.

Table 4.7: Analytics Software Available for Use in the Company

Software	Responses		Per cent of Cases
	<i>n</i>	Per cent	
MS Excel	374	42.0	95.9
SPSS	101	11.3	25.9
SAS	101	11.3	25.9
R	75	8.4	19.2
Python	88	9.9	22.6
Tableau	86	9.8	22.3
Qlik View / Qlik Sense	64	7.2	16.4
Others	1	0.1	0.3
Total	891	100	

Data related to various analytics software that is available for use in the respondents' organisations are presented in Table 4.7. The companies use more than one type of software. As the data has multiple response characteristics, per cent of cases is presented for better interpretation. The data clearly indicate that MS Excel is the leading software being used by almost all organisations, with 95.9 per cent representation. Due to its user-friendly nature and inclusion in Microsoft Office package, a large proportion are predominantly preferring to use MS Excel. Leading statistical analysis packages such as SPSS and SAS are being used by 25.9 per cent each. 19.2 per cent organisations reported to use open source software R. While 22.6 per cent organisations are using Python for analytic functions, 22.3 per cent are using Tableau platform. 16.4 per cent of organisations reported using Qlik View/Qlik Sense, whereas 0.1 per cent of organisations reported using other software.

4.2 DISTRIBUTION OF ANALYTICAL COMPETENCIES

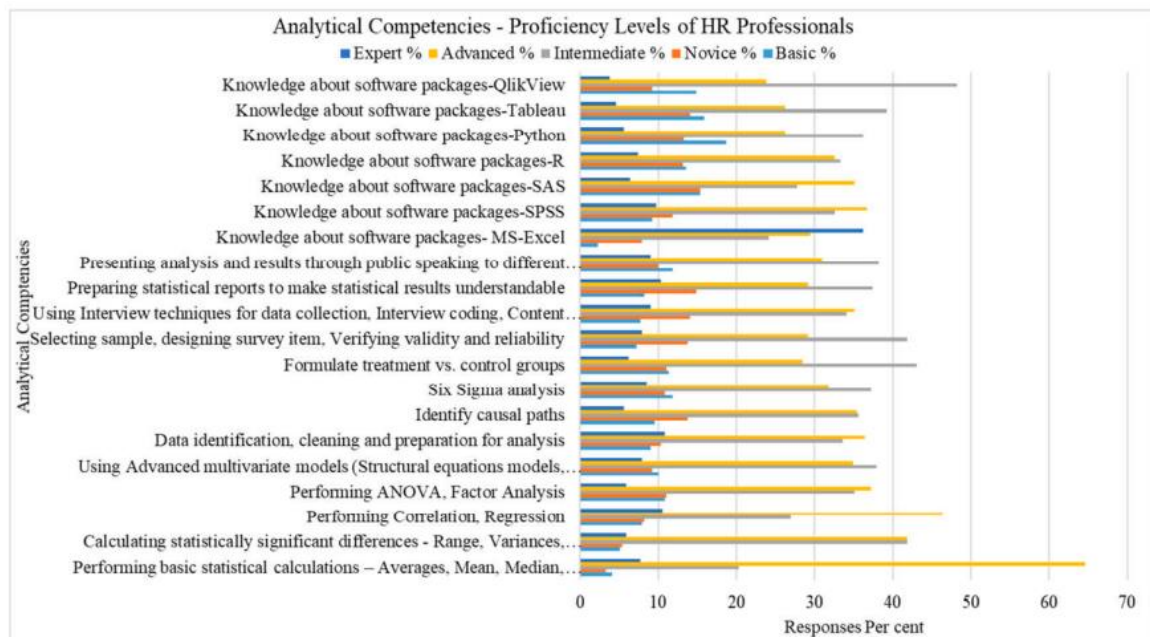
Analytical competencies of respondents were assessed at five levels viz., basic, novice, intermediate, advanced, and expert. Summary statistics were calculated for the responses of different analytical competencies (AC1) performing basic statistical calculations - averages (mean, median), percentiles, (AC2) calculating statistically significant differences - range, variances, standard deviation, (AC3) performing correlation, regression, (AC4) performing ANOVA, factor analysis, (AC5) using advanced multivariate models (structural equations models, bivariate / multivariate choice models, cross-level models), (AC6) data identification, cleaning and preparation for analysis, (AC7) identify causal paths, (AC8) six sigma analysis, (AC9) formulate treatment vs. control groups, (AC10) selecting sample, designing survey item, verifying validity and reliability, (AC11) using interview techniques for data collection, interview coding, content analysis, (AC12) preparing statistical reports to make statistical results understandable, (AC13) presenting analysis and results through public speaking to different stakeholders, (AC14) knowledge about software packages- MS-Excel, (AC15) knowledge about software packages-SPSS, (AC16) knowledge about software packages-SAS, (AC17) knowledge about software packages-R, (AC18) knowledge about software packages-Python, (AC19) knowledge about software packages-Tableau, and (AC20) knowledge about software packages-QlikView. Summary statistics of analytical competencies of respondents are presented in **Table 4.8**.

Table 4.8: Distribution of Analytical Competencies among Respondents (n= 390)

Proficiency Levels (→) Items (↓)	Basic		Novice		Intermediate		Advanced		Expert	
	n	%	n	%	n	%	n	%	n	%
AC1-Performing basic statistical calculations – Averages, Mean, Median, Percentiles	16	4.1	13	3.3	79	20.3	252	64.6	30	7.7
AC2-Calculating statistically significant differences - Range, Variances, Standard deviation	20	5.1	21	5.4	163	41.8	163	41.8	23	5.9
AC3-Performing Correlation, Regression	31	7.9	32	8.2	105	26.9	181	46.4	41	10.5
AC4-Performing ANOVA, Factor Analysis	42	10.8	43	11	137	35.1	145	37.2	23	5.9
AC5-Using Advanced multivariate models (Structural equations models, Bivariate / multivariate choice models, Cross-level models)	39	10	36	9.2	148	37.9	136	34.9	31	7.9
AC6-Data identification, cleaning and preparation for analysis	35	9	40	10.3	131	33.6	142	36.4	42	10.8
AC7-Identify causal paths	37	9.5	54	13.8	139	35.6	138	35.4	22	5.6
AC8-Six Sigma analysis	46	11.8	42	10.8	145	37.2	124	31.8	33	8.5
AC9-Formulate treatment vs. control groups	44	11.3	43	11	168	43.1	111	28.5	24	6.2
AC10-Selecting sample, designing survey item, Verifying validity and reliability	28	7.2	54	13.8	163	41.8	114	29.2	31	7.9
AC11-Using Interview techniques for data collection, Interview coding, Content analysis	30	7.7	55	14.1	133	34.1	137	35.1	35	9
AC12-Preparing statistical reports to make statistical results understandable	32	8.2	58	14.9	146	37.4	114	29.2	40	10.3
AC13-Presenting analysis and results through public speaking to different stakeholders	46	11.8	39	10	149	38.2	121	31	35	9
AC14-Knowledge about software packages- MS-Excel	9	2.3	31	7.9	94	24.1	115	29.5	141	36.2
AC15-Knowledge about software packages-SPSS	36	9.2	46	11.8	127	32.6	143	36.7	38	9.7
AC16-Knowledge about software packages-SAS	60	15.4	60	15.4	108	27.7	137	35.1	25	6.4
AC17-Knowledge about software packages-R	53	13.6	51	13.1	130	33.3	127	32.6	29	7.4
AC18-Knowledge about software packages-Python	73	18.7	52	13.3	141	36.2	102	26.2	22	5.6
AC19-Knowledge about software packages-Tableau	62	15.9	55	14.1	153	39.2	102	26.2	18	4.6
AC20-Knowledge about software packages-Qlik View	58	14.9	36	9.2	188	48.2	93	23.8	15	3.8

The data indicates that higher proportion of respondents reported being at the intermediate level in terms of several analytical competencies such as using advanced multivariate models (38%), identifying causal paths (36%), six sigma analysis (37%), formulating treatment vs. control groups (43%), selecting sample, designing survey item, verifying validity and reliability (42%), preparing statistical reports to make statistical results understandable (37%), presenting analysis and results through public speaking to different stakeholders (38%), knowledge about software packages-R (33%), knowledge about software 143 packages-Python (36%), knowledge about software packages-Tableau (39%), and knowledge about software packages-QlikView (48%). For the competency calculating statistically significant differences - range, variances, standard deviation, the respondents were equally representing (42% each) both intermediate and advanced level. Higher proportion of respondents reported to be at the advanced level of expertise for analytical competencies such as performing basic statistical calculations - averages (mean, median), percentiles (65%), performing correlation, regression (46%), performing ANOVA, factor analysis (37%), data identification, cleaning and

preparation for analysis (36%), using interview techniques for data collection, interview coding, content analysis (35%), knowledge about software packages-SPSS (37%), and knowledge about software packages-SAS (35%). For the analytical competency knowledge about software packages- MS-Excel (36%) only higher proportion of respondents rated at the expert level. The analytical competency levels are graphically presented in Figure.



4.3 DISTRIBUTION OF ADOPTION OF HR ANALYTICS

Adoption levels of HR analytics among the respondents is assessed based on the four constructs presented in the theoretical model. The four constructs are performance expectancy, effort expectancy, social influence, and facilitating conditions. Each of these four constructs and the adoption is measured using the items discussed in the methodology. The items under the constructs are measured using a five-point scale with values representing 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, and 5-strongly agree. Summary statistics were calculated for the construct performance expectancy through the items (PE1) "I would find HR analytics useful in my job", (PE2) "Using HR analytics enables me to accomplish tasks more quickly", (PE3) "Using HR analytics increases my productivity", and (PE4) "If I use HR analytics, I will increase my chances of getting a raise." The construct effort expectancy was measured using items (EE1) "My interaction with HR analytics would be clear and understandable", (EE2) "It would be easy for me to become skilful at using HR analytics", (EE3) "I would find HR analytics easy to use", and (EE4) "Learning to operate HR analytics is easy for me."

Table 4.9: Distribution of Variables of HR analytics Adoption (n= 390)

Variable	<i>M</i>	<i>SD</i>	<i>SE_M</i>	<i>Mdn</i>	<i>Mode</i>	<i>Skewness</i>	<i>Kurtosis</i>
PE1-"I would find HR analytics useful in my job."	3.73	0.81	0.04	4.00	4.00	-0.79	1.26
PE2-"Using HR analytics enables me to accomplish tasks more quickly."	3.54	0.84	0.04	4.00	4.00	-0.21	-0.30
PE3-"Using HR analytics increases my productivity."	3.61	0.90	0.05	4.00	4.00	-0.47	0.09
PE4-"If I use HR analytics, I will increase my chances of getting a raise."	3.85	0.78	0.04	4.00	4.00	-0.52	0.63
EE1-"My interaction with HR analytics would be clear and understandable."	3.71	0.88	0.04	4.00	4.00	-0.75	0.98
EE2-"It would be easy for me to become skilful at using HR analytics."	3.53	0.91	0.05	4.00	4.00	-0.22	-0.34
EE3-"I would find HR analytics easy to use."	3.65	0.90	0.05	4.00	4.00	-0.43	0.11
EE4-"Learning to operate HR analytics is easy for me."	3.78	0.84	0.04	4.00	4.00	-0.75	1.11

4.4 ANNOVA

ANOVA test for linearity is carried out on the research model of the study. The results of ANOVA output for linearity test (**Table 4.10**) have shown that the assumption of deviance from linearity is rejected ($p > 0.05$). This suggests the presence of a linear relationship among variables in the model.

Table 4.10: ANNOVA TEST FOR LINEARITY

			Sum of Squares	df	Mean Square	F	Sig.
Performance Expectancy	Between Groups	(Combined)	13.273	11	1.207	1.476	0.138
		Linearity	4.891	1	4.891	5.982	0.115
		Deviation from Linearity	8.382	10	0.838	1.025	0.421
	Within Groups		309.025	378	0.818		
	Total		322.297	389			
Effort Expectancy	Between Groups	(Combined)	10.592	11	0.963	1.168	0.308
		Linearity	0.298	1	0.298	0.362	0.548
		Deviation from Linearity	10.293	10	1.029	1.248	0.259
	Within Groups		311.706	378	0.825		
	Total		322.297	389			
Social Influence	Between Groups	(Combined)	5.99	12	0.499	0.595	0.846
		Linearity	1.302	1	1.302	1.552	0.214
		Deviation from Linearity	4.688	11	0.426	0.508	0.898
	Within Groups		316.307	377	0.839		
	Total		322.297	389			

4.5 CORRELATIONS

Correlation among the independent variables leads to multicollinearity. Higher correlation leads to problems in model fit and results. To verify multicollinearity, initially, the Pearson correlation matrix is checked. And in the next step, variance inflation factor (VIF) for independent variables is obtained to check existence of multicollinearity. If the correlation coefficients are above 0.9, multicollinearity may prevail between the variables (Dohoo et al., 1997). **Table 4.11** presents the bivariate Pearson correlations for the variables in the model. The correlation values do not indicate any existence of multicollinearity in the data as all values are below 0.8 (Hair et al., 2013).

Table 4.11: Bivariate Pearson Correlation

	PE	EE	FC	SI
PE	1			
EE	0.033	1		
SI	0.194**	0.089	1	
FC	-0.066	0.032	0.063	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

4.6 DIFFERENCES IN ANALYTICAL COMPETENCIES BY GENDER

An attempt is made to check whether the male and female respondents differ in their analytical competencies. To this extent, a two-tailed independent samples t-test was carried out to assess the differences in means of analytical competencies by gender. The results of the t-test are presented in Table 4.12. It is identified that the results of t-test were significant, $t(159.23) = 2.43$, $p = 0.016$. The results show that the mean of analytical competencies significantly differed between the male and female respondents. Also, the mean of analytical competencies in the male (3.73) respondents was significantly higher than the mean of analytical competencies in the female (3.55) respondents.

Table 4.12: T-Test

	Male		Female				
Variable	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
Analytical Competencies	3.73	0.55	3.55	0.74	2.43	.016	0.29

Variables Compared to test Differences	<i>Sig.</i>	Hypothesis validation	<i>d</i>	Effect Size
Analytical competencies by gender	$p < 0.05$	Supported	0.29	Small

4.7 DIFFERENCES IN ANALYTICAL COMPETENCIES BY TRAINING PROGRAMMES

ANOVA test was carried out to ascertain the differences among respondents' analytical competencies by the levels of whether training was offered, no. of training programmes attended within the organisation, and no. of training programmes attended outside the organisation. The results are shown in **Table 4.13** From the results, it can be observed that there are significant differences ($F(7, 382) = 5.82$, $p < 0.001$) in analytical competencies among the levels of whether training was offered, no. of training programmes attended within the organisation, and no. of training programmes attended outside the organisation. Analytical competencies differed significantly (at 95% confidence level, $F(1, 382) = 11.32$, $p < 0.001$, $\eta^2 = 0.03$) by whether training was offered levels. But, analytical competencies were not significantly different (at 95% confidence level, $F(3, 382) = 0.56$, $p = 0.639$) by no. of training programmes attended within the organisation levels. However, analytical competencies differed significantly (at 95% confidence level, $F(3, 382) = 7.75$, $p < 0.001$, $\eta^2 = 0.06$) by no. of training programmes attended outside the organisation levels.

Table 4.13: ANNOVA Test

Variable	SS	df	F	p	η^2
Whether Training was Offered	3.98	1	11.32	<.001	0.03
No. of training programmes attended within the organisation	0.59	3	0.56	.639	0.00
No. of training programmes attended outside the organisation	8.17	3	7.75	<.001	0.06
Residuals	134.28	382			

Variables Compared to test Differences	<i>Sig.</i>	Hypothesis validation	η_p^2	Effect Size
Analytical competencies by the training offered	$p < 0.05$	Supported	0.03	Small
Analytical competencies by training within the organisation	$p > 0.05$	Not Supported	-	-
Analytical competencies by training outside the organisation	$p < 0.05$	Supported	0.04	Small

CHAPTER 5

FINDINGS AND CONCLUSION

5.1 FINDINGS

Demographic characteristics of the respondents the important demographic characteristics of the respondents are presented below:

- It is generally considered that females occupy HR roles in more numbers than their male counterparts. Against this common belief that women dominate the HR profession, the study reveals that it is still a male dominated profession.
- The respondents, both male and female, are holding different HR positions from generalist to specialist. However, a large proportion of them is holding generalist positions.
- A substantial proportion of the respondents having professional qualification are males. 228
- A good proportion of the respondents, both male and female, are in the age group of 28-34 years. Presence of relatively younger HR professionals across the industries provides scope for spreading analytical literacy and transforms them as change agents.
- A little more than half of the male respondents and a little less than half of the female respondents have more than five years of experience.
- Age-group wise distribution of the respondents shows that about 41 per cent belong to 28-34 years age group and around 32 per cent belong to 35- 41 years age group.
- Age-group wise and organisation's workforce size-wise distribution of respondents shows that relatively younger HR professionals are working in semi medium-sized organisations while relatively older HR professionals are working in larger organisations. Given the presence of relatively young and also trained HR professionals in semi medium organisations, one may expect them to implement HR analytics more readily.
- Only a smaller proportion of the respondents belonging to every age group have reported having received some training in HR analytics. However, the age-group

wise distribution of HR professionals who received training shows that a large proportion of them belong to 28-34 years age group.

- About 1/3rd of the respondents are from the IT (Information Technology) industry. In both genders, representation from the IT industry is
- Age-group wise and industry-wise distribution of respondents also brings out the importance of the IT industry. However, in the senior age group of 49+ years, respondents are equitably distributed across the industries such as IT, retail, and banking/finance/insurance.
- The study found that there are six major types of positions occupied by HR professionals. They are generalist, specialist, HR associate, HRIS/analytics specialist, manager, and director. More specialist services are called for due to the growing importance of talent retention and management in HR. Despite this, it is surprising to find that a large number of companies are relying on generalists to manage complex human resource functions.
- The distribution of respondents based on the position and workforce size of the organisation reveals two things. Firstly, a large majority of them are employed as generalists, and secondly, a large proportion of them are employed in semi-medium organisations. Across all the age groups, a large number of respondents are holding a generalist position. HR analytics requires proper orientation and training. Since generalists dominating the HR profession, they require more excellent orientation and training in HR analytics.
- In the relatively young age group of 21-27 years, a considerable number of respondents are holding a managerial position.
- Irrespective of positions held by an HR professional in an organisation, training is required in HR analytics. However, it is reported by the respondents that training in HR analytics is being imparted on a selective basis depending upon the position and aptitude.
- Training plays a vital role in acquainting HR professionals with emerging techniques. More than half of the respondents have not received any training program on HR analytics offered/sponsored by the company. Those who have received some training both inside and outside the organisations, the majority of respondents across all age groups have reported that they have not attended more than two programs. This trend 230 clearly brings out the inadequacy of

training in HR analytics. When inquired about whether any training was offered in HR analytics, a majority of respondents, both male and female, responded negatively.

- The distribution of the respondents, according to work experience has revealed that about 47 per cent of them are having less than five years of work experience, while about 41 per cent are having 6-12 years of experience. Only a small per cent of respondents have more than 20 years of total work experience.
- Education qualification wise distribution of the respondents evidently brings out the fact that engineering graduates are dominating the HR profession. It is unfortunate to note that professionally qualified MBA graduates are having relatively lesser representation in a field which is supposed to be their own. Though HR management requires specialist skills, it is surprising to find that only 41 per cent of the respondents are professionally qualified to manage human resources.
- It is disheartening to note that only 30 respondents out of 390 have specialised in analytics through certification courses. There is a severe skill deficit in the HR profession. There is every case for entrusting the HR function in the organisation to the HR specialists with analytics as an added qualification.
- Training is required for all employees. In the case of employees having a lesser experience, training is more relevant. Comparison of respondents' work experience and training offered indicates that only about 55 per cent of them (who have less than five years of experience) received training. Supportive training programs need to be organised for those who have lesser experience in organisations. The distribution of respondents by their work experience and training offered to them strengthens this proposition.
- The distribution of respondents by their nature of HR function handled reveals that a vast majority of them are handling talent planning and acquisition function. In order of importance, functions that respondents are handling are training/development, compensation/ benefits and employee engagement/ well-being/ relations functions followed by 231 systems/analytics functions, and succession planning/ career planning functions.
- The HR professionals included in the study group are using different types of software to perform HR analytic functions. MS-Excel is the most popular

package among all the HR professionals. Fink (2010) has emphasized that several useful analyses can be carried out using MS-Excel itself, which is in congruence with the present study results.

5.2 ANALYTICAL COMPETENCIES OF HR PROFESSIONALS

HR professionals nowadays require analytical competencies in order to implement HR analytics. An important aim of the study focuses on assessing the analytical competencies of HR professionals. The identified analytical competencies are: Performing basic statistical calculations - averages (mean, median), percentiles; calculating statistically significant differences - range, variances, standard deviation; performing correlation, regression; performing ANOVA, factor analysis; selecting sample, designing survey item, verifying validity and reliability; using interview techniques for data collection, interview coding, content analysis; preparing statistical reports to make statistical results understandable; presenting analysis and results through public speaking to different stakeholders; knowledge about software packages- MS-Excel; knowledge about software packages-SPSS. The analytical competencies that are identified and rated are in consistency with the propositions made by Jeanne G. Harris J. G. and Elizabeth Craig (2011), Popovs

ka and Latkovikj (2015), SHRM Competency Model (2016), and Ulrich et al., (2017). The major findings relating to the distribution of analytical competencies are the following.

- Almost all the respondents have reported that they are quite familiar with the usage of MS-Excel and using it and applying it for performing analytical 233 functions. Fink (2010) has conveyed similar opinion that quite useful analyses can be done by the HR professionals using Excel or spreadsheet.
- A very smaller proportion of the respondents have an advanced level of analytical competencies. They are using correlation and regression techniques, ANOVA, factor analysis and such other advanced techniques, with their proficiency in SPSS and SAS. Fink (2010) carried similar response in their study that companies were using reasonably good analytical tools like regression.

The major objectives of the study are: to analyse the IT policies of India and Tamil Nadu; to study the human resource management in the IT industries in Tamil Nadu;

to study the problems of the employees in the IT industries in the study area; to analyse the work climate in the IT industries in the study area; to study the job satisfaction of the employees in the IT industries in the study area; and to suggest measures for implementing better human resources development programmes in the IT industries in the study area.

The important hypotheses of the study are: there is a significant difference in the compensation paid to the employees of the IT industries in the study area; job satisfaction improves if the personnel needs of employees of IT industries are attended in the study area; job satisfaction improves with better work atmosphere in the IT industries of the study area; and there is a significant difference in the job satisfaction among the employees of the IT industries in the study area.

This research work is conducted for the period from 1986 to 2011 to analyze the job satisfaction among the employees working in IT industries in Chennai District. The analytical frame work consists of both primary and secondary data. Multistage stratified random sampling method was used in this study. This sampling is performed in four stages: In stage one, the Chennai City was purposively chosen for this research work.

The Chennai city has ten corporation zones and 155 wards. To select the sample respondents' total households in Chennai city was considered. In the selection, 400 employees working in IT industries in Chennai are randomly chosen. The sample respondents are identified in terms of employment IT/ITES/BPO industry during the survey period. In the third stage, primary data were collected from the sample respondents. A detailed questionnaire was prepared for this study. A pilot study was undertaken before the final survey and after that a few questions pertaining to job satisfaction have been added. The data in the filled in questionnaire were entered into computer. Then tables for each question in the questionnaire were drawn and for the frequencies percentages were calculated.

The present research theoretically contributes to the assessment of analytical competencies. The study has shown significant role of those analytical competencies in shaping the use behaviour (application) of HR professionals towards HR analytics. The research contributes to the assessment of the application of use behaviour in technology adoption in general and application of HR analytics

in particular. The study results highlighted that training offered within the organisation lacks significance. External experts and certification bodies are to be involved in training HR professionals. Despite availability of advanced statistical software, many organisations are relying on traditional spreadsheet packages for HR decision making. By popularising the usage of statistical software like SPSS, SAS, and R high precision analytics reports can be generated, which will enhance the decision-making outcomes with higher certainty. Insights drawn from the present study pave way for carrying out further research in the domain of HR analytics and technology adoption.

5.3 CONCLUSION

Human resources are the most important and critical element of an organisation's success. Human resources create the competitive advantage for the business. Managing human resources in an effective way is a challenge that every organisation has to face. HR professionals shoulder this responsibility to help organisation manage its human resources. HR professionals act as cultural stewards who propagate the core values of the organisation and ensure that those human resources associated with the organisation demonstrate the desired behaviours in the organisation. An organisation's capability to reach the desired business objectives is largely affected by the human resources employed in the organisation. Human resources produce the distinct advantage to one organisation over the others. Role of HR professionals is crucial in shaping the correct HR strategy to attract and retain the best human resources that match the business requirements. HR professionals play a key role to assure the availability of the needed human resources for the organisation. HR professionals are responsible to direct the entry, deployment and exit of the talent needs of the organisation. They play active role in planning, recruitment, staffing, and training the talent to carry out the organisation's activities without any disturbance. HR professionals also address the individual needs of the employees by timely compensation and benefits administration. They ensure the optimum productivity and performance levels of the employees through the right communication, motivation, and engagement. When organisation undergoes transformational changes, HR professionals take the lead to implement the change management smoothly. While carrying out all these functions, HR professionals need to maintain good employee satisfaction levels. HR

professionals keep watch on organisation's health which is determined by the general organisational climate. Some of the issues that concern HR professionals are employee attrition, low productivity of employees, high HR costs, talent deficit, etc. Several business decisions taken by the middle and top management levels are dependent on the state of human resources in the organisation. Thus, HR professionals need to provide timely updates of HR data to various stake holders within the organisation. Managements of the organisation are interested in understanding the performance of the HR function in itself. Thus, HR professionals need to present to the management, various HR decisions taken up and the results of such decisions. To make the right decisions about human resources, HR professionals require data that provides the correct insights. Analytics in the HR domain is a big leap in this direction.

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ANNEXURE I - QUESTIONNAIRE

1. Name (optional): _____

2. Gender (Put ' ' mark in appropriate box)

Male ☐ Female ☐

3. Age (In completed years): _____

4. Educational Qualification (Put ' ' mark in appropriate box)

B.Tech.,	
B.Sc./B.Com./BA/BBA	
M.Tech./M.Sc./MS	
MBA/PGDBM/MHRM	
PhD	

5. Name of the Organization: _____

6. City where your organization is located: _____

7. Total Workforce Strength:

a) Your branch: _____

b) Overall: _____

8. Where is your organization's headquarters located:

India ☐

Others (specify if any)

9. Select the industry to which your organization belongs to:

(Put ' ' mark in appropriate box)

Banking/Financial/Insurance Services ☐	
Health Care Services ☐	
Hospitality/Travel/Tourism ☐	
Retail ☐	
Telecommunications ☐	
Education/Academic consultancy ☐	
Manufacturing (Heavy) ☐	
FMCG ☐	
Information Technology ☐	
Process Outsourcing ☐	
Public Sector/Govt. ☐	
Others (specify if any) ☐	

10. Designation: _____

11. Total Work Experience (in years): _____

12. Your position in current organization:

Generalist ☐	
Specialist ☐	
Manager ☐	
Director ☐	
HRIS/Analytics specialist ☐	
Others (specify if any) ☐	

13. Which Human Resource functional area are you currently associated with
(Select more than one area, if applicable)

Talent Planning and Acquisition	
Appraisal	
Compensation/Benefits	
Employee Engagement/Well-being/Relations	
Training/Development ☐	
Information Systems/Analytics	
Succession Planning/Career Planning	
Others (specify if any)	

SECTION II

PROFICIENCY LEVEL OF ANALYTICAL COMPETENCIES AMONG HR PROFESSIONALS

Read the below statements and indicate your level of proficiency against each item: You may consider the scale mentioned below to rate the competency by putting (‘’) mark in the appropriate box.

Scale Anchors:				
A	B	C	D	E
Basic Have a common knowledge of basic techniques.	Novice Have the level of experience gained in experimental scenarios or as a trainee on-the-job.	Intermediate Able to successfully complete tasks as requested. Help from an expert may be required.	Advanced Can perform the actions associated with this skill without assistance.	Expert Known as an expert in this area. Can provide guidance, troubleshoot and answer questions.

14. Performing basic statistical calculations - Averages (Mean, Median), Percentiles					
15. Calculating statistically significant differences - Range, Variances, Standard deviation					
16. Performing Correlation, Regression					
17. Performing ANOVA, Factor Analysis					
18 Using Advanced multivariate models (Structural equations models, Bivariate / multivariate choice models, Cross-level models)					
19. Data identification, cleaning and preparation for analysis					
20. Identify causal paths					
21. Six Sigma analysis					
22. Formulate treatment vs. control groups					
23. Selecting sample, designing survey item, Verifying validity and reliability					
24. Using Interview techniques for data collection, Interview coding, Content analysis					

25. Preparing statistical reports to make statistical results understandable					
26 Presenting analysis and results through public speaking to different stakeholders					

Scale Anchors:				
A	B	C	D	E
Basic Have a common knowledge of basic techniques.	Novice Have the level of experience gained in experimental scenarios or as a trainee on-the-job.	Intermediate Able to successfully complete tasks as requested. Help from an expert may be required.	Advanced Can perform the actions associated with this skill without assistance.	Expert Known as an expert in this area. Can provide guidance, troubleshoot and answer questions.

27. Knowledge about software packages

(i) MS-Excel					
(ii) SPSS					
(iii) SAS					
(iv) R					
(v) Python Expert					
(vi) Tableau					
(vii) Qlik View					
(viii) Others (specify if any)					

SECTION III

ADOPTION OF HR ANALYTICS

After reading the following statements, give your agreement to the choices below by ticking (‘|’) the corresponding numerical value in the brackets against each statement:

Scale Anchors:				
A	B	C	D	E
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

28. Performance Expectancy

(i) I would find HR analytics useful in my job.					
(ii) Using HR analytics enables me to accomplish tasks more quickly.					
(iii) Using HR analytics increases my productivity					
(iv) If I use HR analytics, I will increase my chances of getting a raise.					

Scale Anchors:				
A	B	C	D	E
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

29. Effort Expectancy

(i) My interaction with HR analytics would be clear and understandable.					
(ii) It would be easy for me to become skilful at using HR analytics.					
(iii) I would find HR analytics easy to use.					
(iv) Learning to operate HR analytics is easy for me.					
(i) My interaction with HR analytics would be clear and understandable.					
(ii) It would be easy for me to become skilful at using HR analytics.					

30. Social Influence

(i) People who influence my behaviour think that I should use HR analytics.					
(ii) People who are important to me think that I should use HR analytics.					

(iii) The senior management of this business has been helpful in the use of HR analytics.					
(iv) In general, the organisation has supported the use of HR analytics.					

31. Facilitating Conditions

(i) I have the resources necessary to use HR analytics.					
(ii) I have the knowledge necessary to use HR analytics.					
(iii) HR analytics is compatible with other systems I use.					
(iv) A specific person (or group) is available for assistance with HR analytics difficulties.					

32. Level of Adoption

(i) My organization is putting a policy in place to use HR analytics.					
(ii) I am beginning to explore using HR analytics.					
(iii) I am interested in using HR analytics.					
(iv) I am recommending my organization to invest in HR analytics.					
(v) I use HR analytics for some specific tasks.					

SECTION IV

Extent of Data Sophistication Used in HR Analytics

Indicate the extent of sophistication of data analysis being done in your organisation corresponding to the HR functions mentioned by ticking (‘|’) the corresponding brackets against each statement.

Scale Anchors:				
A	B	C	D	E
Basic	Exploratory	Predictive	Prescriptive	Optimisation
Routine reports are only generated (Data entry, Tables)	Descriptive statistical analysis is used (Graphs/Averages/Dispersion)	Predictive/High end statistical analysis is used (Trend/Regression)	Prescriptive/Business value analysis (Decision Models/Simulation)	Automated, beyond the prescriptive level, matching prescription outcome data and further improvements

33. Strategic planning					
34. HR planning					
35. Diversity					
36. Recruitment					
37. Selection					

Scale Anchors:				
A	B	C	D	E
Basic	Exploratory	Predictive	Prescriptive	Optimisation
Routine reports are only generated (Data entry, Tables)	Descriptive statistical analysis is used (Graphs/Averages/Dispersion)	Predictive/High end statistical analysis is used (Trend/Regression)	Prescriptive/Business value analysis (Decision Models/Simulation)	Automated, beyond the prescriptive level, matching prescription outcome data and further improvements

38. Compensation						
39. Benefits						
40. Employee training /education						
41. Management development						
42. Performance management						
43. Competency / talent assessment						
44. Promotions						
45. Career planning						
46. Succession planning						
47. Employee attitude surveys						
48. Downsizing/ layoffs						
49. Union/labor relations						
50. Organization design						
51. Organization development						
52. Change management						

SECTION V

EXTENT OF APPLICATION OF HR ANALYTICS

Please indicate the extent to which HR analytics applications are being used for HR decision making by ticking (‘’) the option of your choice below:

Scale Anchors:				
A	B	C	D	E
Never	Rarely	Sometimes	Frequently	Regularly

53. Assess routine HR process performance (payroll, benefits, communication, etc.)					
54. Evaluate and improve the HR department functioning					
55. Evaluate the effectiveness of HR programs and practices					
56. Measure the cost of providing HR services					
57. Measure the impact of HR programs on the workforce in terms of competence, motivation, attitudes, behaviours, etc.					
58. Measure the business impact of HR programs and processes					
59. Conduct cost-benefit analyses (also called utility analyses) of HR programs					
60. Assess the potential impact of HR programs before they are implemented					
61. Evaluate and track the performance of outsourced HR activities					
62. Identify HR programs that should be discontinued					
63. Identify where talent has the greatest potential for strategic impact					
64. Make recommendations about the talent that reflect your company's competitive situation					
65. Assess and improve the human capital strategy of the company					
66. Contribute to decisions about business strategy and human capital management					
67. Support organizational change efforts					

SECTION VI

ANALYTIC PROFILE

68. Which of the following are available for you to use at work in your organization? Put (') for all those which are applicable.

MS Excel	
SPSS	
SAS	
R	
Python	
Tableau	
Qlik View / Qlik Sense	
Others (Specify if any)	

69. Has your company offered/sponsored any training programme on HR analytics?

Yes ☐ No ☐

If YES, mention the number of training programmes attended,

(a) Within your company: _____.

(b) Outside your company: _____. Thank you very much for your Time and Patience

ANNEXURE II – RESEARCH ARTICLE
A STUDY ON ADOPTION AND APPLICATION OF HR ANALYTICS AMONG HR PROFESSIONALS WITH
REFERENCE TO DLK TECHNOLOGIES

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ABSTRACT

This study explores the adoption and application of HR Analytics among HR professionals with specific reference to DLK Technologies. The study aims to understand the factors that influence the adoption of HR Analytics and the extent to which HR Analytics is used in decision-making processes. A mixed-methods approach is utilized, involving a survey of HR professionals at DLK Technologies and follow-up interviews with select participants. The findings reveal that while the majority of HR professionals are aware of HR Analytics, only a small percentage have fully adopted it. Factors influencing adoption include the availability of data and resources, organizational support, and the perceived usefulness of HR Analytics. The study also identifies a range of applications for HR Analytics, including talent management, recruitment, and employee engagement. However, challenges to effective application are also noted, such as a lack of skills and knowledge among HR professionals and the complexity of HR Analytics tools. The study concludes with recommendations for HR professionals and organizations to effectively adopt and apply HR Analytics to enhance HR decision-making processes.

INTRODUCTION

Human Resource (HR) analytics is a data-driven approach to managing people at work. It involves using data and analytical methods to understand, measure, and improve HR processes, strategies, and outcomes. HR analytics has become increasingly popular among HR professionals in recent years as a way to gain insights into workforce trends, identify potential problems, and make informed decisions about HR policies and practices.

The adoption and application of HR analytics have several benefits for HR professionals. By analysing HR data, HR professionals can identify patterns and trends, predict future outcomes, and make data-driven decisions that are more likely to be successful. For example, HR analytics can be used to identify areas of high turnover and to develop retention strategies, to analyse employee engagement levels and to develop initiatives to improve engagement, and to identify skills gaps and to develop training programs to address them.

However, the adoption and application of HR analytics also come with challenges. HR professionals need to have the necessary skills to analyse and interpret HR data, and they need to ensure that data privacy and security are maintained. In addition, HR professionals need to be able to communicate the insights gained from HR analytics effectively to key stakeholders, including senior management and employees.

Despite these challenges, the adoption and application of HR analytics are likely to continue to grow in importance in the coming years as HR professionals seek to leverage data to make more informed decisions and to improve the effectiveness of HR policies and practices. As such, it is important for HR professionals to develop the necessary skills and knowledge to effectively use HR analytics to support organizational objectives.

REVIEW OF LITERATURE

Popovska and Latkovikj (2015) in their study to explore competency framework for HR professionals identified nine competencies, namely, mediation, HR expertise, leadership and direction, consultation, communication, ethical practice, global action, knowledge of the business, and argument-based decision making. Among these nine competencies, argument-based decision-making points to utilising data analytic techniques to rightly interpret information and support business decision making.

This study listed several skills related to research and data analytics as the sub-competencies of argument-based decision making.

Kremer K (2018) reviewed 39 articles published between the years 2004- 2017 to describe the factors that moderate HR analytics. The review refined five main directions of understanding the moderating factors and named them as identify problems, data infrastructure, information technology, analytical skills, enterprise approach. Of the 11 most relevant articles listed by the author for comparison, six articles highlighted the moderating effect of analytical skills of HR professionals on HR analytics.

OBJECTIVE OF THE STUDY

The primary purpose of the study is to understand the adoption and applications of HR analytics among HR professionals in India. In accordance with this, the following objectives are set up.

- To conceptualise analytical competencies essential for HR professionals;
- To assess the level of analytical competencies among HR professionals;
- To identify the level of adoption of HR analytics among HR professionals;
- To investigate the extent of application of HR analytics by the HR professionals.

NEED FOR STUDY

Due to its emergent nature, HR analytics came into the research limelight very recently. There are no significant studies to understand the adoption of HR analytics at the individual level. Though the concept of adoption of technology innovation is regarded as universal (Wejnert, 2002), several factors are different in each country's context. Majority of studies on HR technologies and information systems were based on developed nations (Panayotopoulou, Vakola, & Galanaki, 2007). Countries in the Asian region have got limited exposure to these studies. In the case of Indian context also, there is a dearth of comprehensive studies on the HR technologies, particularly HR analytics.

Reviews of the research agenda on HR analytics have stressed the need for carrying out large-scale, expensive and ambitious sample surveys (Wall & Wood, 2005) and longitudinal quantitative analysis (Guest, 2011). On these premises, an attempt is made to verify the current state at which the HR professionals are in terms of their analytical competencies, and to assess how readily HR professionals are adopting HR analytics, and also, to investigate the extent of HR analytics applications in the organisations.

SCOPE OF THE STUDY

- Considering the objectives of the study, time, and proximity considerations, the study is confined to HR professionals working.
- Generally, HR analytics framework works well in organisations with a considerable size of human resources. Hence, to participate in the study, organisations having at least 500 or more employees were only considered.
- The study is limited in understanding the adoption of HR analytics within the framework of UTAUT, as this theory is well-grounded in explaining the technology adoption behaviours.
- The analytical skills of HR professionals and the application of HR analytics are studied based on expert opinion on widely accepted variables and previously available studies.

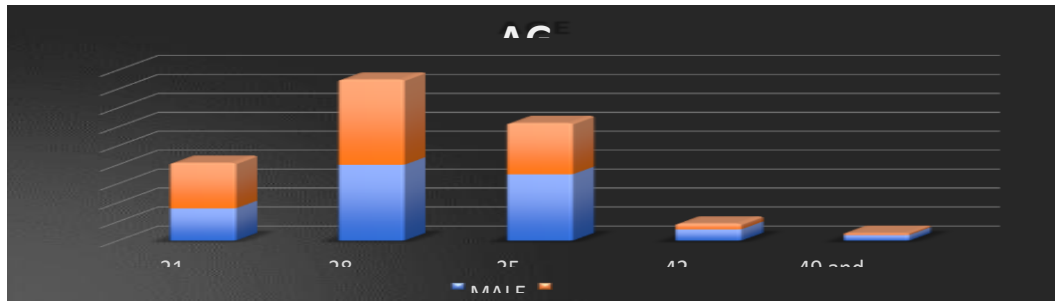
RESEARCH METHODOLOGY

It is essential for the conduct of data collection and analysis. The research design used in this study is explained in nature as it examines the existing conditions in the organization. Descriptive research is also called statistical research is used for the study. Snowball sampling is a type of nonprobability sampling method that is used. The statistical tools used for analysis are T-Test Correlation and ANNOVA.

DATA ANALYSIS AND INTERPRETATION

Table 4.1: Gender wise and age-wise distribution of respondents			
Variable (Gender →)	Male	Female	Total
Age Group (Years ↓)			
21 – 27	48 (17)	26 (24)	74 (19)
28 – 34	111 (40)	50 (45)	161 (41.3)
35 – 41	97 (35)	30 (27)	127 (32.6)
42 – 48	16 (6)	3 (3)	19 (4.9)
49 and above	8 (3)	1 (1)	9 (2.3)
Total	280 (100)	110 (100)	390 (100)

4.1.1: Chart showing Gender wise and Age wise distribution of the respondents

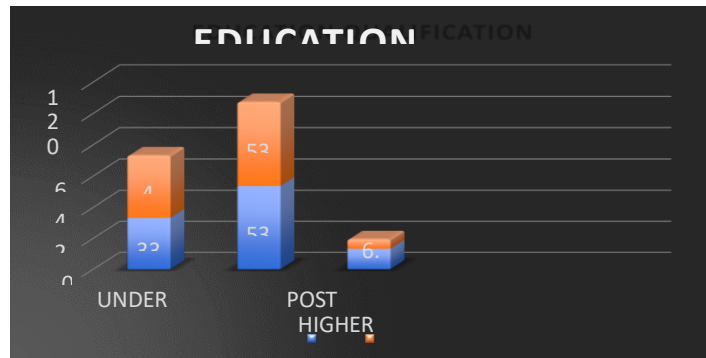


INTERPRETATION

Of the 390 respondents, 71.8 per cent are males. Female respondents in the study are 28.2 per cent. **Table 4.1** shows that 3/4th of the respondents are in the 28-41 years age group. More precisely, around 41 per cent are in 28-34 years age group and around 33 per cent are in 35-41 years age group. Of the 280 male respondents, 40 per cent are in the 28-34 years age group, and 35 per cent are in 35-41 years age group. Similarly, 45 per cent of the 110 female respondents are in 28-34 years age group, and 27 per cent are in 35-41 years age group.

Table 4.2: Distribution of respondents by educational qualification and gender			
Variable (Gender →)	Male	Female	Total
Educational Qualification ↓			
Under Graduation	93 (33.2)	44 (40)	137 (35.1)
Post-Graduation	150 (53.6)	59 (53.7)	209 (53.6)
Other Certification/Higher Qualification	37 (13.2)	7 (6.3)	44 (11.3)
Total	280 (100)	110 (100)	390 (100)
Note: The figures in parentheses indicate percentage to total			

4.1.2: Chart showing distribution of respondents as per their educational qualification and gender



INTERPRETATION

Table 4.2 presents the distribution of respondents as per their educational qualification and gender. Around 54 per cent of the respondents have a postgraduate qualification. The proportion having post-graduation qualification is same across the genders.

While 40 per cent of the female respondents have an undergraduate qualification, around 33 per cent of the male respondents have the Undergraduate qualification.

While most of the respondents having graduation as highest qualification are engineering graduates, most of the respondents having post-graduation qualification are from management stream. It is surprising to find that the HR profession is still not being managed by professionally qualified individuals.

Table 4.3: Gender wise and work experience wise distribution of respondents

Variable (Gender →)	Male	Female	Total
Total Work Experience (Years ↓)			
≤5	127 (45)	59 (54)	186 (47.7)
6 - 12	120 (43)	37 (34)	157 (40.3)
13 - 19	20 (7)	12 (11)	32 (8.2)
20 - 26	8 (3)	2 (2)	10 (2.6)
27+	5 (2)	0 (0)	5 (1.3)
Total	280 (100)	110 (100)	390 (100)

Note: The figures in parentheses indicate percentage to total

4.1.3: Chart showing respondents distributed by gender and workexperience

INTERPRETATION:

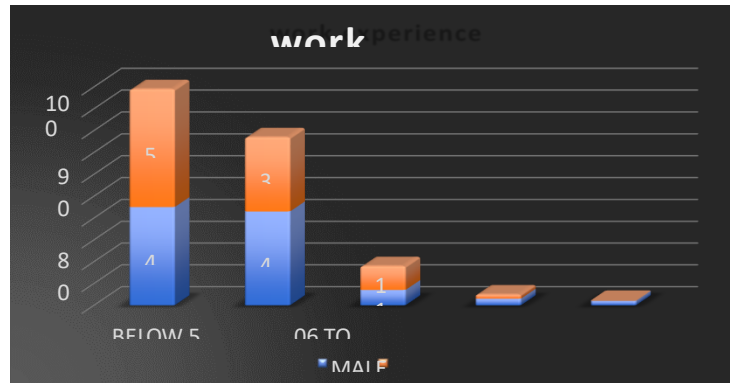


Table 4.3 presents profile of the respondents distributed by gender and work experience. As is clear from the table, a large proportion of the respondents have less than or five years of experience only. While 54 per cent of females have less than or equal to five years of experience, this proportion for males is 45 per cent.

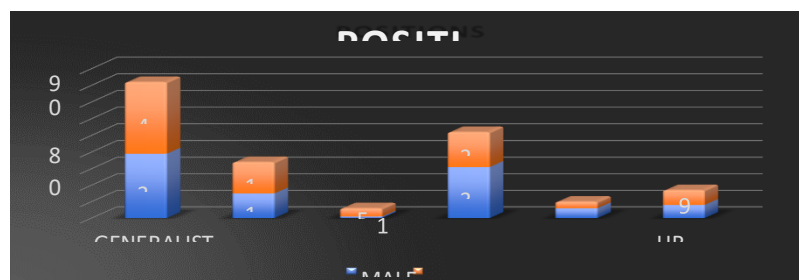
Thus, it can be inferred that female HR professionals are having lesser years of work experience than their male counterparts.

A little more than 40 per cent of the respondents have work experience between 6-12 years. 43 per cent of the male respondents and 34 per cent of female respondents fall in this category.

Table 4.4: Gender wise and position wise distribution of respondents

Variable (Gender →)	Male	Female	Total
Position ↓			
Generalist	108 (39)	47 (43)	155 (39.7)
Specialist	43 (15)	21 (19)	64 (16.4)
HR Associate	3 (1)	5 (5)	8 (2.1)
Manager	88 (31)	23 (21)	111 (28.5)
Director	16 (6)	4 (4)	20 (5.1)
HRIS/Analytics specialist	22 (8)	10 (9)	32 (8.2)
Total	280 (100)	110 (100)	390 (100)

4.1.4: Chart showing Gender wise and position wise distribution of respondents.



INTERPRETATION:

The distribution of the respondents by gender and position held is presented in **Table 4.4**. HR professionals have been categorised into six categories, from generalist to analytics specialist. Of the 390 respondents, around 40 per cent are

generalists. Forty-three per cent of female respondents and 39 per cent of male respondents are generalists; next higher representation is from the category of managers. Of the 111 managers, 88 are male, and 23 are female. Only 8 per cent of the respondents are analytics specialists. This proportion has not varied much by gender.

The industry represented by the respondents is profiled and presented in Table 4.5. The respondents in the present study represent around 20 different industries. Around 30 per cent of the respondents are from the IT industry. It can be observed that 11.8 per cent of the respondents are representing the banking/financial/insurance services. Respondents from manufacturing (heavy) industry represent around 8 per cent. The proportion of respondents from health care services, education, and public sector/govt. stood at 6.7 per cent from each category.

ANNOVA

ANNOVA TEST FOR LINEARITY

			Sum of Squares	df	Mean Square	F	Sig.
Performance Expectancy	Between Groups	(Combined)	13.273	11	1.207	1.476	0.138
		Linearity	4.891	1	4.891	5.982	0.115
		Deviation from Linearity	8.382	10	0.838	1.025	0.421
	Within Groups	Total	309.025	378	0.818		
Effort Expectancy	Between Groups	(Combined)	10.592	11	0.963	1.168	0.308
		Linearity	0.298	1	0.298	0.362	0.548
		Deviation from Linearity	10.293	10	1.029	1.248	0.259
	Within Groups	Total	311.706	378	0.825		
Social Influence	Between Groups	(Combined)	5.99	12	0.499	0.595	0.846
		Linearity	1.302	1	1.302	1.552	0.214
		Deviation from Linearity	4.688	11	0.426	0.508	0.898
	Within Groups	Total	316.307	377	0.839		
			322.297	389			

INFERENCE

ANOVA test for linearity is carried out on the research model of the study. The results of ANOVA output for linearity test in above table have shown that the assumption of deviance from linearity is rejected ($p > 0.05$). This suggests the presence of a linear relationship among variables in the model

CORRELATION

Bivariate Pearson Correlation

	PE	EE	FC	SI
PE	1			
EE	0.033	1		
SI	0.194**	0.089	1	
FC	-0.066	0.032	0.063	1

Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

INFERENCE:

Correlation among the independent variables leads to multicollinearity. Higher correlation leads to problems in model fit and results. To verify multicollinearity, initially, the Pearson correlation matrix is checked. And in the next step, variance inflation factor (VIF) for independent variables is obtained to check existence of multicollinearity. If the correlation coefficients are above 0.9, multicollinearity may prevail between the variables (Dohoo et al., 1997). **Above table** presents the bivariate Pearson correlations for the variables in the model. The correlation values do not indicate any existence of multicollinearity in the data as all values are below 0.8 (Hair et al., 2013).

T- Test

Male		Female					
Variable	M	SD	M	SD	t	p	d
Analytical Competencies	3.73	0.55	3.55	0.74	2.43	.016	0.29

Variables Compared to test Differences	Sig.	Hypothesis validation	d	Effect Size
Analytical competencies by gender	$p < 0.05$	Supported	0.29	Small

INFERENCE

An attempt is made to check whether the male and female respondents differ in their analytical competencies. To this extent, a two-tailed independent samples **t-test** was carried out to assess the differences in means of analytical competencies by gender. The results of the t-test are presented in **above table**. It is identified that the results of t-test were significant, $t(159.23) = 2.43$, $p = 0.016$. The results show that the mean of analytical competencies significantly differed between the male and female respondents. Also, the mean of analytical competencies in the male (3.73) respondents was significantly higher than the mean of analytical competencies in the female (3.55) respondents.

ANNOVA

Variables Compared to test Differences	Sig.	Hypothesis validation	η_p^2	Effect Size
Analytical competencies by the training offered	$p < 0.05$	Supported	0.03	Small
Analytical competencies by training within the organisation	$p > 0.05$	Not Supported	-	-
Analytical competencies by training outside the organisation	$p < 0.05$	Supported	0.04	Small

:

Variable	SS	df	F	p	η_p^2
Whether Training was Offered	3.98	1	11.32	< .001	0.03
No. of training programmes attended within the organisation	0.59	3	0.56	.639	0.00
No. of training programmes attended outside the organisation	8.17	3	7.75	< .001	0.06
Residuals	134.28	382			

INFERENCE

ANOVA test was carried out to ascertain the differences among respondents' analytical competencies by the levels of whether training was offered, no. of training programmes attended within the organisation, and no. of training programmes attended outside the organisation. The results are shown in **above table**. From the results, it can be observed that there are significant differences ($F(7, 382) = 5$, $p < 0.001$) in analytical competencies among the levels of whether training was offered, no. of training programmes attended within the organisation, and no. of training programmes attended outside the organisation. Analytical competencies differed significantly (at 95% confidence level, $F(1, 382) = 11.32$, $p < 0.001$, $\eta_p^2 = 0.03$) by whether training was offered levels. But, analytical competencies were not significantly different (at 95% confidence level, $F(3, 382) = 0.56$, $p = 0.639$) by no. of training programmes attended within the organisation levels. However, analytical competencies differed significantly (at 95% confidence level, $F(3, 382) = 7.75$, $p < 0.001$, $\eta_p^2 = 0.06$) by no. of training programmes attended outside the organization levels.

SUGGESTION

The present research theoretically contributes to the assessment of analytical competencies. The study has shown significant role of those analytical competencies in shaping the use behaviour (application) of HR professionals towards HR analytics. The research contributes to the assessment of the application of use behaviour in technology adoption in general and application of HR analytics in particular. The study results highlighted that training offered within the organisation lacks significance. External experts and certification bodies are to be involved in training HR professionals. Despite availability of advanced statistical software, many organisations are relying on traditional spreadsheet packages for HR decision making. By popularising the usage of statistical software like SPSS, SAS, and R high precision analytics reports can be generated, which will enhance the decision-making outcomes with higher certainty. Insights drawn from the present study pave way for carrying out further research in the domain of HR analytics and technology adoption.

CONCLUSION:

Human resources are the most important and critical element of an organisation's success. Human resources create the competitive advantage for the business. Managing human resources in an effective way is a challenge that every organisation has to face. Several business decisions taken by the middle and top management levels are dependent on the state of human resources in the organisation. Thus, HR professionals need to provide timely updates of HR data to various stake holders within the organisation. To make the right decisions about human resources, HR professionals require data that provides the correct insights. Analytics in the HR domain is a big leap in this direction.

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