

A Study on the Perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in the Area of Talent Acquisition and Talent Development

Sajam A. S. and Preeti Nair***

ABSTRACT

Information Technology is playing a vital role in business world. Today, competitive edge in business is achieved through innovative information technology applications. It is imperative for organisations to embrace relevant technology and put to their advantage, to stay ahead of the pack. Organisational success is largely defined by how well technology is deployed and adopted by the organisation. This is very true for industries like the Pharmaceutical Industry where knowledge is the main source of competitive advantage. The aim of this paper is to identify the research gap that can be considered for further research and to understand how other research studies have defined and approached the concept of Human Resources Analytics in organisations.

Keywords: *Information technology; Pharmaceutical industries.*

1.0 Introduction

Information technology and its applications to various business functions have changed the way businesses are run today. Today, competitive edge in business is achieved through innovative information technology applications. It is imperative for organisations to embrace relevant technology and put to their advantage, to stay ahead of the pack. Organisational success is largely defined by how well technology is deployed and adopted by the organisation. This is very true for industries like the Pharmaceutical Industry where knowledge is the main source of competitive advantage. The industry is highly technology intensive and companies learn and build their knowledge stocks which have a direct impact on innovation and company performance. They use advanced data analytics, like machine learning and artificial intelligence in corporate decision making across the entire value chain, from R&D to manufacturing and marketing. Big data and artificial intelligence initiatives have changed the competitive landscape: pharmaceutical companies now face competition from the likes of Apple and Google, whose analytics capabilities are way ahead. (Zeynep Erden, 2018)

It is equally important for Human Resources Departments of these organisations to adopt appropriate information technology applications. With the organizational size, there is a growth found in the human resources management which shows that there is a necessity for generation of human resource reports and employee data should be maintained in organizations to adopt Human Resources Information Systems (Tripathi, 2011).

Human Resources Analytics could help an organization achieve competitive edge in the market place. Organisations need to be efficient in its operations and one of the ways to improve efficiency is by reducing human resource costs and Human Resources Analytics can play an large role in achieving this objective. There have been great strides in the field of human resources for the last two decades in Talent Acquisition, Talent Development and Talent Retention.

**Corresponding author; Department of Human Resources, Parul University, Vadodara, Gujarat, India (E-mail: sajamas@rediffmail.com)*

***Associate Professor, Parul University, Vadodara, Gujarat, India*

The role of Human Resources Analytics would be to collect, retrieve, disseminate the required information from the data available to the human resources department to achieve the overall objective of an organization.

In the overall organisation context, departments like Finance, Supply Chain and Marketing have used analytics in various ways. However, Human Resources Departments has lagged behind in the use of analytics. This is largely due to the lack of awareness and differing viewpoints on the benefits of implementing Human Resources Analytics.

The usage of HRIS systems over last few decades has helped organisations to streamline operations and achieve efficiencies. Embracing the right technology coupled with right level of automation can help organisations to become efficient. Analytics is data driven output to predict the future. However, it is important to understand the nature of data to be taken and the user should be competent to analyse the data for effectively predicting the future.

1.1 Need and relevance of the proposed research work

It is always believed that effective management of human resources depends on refining Human Resource Practices to changing conditions (Rao, 2000). HRM practices help to arrange activities and to deal with the pool of human resources towards the fulfilment of organization objectives (Schuler & Jackson, 1987; Wright & Snell, 1991). HR Analytics is another tool to help achieve organisational objectives. This creates an opportunity for researchers to find the impact and effectiveness of Human Resources Analytics for organizational performance.

The availability of huge data through HRIS makes it possible for analysis to support the human resources related decisions. Some organisations lack in examining previous data and some organisations fail in the forecast of the future. This is because of the lack of appropriate perception Human Resources professionals towards Human Resources Analytics and leads to wastage of cost and time. Therefore there is a need to study and understand the perception of Human Resources Departments towards Human Resources Analytics. The present study makes an attempt to understand the perception of Human Resources Departments towards Human Resources Analytics. This study will also explore the challenges faced by the Human Resources professionals towards the implementation of Human Resources Analytics.

2.0 Review of Literature

The increased competition and the need to constantly evolve have left no room for laxity on the part of organisations. Competition internally and externally, global competitive landscape, changing economy, process and product innovations, efficient and lean operations, etc. are transforming the way industries operate. It is important for the Human Resources Departments of these organisations to respond adequately and appropriately to the organisations needs.

The review of literature lends clarity to the research done on the subject area, the viewpoints of various researchers, research ideas, observations and findings by them. To comprehend and solve the research problem, it is essential to get an understanding about the various methodologies, techniques and tools used by other researchers.

2.1 Objectives of the review of literature

1. To understand how other research studies have defined and approached the concept of Human Resources Analytics in organisations
2. To identify the research gap that can be considered for further research
3. To understand how this project is linked to related works by other researchers

It is important to understand the perception towards Human Resources Analytics in the area of Talent Management with a focused view of Pharmaceutical Sector. Literature were collected on

- Studies related to Human Resources tools and practices
- Studies related to impact of technology on Human Resources practices
- Studies related to emerging trends in Human Resources Management
- Studies related to Human Resources Analytics in Organisations

2.2 Studies related to human resources tools and practices

A study on Human Resources tools and practices (Rakhunde, 2008) underlines that Human Resources tools and practices have become essential in any industry for creating a proper work culture in the organisation to attract and retain talent. The study finds that there would be challenges in implementing these, however for the organisation to succeed these changes should be embraced. Competent and motivated workforces enable the organisations to succeed and how the Human Resources Departments must respond to the needs of the organisation. The study also emphasises the role of Human Resources department and the managers in deploying appropriate tools and practice's within the organisation.

Lam and White (1998) study shows that an organisation's human resource orientation (effective recruitment, market linked compensation and effective development) were related to return on assets, growth in sales and growth in market capitalisation. M. Sareen and Sarika Tomar (2000), in their article "Sustainable competitive advantage gaining through strategic HRM" opine that till about twenty years back, the contribution of human resource management was considered peripheral to the organization's growth and development.

2.3 Studies related to impact of technology on human resources practices

A study by (Dewan, 2017) reports that a significant positive impact of modern technology has been found on time saving in recruitment & selection practices which clearly indicate that modern technology leads to time saving in recruitment & selection practices. The findings also reveal modern technology leads to time saving in training & development practices. The positive relationship between different components of modern technology and transparency factor of training & development practices reveals that the use of modern technology is enhancing transparency in training & development practices. A significant positive relationship has been found in modern technology and time saving in performance appraisal practice and significant positive impact on transparency enhancement in performance appraisal practices.

Tansley and Watson (2000) opines that the organizations have become more complex over a period of time and the organisations must leverage Information Technology to support the capability building within the organisation. Ghosh (2002), opines that the e-HRM can move from basic workforce records to complex systems of sub-systems with distinct purposes. The workforce information system can give important information in a shape which can be coordinated with some other business information. Technology based database system has the capacity to pull out any of the information and present them in the required shape which spares a considerable measure of time and exertion.

2.4 Studies related to emerging trends in human resources management

A study by Shameem (2009) reports that the two factors that have inhibited HR's ability to function as a business partner are its logic and its language. In order to ensure that HR strategies facilitate the achievement of business strategies, a strategic integration between the two is necessary. A key factor that influences the linkage between business strategy and HR strategy is the organisation's quest to attain competitive advantage.

Literature suggests that human resource management can be a source of sustained competitive advantage (Pfeffer 1994; Wright et al. 1994). Huselid (1995) suggested that a proper configuration of human resources practices can help an organisation sustain its competitive advantage and performance. The challenge that HRM has to face relates to the outcomes. What is important, says Ulrich (1998), is not so much what HR does, but its "deliverables", or its contribution to the overall organisational outcomes.

2.5 Studies related to human resources analytics in organisations

A study on Adoption of Human Resources Analytics by Indian Organisations (Malini, 2018) shows that there is adoption of data analytics in Indian organizations. However there is difference in organizations across sectors in usage of basic analytics. The result indicates that the extent of implementation of Human Resources Analytics depends on suitable environmental factors provided by organizations. It can be confirmed that adoption of Human Resources Analytics leads to improved efficiency and improves productivity in organizations. It can help develop a data driven organization, develop existing talent for future leadership or scarce skill roles. There is a moderate positive relationship between challenges for adoption and adoption of Human Resources Analytics. Challenges faced are due to the factors like lack of awareness, lack of transparency as to how most of the key decisions are made in organizations, limited knowledge and complications in procedure. It implies that there organizations do have challenges to be faced on adoption of Human Resource Analytics. The need of dedication towards education has to be seen from top level to lower level employees which are to be addressed by the organizations.

3.0 Scope and Statement of the Problem

There is increased use of Analytics across many organisations. Though Human Resources Departments have also started using analytics, analytics based decision making has still not taken off well. HRIS systems do have voluminous data, but the precise use of this data for decision making purposes is poorly understood. Review of literature concluded that Human Resources Analytics play an important role in an organisation's success.

Several studies pertaining to the adoption of Analytics in organisations have been done; however there has been no study on the perception of Human Resources Departments towards Human Resources Analytics in the Area of Talent Management

In the pharmaceutical industry, on an average, it takes more than 10 years and over \$1 billion to discover, develop and bring to market a new drug. Over the last few years the industry invested more than \$50 billion in R&D per year and since 2000 it has invested more than half-a-trillion dollars in R&D; more than any other industry. The industry is at an interesting crossroads given the longevity of life and the pace of scientific innovation. This requires deep scientific know how and the right talent with these companies. There is a need for improved R&D productivity and efficiency, increasing the success of related clinical programs and reducing time to market for new medicines. This necessitates a responsive human resources department.

This study attempts to find the perception of Human Resources Departments at Sun Pharmaceutical Industries towards Human Resources Analytics.

4.0 Objectives of the Study

- To understand the perception of Human Resources Department at Sun Pharmaceutical Industries towards HR Analytics in Talent Acquisition.

- To understand the perception of Human Resources Department at Sun Pharmaceutical Industries in Talent Development.

5.0 Hypothesis

5.1 Based on objective 1

Hypothesis No 1a

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on age of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on age of the employee.

Hypothesis No 1b

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the gender of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the gender of the employee.

Hypothesis No 1c

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the educational qualification of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent depending on the educational qualification of the employee.

Hypothesis No 1d

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the Level of the employee in management.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent depending on the Level of the employee in management.

5.2 Based on objective 2

Hypothesis No 2a

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on age of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on age of the employee.

Hypothesis No 2b

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the gender of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the gender of the employee.

Hypothesis No 2c

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the educational qualification of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the educational qualification of the employee.

Hypothesis No 2d

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the Level of the employee in management.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the Level of the employee in management.

6.0 Methodology, Tools and Techniques

Research methodology mentions the research approach and research design for this study. This justifies the mode of research design being adopted towards the problem of research and clearly indicates the data collection procedure along with the various techniques of analysis of data collected for interpretation. The main purpose of methodology is to give a connectivity between research problem and the process by which this problem can be solved.

Descriptive Research is adopted to study the perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics. The data collected from the population shall be tested through quantitative techniques and are interpreted through various numbers and graphs and other statistical tools, while others are qualitative.

6.1 Data collection

Sampling methods: Convenience sampling method among Human Resources Department employees at Sun Pharmaceutical Industries has been used for this study. Questionnaires have been administered through google form and 30 responses were received.

7.0 Analysis and Interpretation**7.1 Introduction**

Basis the information collected using the survey, various analysis and interpretation has been made. The analysis was carried out in two stages:

The first stage deals with the analysis of the respondents profile from Sun Pharmaceutical Industries with frequency tables and charts. The second stage deals with the mean scores and total

mean scores on the perception of HR analytics in the area of Talent Acquisition and Talent Development depending on age, gender, qualification and level of the employees within the organization and the hypotheses testing made on perception HR Analytics among HR employees at Sun Pharmaceutical Industries.

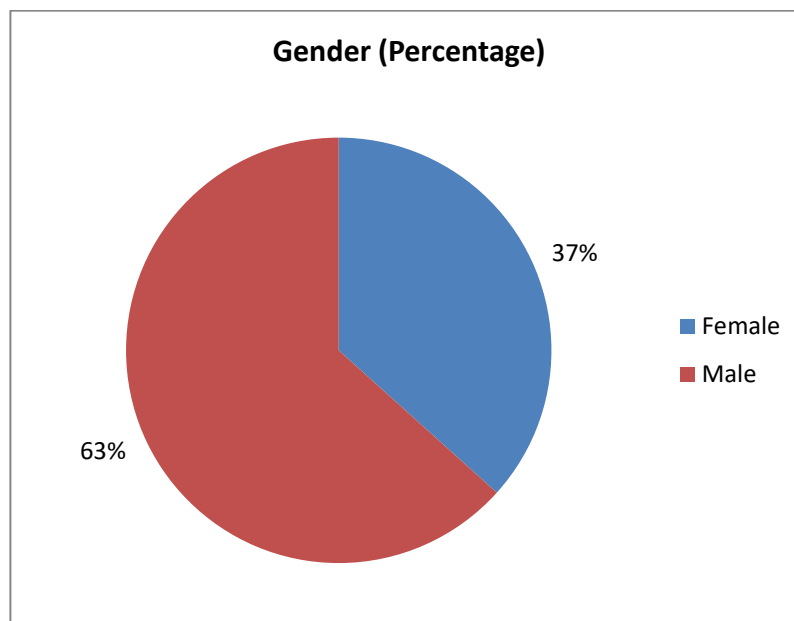
7.2 Part A: Respondents profile

7.2.1 Introduction part A

Based on the data collected from the organization various analysis and interpretations have been made with the support of various statistical tools. Part A of analysis & interpretation gives the complete information on the percentage of participants depending on age, gender, qualification and level in the organisation. The data is furnished in the following table and chart.

Table 7.3.1: Employees Basis their Gender

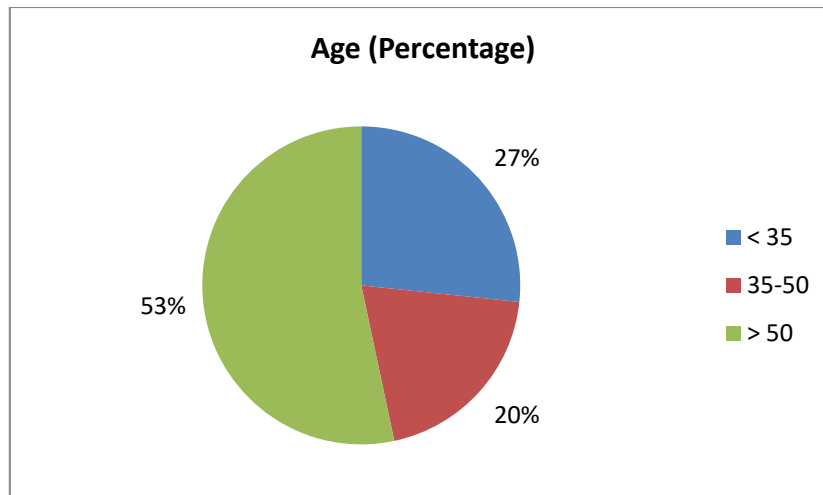
Gender	Number	Gender (Percentage)
Female	11	37%
Male	19	63%
Total	30	100%



The data above shows that of the 30 respondents, 63% were male and 37% were female.

Table 7.3.2: Employees Depending on their Age

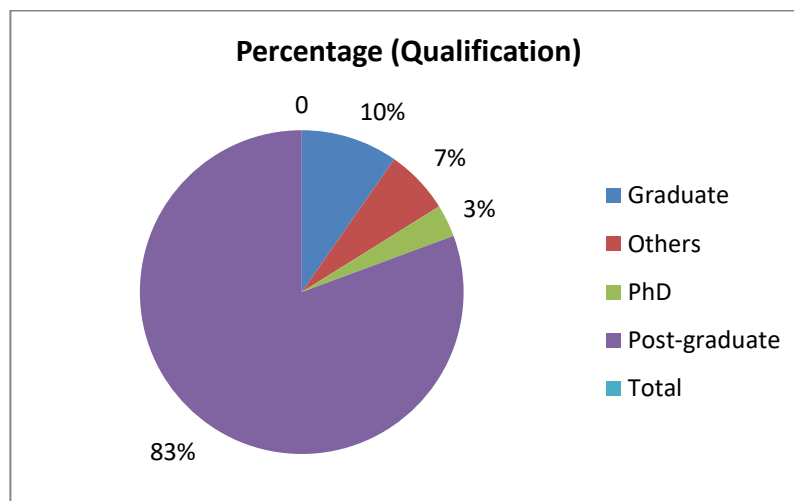
Age	Nos	Age (Percentage)
< 35	8	27%
35-50	6	20%
> 50	16	53%
Total	30	100%



The data above shows that of the 30 respondents, 27% were less than 35 years of age, 20% were between 35 to 50 years of age and 53% were above 50 years of age.

Table 7.3.3: Employees Depending on their Qualification

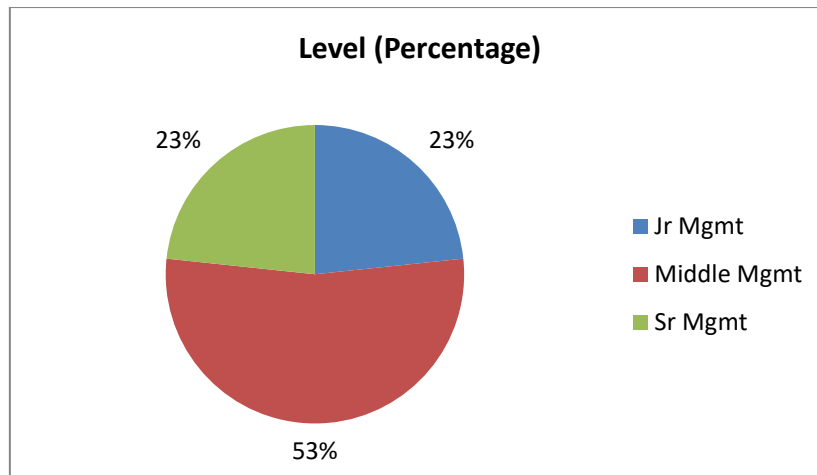
Qualification	Nos	Percentage (Qualification)
Graduate	2	10%
Others	2	7%
PhD	1	3%
Post-graduate	25	83%
Total	30	100%



The data above shows that of the 30 respondents, 86% were post graduate and above, 10% were graduates.

Table 7.3.4: Employees Depending on their Level Management

Level in Organization	Nos	Level (Percentage)
Jr Mgmt	7	23%
Middle Mgmt	16	53%
Sr Mgmt	7	23%
Total	30	100%



The data above shows that of the 30 respondents, 53% belonged to the Senior Management and 23% each belonged to the Middle and Junior Management.

7.3 Part B

Research hypothesis analysis

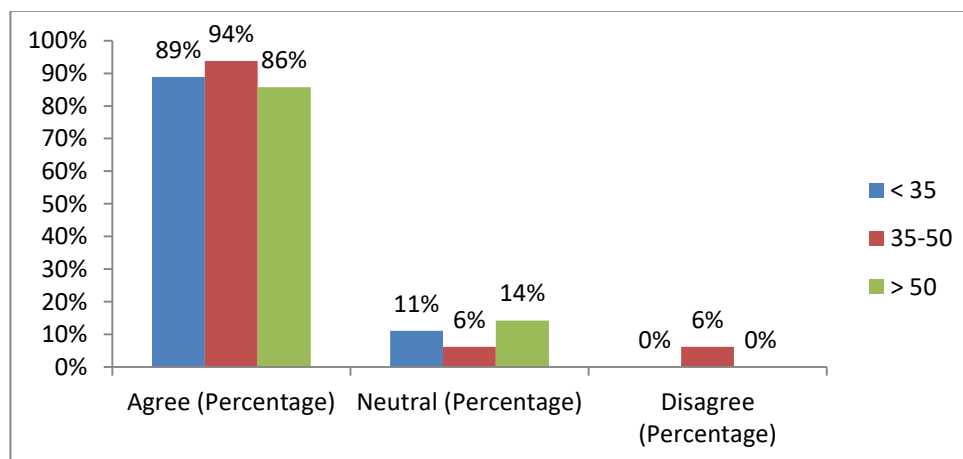
Hypothesis No 1a

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on age of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on age of the employee.

Table 7.3.5: Employees Perception on HR Analytics in Talent Acquisition Depending on their Age

Age	Agree	Agree (Percentage)	Neutral	Neutral (Percentage)	Disagree	Disagree (Percentage)
< 35	8	89%	1	11%	0	0%
35-50	15	94%	1	6%	1	6%
> 50	6	86%	1	14%	0	0%



Inference

From the above Table it is clear that our **null hypothesis is accepted**. We hence accept the hypothesis that there is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on age of the employee.

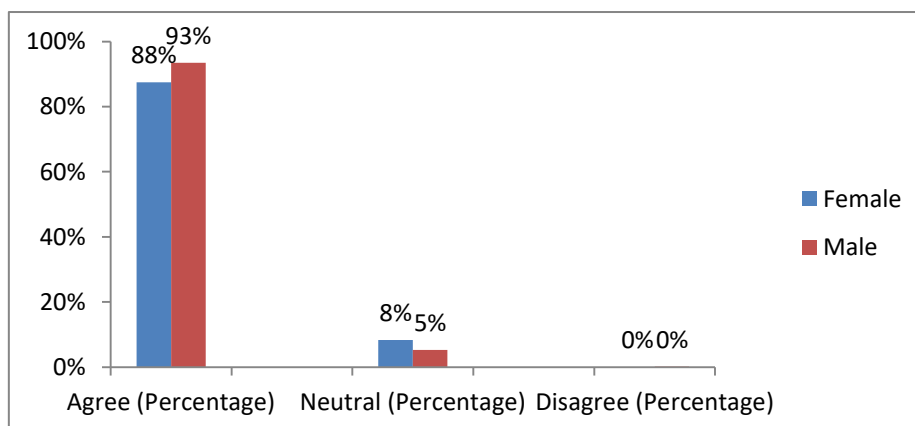
Hypothesis No 1b

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the gender of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the gender of the employee.

Table 7.3.6: Employees Perception on HR Analytics in Talent Acquisition Depending on their Gender

Gender	Agree	Agree (Percentage)	Neutral	Neutral (Percentage)	Disagree (Percentage)
Female	11	88%	1	8%	0%
Male	18	93%	1	5%	3%



Inference

From the above Table it is clear that our **null hypothesis is accepted**. We hence accept the hypothesis that there is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the gender of the employee.

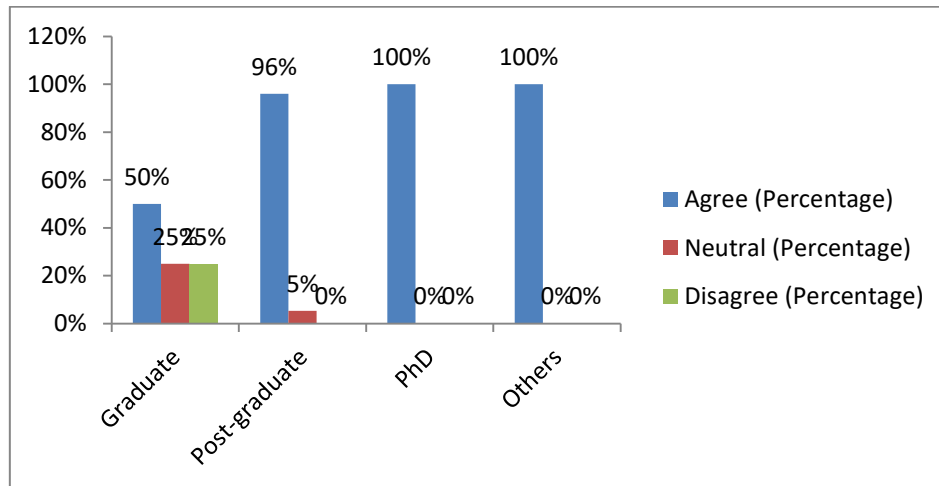
Hypothesis No 1c

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the educational qualification of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent depending on the educational qualification of the employee.

Table 7.3.7: Employees Perception on HR Analytics in Talent Acquisition Depending on their Qualification

Qualification	Agree	Agree (Percentage)	Neutral	Neutral (Percentage)	Disagree	Disagree (Percentage)
Graduate	2	50%	1	25%	1	25%
Post-graduate	24	96%	1	5%	0	0%
PhD	1	100%	0	0%	0	0%
Others	3	100%	0	0%	0	0%

**Inference**

From the above Table it is clear that our null hypothesis is accepted. We hence accept the hypothesis that there is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the educational qualification of the employee.

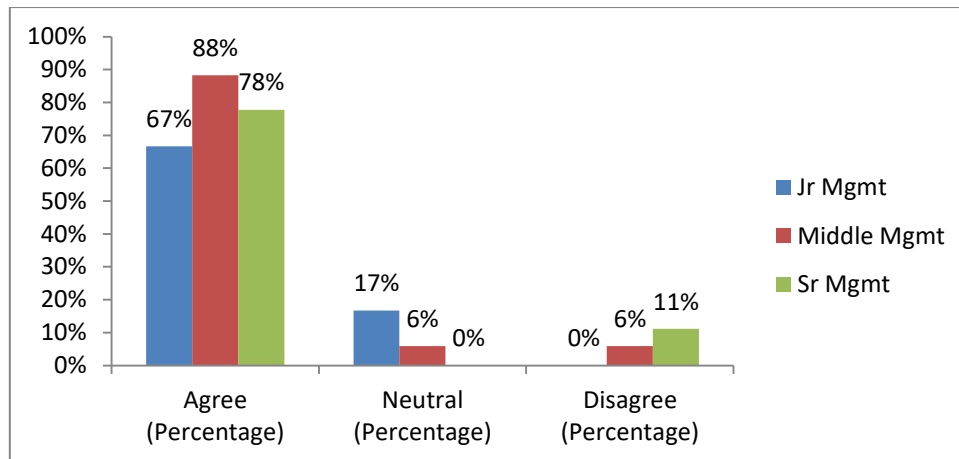
Hypothesis No 1d

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the Level of the employee in management.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent depending on the Level of the employee in management.

Table 7.3.8: Employees Perception on HR Analytics in Talent Acquisition Depending on their Qualification

Level in organization	Agree	Agree (Percentage)	Neutral	Neutral (Percentage)	Disagree	Disagree (Percentage)
Jr Mgmt	6	67%	2	17%	0	0%
Middle Mgmt	15	88%	1	6%	1	6%
Sr Mgmt	7	78%	0	0%	1	11%



Inference

From the above Table it is clear that our **null hypothesis is accepted**. We hence accept the hypothesis that **there is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the Level of the employee in management**.

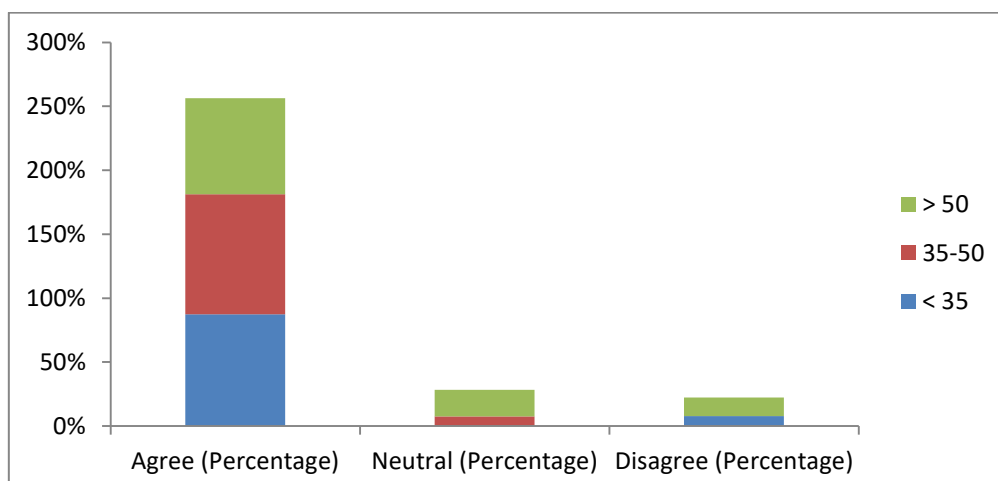
Hypothesis No 2a

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on age of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on age of the employee.

Table 7.3.9: Employees Perception on HR Analytics in Talent Development Depending on their Age

Age	Agree	Agree (Percentage)	Neutral	Neutral (Percentage)	Disagree	Disagree (Percentage)
< 35	7	88%		0%	1	8%
35-50	15	94%	1	8%	0	0%
> 50	5	75%	1	21%	1	15%



Inference

From the above Table it is clear that our null hypothesis is accepted. We hence accept the hypothesis that there is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on age of the employee.

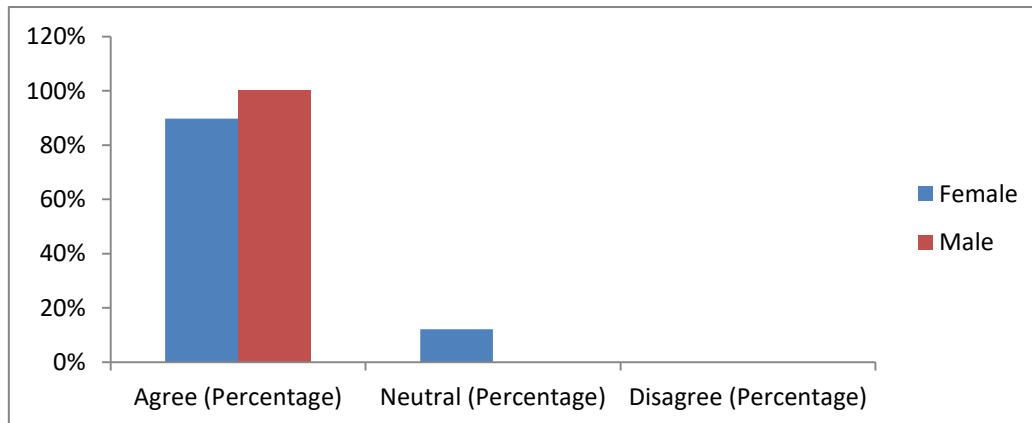
Hypothesis No 2b

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the gender of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the gender of the employee.

Table 7.3.10: Employees Perception on HR Analytics in Talent Development Depending on their Gender

Gender	Agree	Agree (Percentage)	Neutral	Neutral (Percentage)	Disagree	Disagree (Percentage)
Female	10	90%	1	12%	0	0%
Male	19	100%		0%	0	0%



Inference

From the above Table it is clear that our null hypothesis is accepted. We hence accept the hypothesis that there is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the gender of the employee.

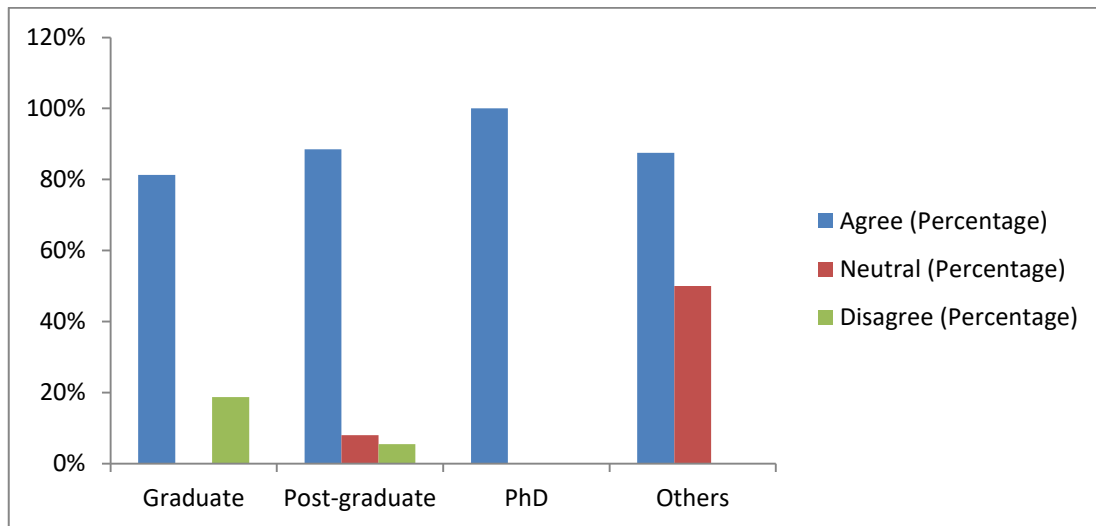
Hypothesis No 2c

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the educational qualification of the employee.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the educational qualification of the employee.

Table 7.3.11: Employees Perception on HR Analytics in Talent Development Depending on their Qualification

Qualification	Agree	Agree (Percentage)	Neutral	Neutral (Percentage)	Disagree	Disagree (Percentage)
Graduate	2	81%	0	0%	0	19%
Post-graduate	22	89%	2	8%	1	6%
PhD	1	100%	0	0%	0	0%
Others	2	88%	1	50%	0	0%



Inference

From the above Table it is clear that our null hypothesis is accepted. We hence accept the hypothesis that there is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the educational qualification of the employee.

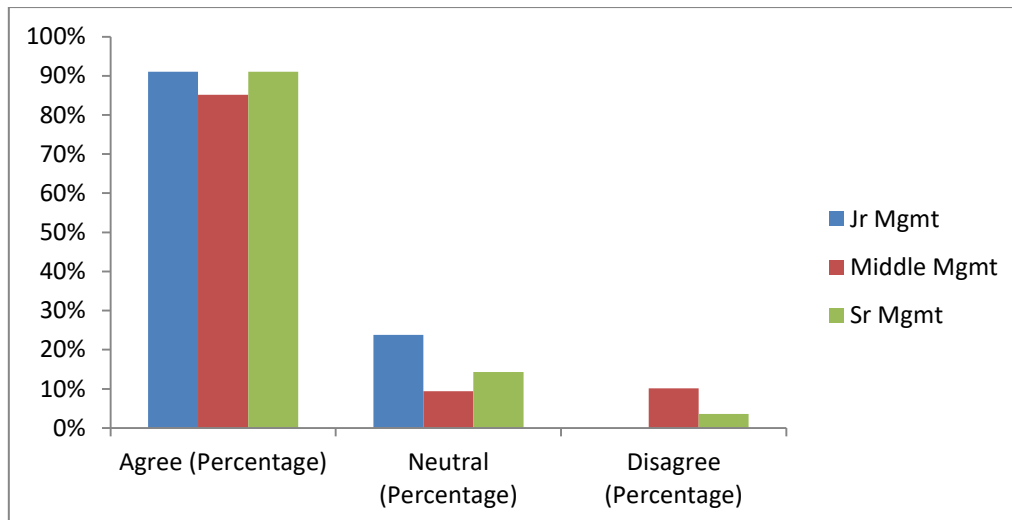
Hypothesis No 2d

Ho: There is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the Level of the employee in management.

H1: There is difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the Level of the employee in management.

Table 7.3.12: Employees Perception on HR Analytics in Talent Development Depending on their Level of the Employee in Management

Level in organization	Agree	Agree (Percentage)	Neutral	Neutral (Percentage)	Disagree	Disagree (Percentage)
Jr Mgmt	6	91%	2	24%	0	0%
Middle Mgmt	14	85%	2	9%	2	10%
Sr Mgmt	6	91%	1	14%	0	4%



Inference

From the above Table it is clear that our null hypothesis is accepted. We hence accept the hypothesis that there is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the Level of the employee in management.

8.0 Findings and Conclusions

8.1 Findings from the study based on objectives

Objective 1: To understand the perception of Human Resources Department at Sun Pharmaceutical Industries towards HR Analytics in Talent Acquisition

A research hypothesis was framed to understand the difference in perception of HR Analytics towards Talent Acquisition among HR professionals at Sun Pharmaceutical Industries on the basis of age, gender, qualification and level in management. The data analysis indicates that there is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Acquisition depending on the age, gender, qualification and level of the employee in management.

To understand the perception of Human Resources Department at Sun Pharmaceutical Industries in Talent Development

A research hypothesis was framed to understand the difference in perception of HR Analytics towards Talent Development among HR professionals at Sun Pharmaceutical Industries on the basis of age, gender, qualification and level in management. The data analysis indicates that there is no difference in perception of Human Resources Department at Sun Pharmaceutical Industries towards Human Resources Analytics in Talent Development depending on the age, gender, qualification and level of the employee in management.

Reference

1. <https://www.vlerick.com/en/about-vlerick/news/technology-is-set-to-transform-the-pharmaceutical-industry>
2. Shameem A (2009) A comparative study of emerging trends in strategic human resource management in the different sub sectors of it industry

3. Mahadik Ramchandra (A study of human resource information systems processes and performance to identify effectiveness of it in large scale organizations in Western India
4. Malini (2018) Adoption of HR Analytics in Indian Corporations
5. Rakhunde (2008) An evaluatory study of human resource tools and practices in industry
6. Bashir (2011) Impact of human resource management on customer services in banking sector
7. Dewan (2017) Impact of modern technology on selected human resource practices A study of public sector banks
8. Joseph (2011) Innovative Human Resource practices and selected HR outcomes in software firms in Kerala
9. Vasagam (2012) Recruitment and retention of Human Resources