

## Factors Influencing ICT Usages on HRM Practices in different Manufacturing Industries of Western Odisha

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### ABSTRACT

*The aim of this research paper is to find out factors influencing ICT usages on HRM practices in different manufacturing Industries of Western Odisha and rank them according to the most influential factor to less influential factor of ICT usages. The present study also determines the association between different factors of ICT usages on HRM practices of Industries of Western Odisha. The sample size was 8 HR managers from different Manufacturing Industries of Western Odisha Data collection done through questionnaire by ranking of different factors like giving 1 to most influential factor, 2 given to 2<sup>nd</sup> most influential factors on like so on to 7<sup>th</sup> influential factor. Fried man ANOVA technique used for ranking of different influential factors of different manufacturing Industries of western Odisha. Also Kendall's Coefficient of Concordance statistic is used to find the correlation between the ranks of factors influencing ICT usages on HRM practices. The result showed that there is a correlation between different factors influencing ICT usages on HRM practices as  $W^2$  found to be .741 and also finds there is a Significant difference among the factors influencing the ICT implementation on HRM practices in manufacturing industries of western Odisha as Chi square value was found to be 35.571 which is greater than tabulated value.*

**Keywords:** ICT, HRM practices, Fried man ANOVA technique, Kendall's Coefficient of Concordance, Chi square value, Western Odisha

### I INTRODUCTION

In this age of information, every organization wants to develop their competitiveness and be the market leader. The use of internet and different types of technology advancement brought revolutionary changes around all the sphere of business world. All organizations need to use new innovations to get a vital position in this competitive global market. Their new technology like ICT (information communication technology) plays a major role in the management of various industries. Also the human resource department also forced to use this ICT innovation in their operations to achieve competitive advantage. In fact due to use of HRIS (Human Resource information system) or ICT on HRM practices reduces the overall cost of HR activities which keep them to advance the HR system (Wiblen, Grant and pery, 2010). More over the use of ICT in HRM practices reduce manpower; cost, time and more importantly can bring accuracy and efficiency in work. It can also eliminate human error and one we can easily assess it sitting at the place of its own site (obeng., 2004). ICT revolution in the area of human resources has served to all its stakeholders including organizations, employs and the society. There are various factors influencing these ICT usages in HRM practices in various industries. The researchers attempted to identify those factors influencing ICT usages in HRM practices of selected manufacturing industries of western Odisha and also ranking the most influential factor of ICT usages for HRM practices.

### II STUDY AREA

HRIS is a systematic procedure for collecting, storing, maintaining, retrieving and validating the data needed by an organization for its human resources, personnel activities and organization unit characteristics **Walker (1999)**. It can support long-term planning in relation to manpower (**Kovach et al., 2002**) including supply and demand forecasts, staffing, separations and development with information on training program costs and work performance of trainee. It can also support compensation programs, salary forecasts, pay budgets, employee relations, contract negotiations etc. Communication and information technologies have added value to HR applications which helped in developing a human resource information system (HRIS). Human Resource Information System (HRIS) as a computerized system used to collect, record, and store, analyze and retrieve data pertaining to organization's human resources **Alwis (2010)**. He also defines Human Resource Management System (HRMS) as a tool designed to ensure that the organization's human resources are recruited, selected, developed, employed, deployed, and supported effectively. Emergence of HRIS and its journey from mere administrative worker to strategic partner to new age relationship builder and knowledge facilitator explores by **Kashive, N.(2011)**. Also he studied the challenges and benefits of HRIS and also compares three model for HRIS with their advantages and limitations. HRIS has high impact on Human Resource Management strategies in Jordanian commercial Banks **Mohmoud Khaled,(2014)**.By using simple regression analysis he found that HRIS had a significant effect on Human resource management strategies. Human Resource Information System (HRIS) have used for

more strategic purpose because it do more faster than any other method with less time and with less manpower **Rakib & Bhuiyaan, (2013)**. He studied the use of Human Resource Information System in both the manufacturing sector and service sector. For this they used Simple Non Probability Sampling method .Data Collection done through Semi Structured Questionnaires and used correlation analysis for establishing relationship between variables. HRIS provides an organisation more flexibility administratively and strategically **Srivastav Shefali (2014)**.She studied the importance of the Human Resource Information System in the current Scenario. She used Simple Random Sampling for her study and Descriptive Statistics and Chi Square Test for data analysis. The use of IT in HRM in organizations helped a lot to human resource staffs to free from routine job roles and enable them to concentrate on strategic planning in human resource development in this globalization era **Pinsonneault (1993)**. Organizational environments have become increasingly complex. Managers in these organizations face growing difficulties in coping with workforces as they are spread across a variety of countries, cultures and political systems. Managers can utilize IT as a tool in general as well as in human resource functions to increase the capabilities of the organization **Tansley and Watson (2000)**. Hong Kong industries perceived that the greatest benefits to the implementation of HRIS were the quick response and access to information that it brought, and the greatest barrier was insufficient financial support **Ngai, E.W. et al. (2004)**.Also they present a comprehensive literature review of human resource information systems (HRIS) and to report the results of a survey on the implementation of HRIS in Hong Kong. Moreover, there was a statistically significant difference between HRIS adopters and non-adopters, and between small, medium, and large companies, regarding some potential benefits and barriers to the implementation of HRIS. **Altarawneh and Shqaira, (2010)** studied the extent to which public Jordanian Management of SME. A Study on the use of Applicant Tracking System (ATS) suggested a model of Human Resource Information System with reference to application tracking system in a small seized enterprise (**Mukherjee, Bhattacharya and Bera 2014**). **Mamoudou,S., Joshi,G.P.,(2014)**, in their paper "Impact of Information Technology in Human Resources Management" give a brief overview about possibilities of IT usage in HR field for measuring and tracking human capital and using the HR information system. There is an impact of (HRIS) on Human Resource Management Strategies in Jordanian Commercial Banks (**Shawabkeh, 2014**). By using simple regression analysis found that HRIS had a significant effect on Human Resource Management Strategies in Jordanian Commercial Banks. **Shahzadi and Lodhi ,(2014)** studied the impact of Enterprise Resource Planning system implementation in Human Resource management

universities have adopted Human Resource Information System (HRIS) and examine the HRIS uses, benefits and HRIS barriers in Jordanian universities. They constructed a structured questionnaire to get data from HRIS users in Jordanian universities. **HRIS** have quick work and quick access to information done. But there were some HRIS implementation barriers like the insufficient financial support, difficulty in changing the organization's culture and lack of commitment from top managers studied the applications of HRIS in human resource management (HRM) in Indian companies. "Technical and strategic HRM" and "performance and reward management" are the most important factors for HRIS applications. The most common application of HRIS in organizations working in India was found to be in "employee record", and "pay roll" system. Also "technical and strategic HRM", "performance and reward management" and "corporate communication" were also used in Indian companies. By the results of ANOVA they found that manufacturing and service companies differed significantly on all sophisticated HRIS applications and by Mean scores they got on all the sophisticated HRIS applications, service companies had significant edge over the manufacturing companies. Also Indian and multinational companies did not differ significantly on any of the HRIS applications (**Kundu and Kadian, 2010**). HRIS increases the efficiency of HR functions like payroll, time, and attendance, appraisal performance, recruiting, learning management, training system, performance record, employee self-service, scheduling, absence management, systems, styles, reduced HR cost, increased motivation of the HR personnel etc. (**Shiri, 2012**). The impact of IT on HRM and it lead to the emergence of HRMS. It merged all HRM activities and processes with the information technology field while the programming of data processing systems evolved into standardized routines and packages of enterprise resource planning software (**Adewoye 2012**). There is a influence of Information Technology on Human Resource practices .They used Convenient sampling method and sample size was 300 They used Questionnaires method consist of different items related to ERP product, HRM activities and organizational productivity. They used Structural equation modelling and regression analysis for data analysis. They found the ERP implementation have negative impact on recruitment and selection and also not showing relation with compensation and benefits but having positive impact on training and development of employees. **V. K. Jain (2014)** studied the impact of ICT on human resource management practices. According to him Human Resource Management (HRM) is not limited to recruitment and training. It has become an inseparable part of every organization. ICT and HRM both are closely related to each other. ICT has significant impact on increasing the efficiency of recruitment, development and decision-making, maintenance, functions. **Khoualdi &**

**Basahel, (2014)** explored the benefits of using the SAP system to manage the human resource at the Saudi Electricity Company (SECO) and find out the challenges for implementation of SAP. They used employee feedback to find results. They used Pearson's Coefficient of Correlation and One-sample T-Test. They found that by using SAP all functions should be easy like faster data retrieval and getting data, reduced cost, speedy transaction, increasing customer satisfaction etc. **Ejaz Ali et al. (2015)** analyze the moderating impact of ERP module (HRIS/HCM) on the relationships between human resource management practices and organizational performance. Data were collected through structured questionnaire method after establishing reliability and validity. The SPSS were used to assess the model fitness, hypotheses testing and to establish validity of the instruments through Pearson Inter-correlation Matrix. A total 220 employees of 25 firms from corporate sector were sampled through simple random sampling technique. He found that HRM practices (selection, compensation) and HRIS have significant impact on organizational performance. The results further showed that HRIS moderated the relationships between selection, compensation and organizational performance. ICT was found to have significant and positive effect on Human resource management practices **Elhazzam, (2015)**. In his paper "The effect of ICT on Human Resources Management Practices (case of number of organizations in southwest Algeria: Bechar city) explores the effect of ICT on HRM practices. Information communication technology (ICT) improves the efficiency; innovation reduces the time help in easier functioning of the organisation. It improves the performance of the employee. It helps to reduce the work time **Vohra et al. (2015)**. In his human resource management and development functions like recruitment, maintenance and development, management development, skills development and organizational development have strong association with acceptance level of ICT in human resource management and development among different private, public private partnership and government institutions in Bangladesh. **David et al. (2013)** studied employees' perception in order to explore the Information technology enabled human resource functions across the globe. The study revealed seven factors namely "Compensation", "Overall Development", "Efficiency", "Reliable features", "Motivation", "Employee benefits", "Commitment". They found human resource information system (HRIS) practices will have a vital influence in this area and HRIS has become a key for developing and improving organizational effectiveness. **Muriithi, et al. (2014)** in his paper "Effects of Human Resource Management Practices and firm performance in listed commercial Banks at Nairobi Securities Exchange" explores the factors affecting the success of HRIS adoption in the listed companies at the Nairobi Securities Exchange and how the use of HRIS strategically and positively

paper" Impact of Information and Communication Technology in HRM" study the Impact of Technology Advancement on Human Resource Performance, Challenges in human resource management from technological advancement and Importance of ICT in human resource performance for this he taken factor analysis and found the conclusion that ICT improves organizational efficiency. Positive impact of ICT are so high that it over shadow the negative impacts but they also state that quantity of communication increased but quality of conversation decreased. level of the usage of HRIS and Electronic recruitment within medium-size and large Croatian companies and to evaluate the relationship among the usage of these modern managerial tools and the overall success of human resource management within these companies are studied by **Wihan and Eileen (2016)**. **Pivac, S., Tadic, I., Marasovic, B., (2014)**. The usage and acceptance level of ICT in human resource management and development at different institutions in Bangladesh was studied by **Faroque, O., Amin.R., (2016)**. Frequency distribution, descriptive statistics, chi-square analysis have been used in the study. The data were collected from 67 private, government and Public Private Partnership (PPP) organizations from different areas in Gopalganj, Bangladesh by purposive sampling technique. From Descriptive statistics they found the usage level of ICT in most of the areas of human resource management and development in the private institutions is much more than that of government institutions. On the other hand, the usage level of ICT in most of the areas of human resource management and development in the banking and financial organizations are much more than that of other organizations. By using x2-test, they found different impacts on firm performance. **Karanja, (2014)** studied how ICT can make academic management of Kenyan public universities more effective and efficient and also find out the challenges that require to achieve this effectiveness through ICT. He found ICT has become an important tool in management of universities. As compared to private universities Public universities are lacking in some field of ICT uses in Kenya. **Khashman, (2016)** explores the impact of human resource information system (HRIS) on organizational performance in Jordanian private hospitals; by examine the HRIS components like job analysis, recruitment, selection, performance appraisal applications, and communications have a significant impact on organizational performance like efficiency and effectiveness. The data was collected through questionnaire method. The population of the research included all private hospitals located in Amman city and the sample size of the research was 170 employees working in HR departments from the private hospitals. He found that there is a positive impact of the HRIS applications on organizational performance and of employees has positive attitudes towards all human resource information system applications. **Piabuo et al. (2017)** in their paper "The

impact of ICT on the efficiency of HRM in Cameroon enterprises: Case of the Mobile telephone industry” study the impact of Information and Communication Technology on the efficiency of Human Resource Management in the Cameroon mobile Telecommunication Sector. They used exploratory research design for the study and the sample size was 120. They used Pearson correlation coefficient was used to establish the relationship between the variables and regression analysis for establish the combined effect of study variables on the dependent variable. They found a significant positive relationship between the use of ICT in selection and recruitment, training and development, Human resource planning, evaluation and compensation and human resource management efficiency. **Khera.S.N and Gulati.K (2013)** focuses on the role of HRIS in HRP. The research was empirical in nature as 127 respondents from top 7 IT companies (as per their market share) were taken. The research was done with the help of the questionnaire. After analysis they found that HRIS has various benefits but the foremost is HRIS stores vital data about the employees of the organizations that helps in human resource planning. HRIS also helps in the strategic activities of HR managers and more in training and development, succession planning, applicant tracking in recruitment and selection and manpower planning. While analyzing the overall contribution of HRIS in HRP it was concluded that HRIS identifies filled and unfilled positions in an organization very effectively and accurately. **Kavanagh, et. al. (1990)** also found that HRIS works interactively with human resources management functions such as human resource planning, staffing, training and career development, performance management, and compensation management. They further concluded human resource information system in a sequence called management information system, decision support system and executive support system, transactional processing system. **J. Anitha and M. Aruna, (2013)** in their paper “Adoption of Human Resource Information System in Organisations” identify various variables that influence adoption of HRIS or any Information Systems through a thorough literature study and consolidate them under four major factors namely Technological, Organisational, Environmental and Psychological factors. Validating this model would help the organisations to understand the essential focus areas for successful adoption of HRIS. **Hanif MI, Yunfei S, Hanif MS, Muhammad ZU, Ahmed KT, et al. (2014)** explored the factors that influence the decision making regarding HRIS adoption in the telecom sector of

**(c) Methodology**

Sample size was 8 Human Resource managers from different Industries of western Odisha like Acc cement limited Bargarh, Bhusan steel Plant ,SMC ,Viraj steel ,Aryan steel , Espl, Shyam Dry from Jharguguda and Sambalpur region. Data collection done through questionnaire by ranking of different

Pakistan particularly PTCL. The study has great significance as it contributes to the existing body of knowledge by providing improved understanding of the various technological, organizational and environmental factors which facilitate or prohibit the HRIS adoption decision in the telecom sector of Pakistan. There are some influential factors of HRIS adoption in Bangladesh. Most of the variables are retrieved from the literature review. Primary data has been collected through survey by distributing structured questionnaire to the employees of the organizations. Some factors such as organization, Technology and Environment of the organization are found to be most influential factors for HRIS adoption in the organizations. The study indicates that the practice of HRIS has positive effects on the organizational performance (**Khan,A.R., et.al. 2015**). There are some critical factors that influencing the decision of to adopt HRIS in hospitals management in Bangladesh (**Alam et al. 2016**).

### III OBJECTIVES, HYPOTHESIS & METHODOLOGY

#### (a) Objectives

- (i) To identify the factors that are most likely to influence the ICT implementation in HRM practices in the manufacturing industries if Western Odisha.
- (ii) To rank the factors influencing ICT usages for HRM practices across different manufacturing sectors of Western Odisha.
- (iii) To determine whether there is any correlation between the ranks obtained on factors influencing ICT usages on HRM practices of Industries of Western Odisha.

#### (b) Hypothesis

- (i)  $H_{01}$ : There is no significant difference among the factors influencing the ICT implementation on HRM practices in manufacturing industries of western Odisha.
- (ii)  $H_{a1}$ : There is a significant difference among the factors influencing the ICT implementation on HRM practices in manufacturing industries of western Odisha.
- (iii)  $H_{02}$ : Different Organizations wise the ranking of factors influencing ICT usages are independent of the type of organizations.
- (iv)  $H_{a2}$ : Different Organizations wise the ranking of factors influencing ICT usages are not independent of the type of organizations.

factors like giving 1 to most influential factor ,2 given to 2<sup>nd</sup> most influential factors on like so on to 7<sup>th</sup> influential factor.

The non-parametric test such as Fried man ANOVA technique used for ranking of different influential factors of different manufacturing Industries of western Odisha. Also Kendall's Coefficient of

Concordance statistic is used to find the correlation between the ranks of factors influencing ICT usages on HRM practices.

### IV DATA ANALYSIS

**Table1**  
Ranks given for the Factors

ORGANIZATI ONS	EAS Y OF USE	REDUC ED COST AND TIME	SAFETY AND SECURI TY	COMPETIT IVE PRESSURE	INCREASED PRODUCTIV ITY	IMPRO VE QUALI TY OF WORK	FACILITAT ING CONDITIO N
Bhusan steel	1	2	3	4	5	7	6
ACC cement	2	1	6	3	7	5	4
Hindalco FRP	3	1	5	2	6	4	7
Aryan steel	3	2	4	1	7	6	5
SMC	2	1	4	3	5	7	6
Viraj	2	1	3	4	6	5	7
ESPL	1	2	3	5	4	7	6
Shyam Dry	3	2	5	1	6	4	7
Rj	17	12	33	23	46	45	48
Rj <sup>2</sup>	289	144	1089	529	2116	2025	2304

**Table2**

#### Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Easy of use	8	2.13	.835	1	3
Reduced cost & time	8	1.50	.535	1	2
Safety and security	8	4.13	1.126	3	6
Competitive pressure	8	2.88	1.458	1	5
Increased productivity	8	5.75	1.035	4	7
Improve quality of work	8	5.63	1.302	4	7
Facilitating condition	8	6.00	1.069	4	7

**Table 3**  
**Ranks**

	Mean Rank
Easy of use	2.13
Reduced cost & time	1.50
Safety and security	4.13
Competitive pressure	2.88
Increased productivity	5.75

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**Table 4**

**Test Statistics<sup>a</sup>**

N	8
Chi-Square	35.571
df	6
Asymp. Sig.	.000

a. Friedman Test

So, here the calculate value of fried man statistic value that is  $\chi^2$  is 35.571 .Here the number of columns(k) is 7, The table value for 5 percent level of significance for (k-1) degrees of freedom (that is 6) is 12.592. So, calculated Value of Chi square (35.571) is greater than tabulated value of chi square (12.592).

So ,we reject the null hypothesis of no significant difference among the factors influencing ICT usages on HRM Practices of different manufacturing industries of western Odisha. So, alternate hypothesis is accepted that there is a Significant difference among the factors influencing the ICT implementation on HRM practices in manufacturing Industries of western Odisha. Looking at the  $R_j$  score, it finds that reduced cost and time is the most influential Factor for ICT usages on HRM practices for manufacturing industries of western Odisha.

Ho: Different Organizations wise the ranking of factors influencing ICT usages are independent of the type of Organizations.

**Table 5**  
**Ranks**

	Mean Rank
Easy of use	2.13
Reduced cost time	1.50
Safety and security	4.13
Competitive pressure	2.88
Increased productivity	5.75
Improve quality of work	5.63
Facilitating condition	6.00

**Table 6**

Test Statistics	
N	8
Kendall's W <sup>a</sup>	.741
Chi-Square	35.571
df	6
Asymp. Sig.	.000
a. Kendall's Coefficient of Concordance	

Ha: Different Organizations wise the ranking of factors influencing ICT usages are not independent of the type of Organizations.

Here the Kendall's Coefficient of Concordance is found to be .741 which is more than 0.05.

So, here the null hypothesis the ranking of factors influencing ICT usages are independent of the type of organizations was rejected and we found that there is a correlation between the ranks of factors influencing ICT usages on HRM practices of Industries of Western Odisha

## V CONCLUSION

The usage of ICT in HRM practices enhances the effectiveness of industries of Western Odisha. This paper takes a step forward towards effectively identify the factors influencing ICT in these industries and ranking of different factors most influential to less influential factors. Its seven fold dimension covered under seven questions namely ease of use, competitive pressure, reduced cost and time, safety and security, improve quality of work, facilitating condition and increased productivity attempts to cover almost every area pertaining to

organization while choosing ICT. It will also help other stakeholders of the industries of Western Odisha and to the society. This paper identifies most influential factor is the cost and time reduction then ease of use then competitive pressure then safety and security then improve quality of work ,then improve productivity and last the facilitating condition. Further the study can also help in undertaking research work in other similar areas of ICT usages on HRM practices.

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