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Information Technology in Human Resource Management: A Practical Evaluation

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Abstract: This paper encloses a brief overview of number of observations on the applications of information technology (IT) in the field of human resource management (HRM) in general. Although the impact of IT on HRM has long been attracting the concern of academics, no pragmatic research has ever been realized in this field in India, and few studies have been reported elsewhere. The survey was conducted among the IT managers and professionals from various sectors, based on those results, the data shows that IT is used widely in the organizations to perform HRM functions in India's dynamic economy. The results also shown that, while IT has an impact on all sectors in terms of HRM to certain extent, the types of IT used vary significantly between recruitment, maintenance, and development tasks. However, the observed results here disclosed that these organizations are not applying these technologies systematically and wisely in the performance of HRM functions.

Keywords: Human Resource Management (HRM), Human Resource Management System (HRMS), recruitment, Human Resource (HR), Information Technology (IT), ANOVA test, Chi-square test.

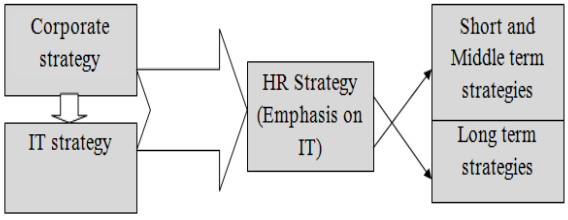
1. INTRODUCTION

The HRM function in organizations has gained increasing strategic emphasis and the importance of its alignment HRM and business strategies is well-acknowledged. In fact, effective HRM is vital in order to be able to meet the market demands with well-qualified employees at all times. Technology and HRM have a broad range of influences upon each other, and HR professionals should be able to adopt technologies that allow the reengineering of the HR function, be prepared to support organizational and work-design changes caused by technology, and be able to support a proper managerial climate for innovative and knowledge-based organizations. These technological advances are being driven primarily by strong demands from human resource professionals for enhancement in speed, effectiveness, and cost containment.

In the present context of increasing globalization, employing organizations and their environments have become increasingly complex. Managers in these organizations face growing difficulties in coping with workforces that may be spread across a variety of countries, cultures and political systems. Given such trends, IT has considerable potential as a tool that managers can utilize, both generally and in human resourcing functions in particular to increase the capabilities of the organization.

The remainder of this article is organized as follows: The following section introduces the evolution of HRM systems from an early stage to the present through a review of associated literature. This is followed by research methodology. The results of the study are then presented and discussed. Finally, the paper ends with the conclusion and future research directions.

Framework of IT Human Resources Plan



2. TRENDS IN THE UTILIZATION OF IT IN HUMAN RESOURCE MANAGEMENT

Surveys have shown that more than 90 percent of HR departments operate with some form of computerized HRMS. In a survey undertaken by the Institute of Manpower Studies, a number of key changes were found to have an impact on the use of HRMSs. These

changes included the development of the HR function itself, which resulted in the closure of many centralized IT functions, and today, the majority of HR applications are networked.

In the mid-1990s, due to business process reengineering and integration of information from varied applications, Enterprise Resource Planning (ERP) became popular among organizations. Watson Wyatt Worldwide (now Towers Watson) discovered in a survey of 649 firms that nearly every organization had made significant investments in some arrangement of enterprise resource planning (ERP), HR service centers, interactive voice response (IVR), voice recognition systems (VRS), Web applications and employee portals. The value of ERP is its capability to integrate other functions with HR under a single vendor and common technology standards. In the leading ERP systems some of the HRMS components consent the use of the internet to reduce transaction costs. For example, the HRM capability of the PeopleSoft package (one type of ERP software) was used to track the movements of 5,000 employees across 70 locations and calculate their salaries accurately. Consequently, when operational benefit in payroll processing was considered, cycle time was reduced from four days to four hours. Thus, accurate, time-effective information delivered to managers enhanced the speed and quality of decision making and assisted cost control. Moreover, in keeping with varying demand patterns, most ERP vendors have introduced second generation Web-based HRISs that are easier to integrate with other applications.

A survey reported that more than 90 percent of respondents used or had plans to use an HR portal tool in 2014 and organizations are using HR portals for company communication (50 percent), employee handbooks and policies (47 percent), work/life information and links (30 percent), benefits enrollment (24 percent), training (27 percent), employee message board (22 percent), HR record keeping (24 percent) and in areas other including recruitment and employment information (five percent).

3. RESEARCH METHODOLOGY

Research Model

The present study performs a systematic and exploratory analysis approach to investigate the impact of IT applications on HRM functions. The hypotheses were categorized according to the following practical factors:

- Use of IT
- Type of IT tools.

The justification for each empirical factor and the corresponding hypotheses are provided below.

Use of Information Technology

IT can bring many improvements to organizations. Snell, Stueber and Lepak pointed out that IT has the potential to reduce administrative costs, enhance productivity, lower speed response times, improve decision making and enhance customer service, simultaneously. The efficient management of human resources also has an important role to play in the performance and success of organizations. However, in spite of evidence of the increasing use of HR-related technology by individual firms, there has been little hypothesis development in this area and academia has failed to give the impact of IT on HR in organizations from different sectors the consideration it deserves.

The present study therefore proposes the following hypotheses:

H1a: The use of IT adopts a different pattern according to the different sector for recruitment tasks.

H1b: The use of IT adopts a different pattern according to the different sector for maintenance and development tasks.

H1c: The use of IT adopts a different pattern according to the different sector for management and planning tasks.

Types of IT Tools

Seyal et al. examined the extent of use of IT in various small and medium business organizations in Brunei Darussalam. Their study attempted to assess the depth and breadth of IT usage in business. They concluded that the chief executive's computer knowledge is positively related with the use of IT and that businesses in different sectors have different information processing needs.

Calhoun et al**.** also studied the impact of national culture on information Technology usage in organizations and reported the relationship between some organizational characteristics and use of IT.

On the other hand, culture, control and competition as the constitution of subjectivity, determine the locus of IT application in organizations. These studies do not consider the relationship between types of software

used in organizations and their internal operations. It is evident from previous studies that types of IT tools in HRM functions were given due consideration.
Elliott and Tevavichulada bring some data that shed light on the types of software applications taking place in HRM and their combination to HRM activities. The results of their study reveal that most software applications used in both sectors are not considerably different except for in terms of statistics and utility programs.

Their study does not give a comparative analysis on the types of software used for different HRM functions. They also pointed out that their sampling technique captures only one point in time and it is expected that the number of organizations integrating software and HRM functions will be constantly growing with the passage of time.
Against this backdrop, it is worth to analyze the usage pattern of the types of software for the main HRM functions and to this end, our hypotheses are postulated as follows:

H2a: Type of IT tool used differs according to recruitment tasks.

H2b: Type of IT tool used differs according to maintenance and development tasks.

H2c: Type of IT tools used differs according to management and planning tasks.

4. RESEARCH INSTRUMENT AND THE DATA

A survey approach was adopted for this study and the data was obtained by means of a questionnaire. The questionnaire contains seven questions which involve seven variables to meet the objectives of this research (Table 1). It is structured in nature and does not enclose any open ended questions. The respondents are required to choose one or more of the alternatives for questions 3-6. The range of values for questions 4-6 also shows the tasks for the related HRM functions.

The respondents were the managers of IT divisions of major government, public and private sector organizations, who were also regular attendees of the annual workshop on the use of IT in organizations. A total of 100 completed survey questionnaires were received, giving a response rate of 60 per cent.

The variables are grouped in two categories as dependent and independent variables. The proposed dependent variables of this study are “sector” and “IT tools” while the independent variables are “recruitment”, “maintenance and development,” “management and planning,” “IT use” and “restructure.”

Questions	Variables.	Definition	Range of values
1	Sector	In which sector is your organization?	Government, public, private
2	IT use	Are your organization’s daily HRM operations heavily dependent on computers and IT?	Yes/No
3	IT tools	What types of IT tools are used to complete HR functions?	Application software (such as DBMS, spreadsheets, data mining/data warehousing), information system software (such as decision support systems, executive information systems, expert systems), information and communication technologies (ICT).
4	Recruitment	For which of the following tasks does your organization use Computers /IT?	Position inventory, Internet, employee selection, employee management and workforce planning
5	Maintenance and development	For which of the following development tasks does your organization use Computers /IT?	Training and human resource development, performance evaluation, employee turnover, and absenteeism analysis
6	Management and Planning	For which of the following tasks does your organization Use computers /IT?	Personnel files and skills inventory, benefit administration, government reports, succession planning and implementation
7	Restructure	You’re your organization have any plans to improve IT use for its HRM department?	Yes/No

The ANOVA test was chosen to test the hypotheses. The ANOVA test provides a nonparametric alternative to the one-way analysis of variance and is tough in its resistance to the outliers and errors in the data relative to the usual normal theory F test. The chi-square test method is used whenever there is a need to examine the relationship between the dependent and independent variables.

Use of IT: The test results are shown in Table 1. The analysis of p-values in Table 1 indicated that there is not sufficient evidence to accept H1a or H1b. This means that the use of IT does not show a different pattern according to sector in terms of recruitment, and maintenance and development functions. This can also be interpreted as that the use of IT has no impact according to sector for these HRM functions. It can also be observed from the last column in Table 1 that the p-value is 0.01 for H2c and we accept this hypothesis. This means that the use of IT shows considerably different patterns according to sector and hence has important impact in terms of management and planning tasks.

Table 1: Test results for the impact of IT according to sector for HR functions

Dependent variable	Test variables	Hypothesis	F-value	d.f.	p-value*
Sector					
	Recruitment	H1a	1.81	2/9	0.22
	Maintenance and development	H1b	0.88	2/9	0.45
	Management and planning	H1c	7.09	2/9	0.01

*Table values are at a five percent significance level

Types of IT: The test results are summarized in Table 2. The last column of Table 2 shows that, except for hypothesis H2c, the results were found to be significant at 5 percent significance level in this category. This means that the type of IT tool used for recruitment and maintenance and development functions varies among organizations and has impact on these functions. On the other hand, the p-value for H2c indicated that there is not sufficient evidence to accept the hypothesis that the kind of IT tool used differs for management and planning function.

Table 2: Test results for the impact of types of IT on HR functions

Dependent variable	Test variables	Hypothesis	F-value	d.f.	p-value*
Sector					
	Recruitment	H2a	3.07	3/32	0.04
	Maintenance and development	H2b	2.74	3/32	0.05
	Management and planning	H2c	0.78	3/32	0.52

*table values are at a five percent significance level.

5. RESULTS

This study revealed that more than 90 percent of the organizations use computers/IT for HR functions in general. According to the study, HR departments are also planning to increase investments in HR related technologies in the near future. According to our survey, all sectors use word processing, spreadsheet tools, DBMS and Internet (82 percent) more for HRM tasks than DSS, expert systems, executive information systems and reengineering tools. This is reliable with the findings reported by Elliott & Tevavichulada and Norris. Perhaps the most important finding of this study is based on the test results, which support the position that HR applications and the use of IT are not widely integrated and structured together as one single HR portal providing service. The chi-square test results also showed that the type of IT used for different HRM functions vary notably between sectors (χ 2= 23.194, df=4, pvalue= 0.000). This situation is expected to continue in the near future since most of

the respondents (75 percent) stated that their organizations have no plans to restructure their human resource departments. Some managers may only see technology as a means of controlling, limiting and weakening their workforce. Therefore, it seems that, in future there will be a rise of ERP implementation and its standardization thereof, even though some small and medium sized organizations may find this process quite expensive.

Recruitment

The study revealed that the use of it does not adopt different patterns between sectors for recruitment tasks. Although it was found that private sector organizations (75 percent) use it more than government sector (55 percent) and public sector (45 percent) organizations do for recruitment tasks, the variation was not found to be statistically considerable (χ 2= 4.499, df=6, p-value=0.609).

Test results also indicated that the type of the IT tool used for recruitment tasks has major impact. It was remarkable to find that, despite of sector, ICT (30 percent) was identified to be the second highest used tool for recruitment tasks. This is possibly due to the fact that the users who have experience with information and communication technologies choose Internet and network technologies for their information and service needs.

Maintenance and Development

Alike to recruitment the test results indicated that use of IT does not show different patterns between sectors for maintenance and development tasks. The private sector (57 percent) uses IT more than the government (29 percent) and public sectors (35 percent) for maintenance and development functions. One of the reasons may be that even if the private sector employs less people, the maintenance and development of their human resources is essential for their existence and IT seems to be the only useful solution in this respect. However, the variation was not found to be significant (χ2= 3.044, df=6,p-value=0.803) in our study.

However, private organizations use information technology practices more for performance evaluation, employee turnover and absenteeism analysis tasks. From the various tools, application software (46 percent) was found to be the mostly used.

Management and Planning

The test results revealed that government (70 percent) and public (68 percent) sector organizations use IT slightly more than their private sector (63 percent) for HR management and planning. The difference between sectors was not found to be significant (χ2 =1.361, df = 4, p-value = 0,851). The gap between the Indian private and public sectors is not significant. Application software was found to be the widely used tool for government (47 percent), public (58 percent) and private (46 percent) sector organizations for this function.

6. CONCLUSION

This study investigates the scope and relative impact of IT use on HRM functions in organizations from different sectors. It has also taken into consideration the usage pattern of diverse IT tools to perform different HRM functions in organizations. Based on the survey data, the results firstly indicated that IT has significant impact on all sectors in terms of management and planning tasks and, secondly, that kind of IT used varies extensively for the tasks of recruitment, and maintenance and development functions. The findings also support the conclusion that the use of IT is important in the organizations for their HRM activities. Future practical studies should examine the impact of IT on additional HR functions in different organizations in other parts of the world to make a broad evaluation. Furthermore, in India this study could also be conducted with more wideness and intensity in terms of HRM functions and IT tools.

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