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MANAGING HUMAN CAPITAL USING IT TOOLS & TECHNIQUES

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Abstract

The This paper discusses the necessity of overseeing Intellectual capital by integrating concepts of HRM and tools & techniques of IT especially DW and DM, so as to achieve e-HRM.

During 21st century, HRM has entered into the "digital age", and HR managers must keep up the pace to meet the faster demand of a lot younger Generation Y and Z workforce.

Keywords: e-HRM (Electronic Human Resource Management), HR (Human Resource), IT (Information Technology), DW (Data Warehousing), DM (Data Mining)

I. INTRODUCTION

HRM deals with two groups of functions i.e. "Managerial" and "Operative". HR management deals with managerial functions by carrying out task function for the purpose of contributing to organizational and individual goals.

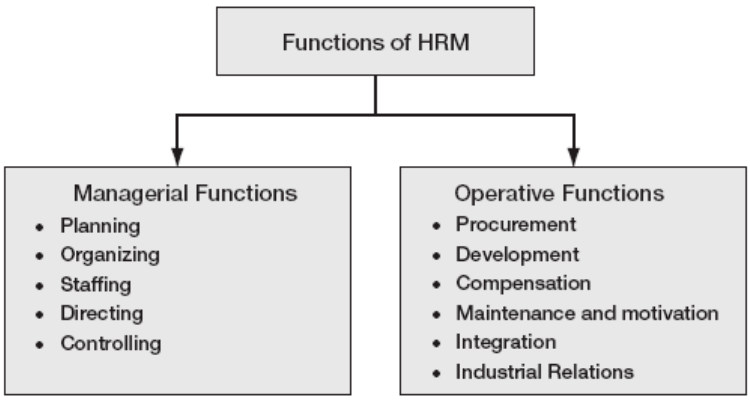
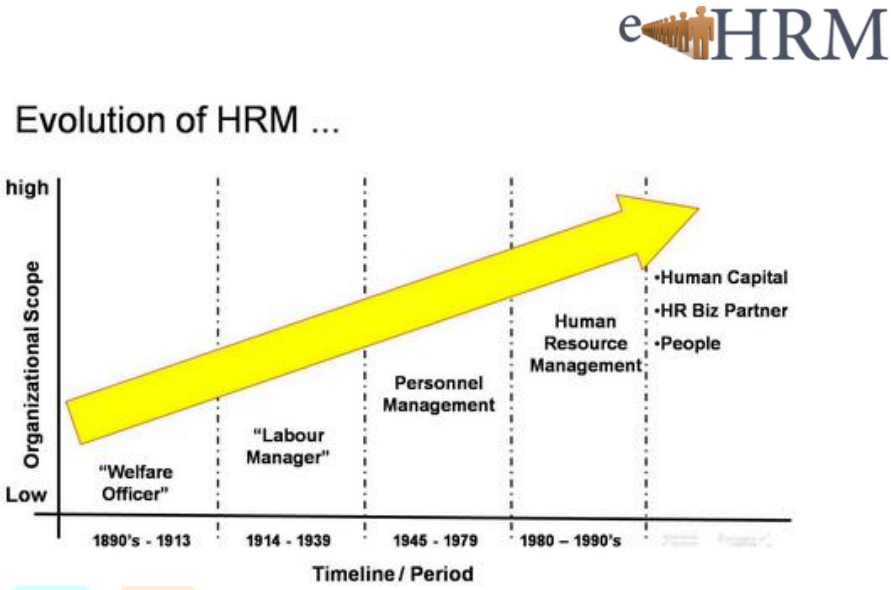


Figure: 1 (Pravin Durai, 2010)[1]

IT plays a key role in achieving organizations goals and providing competitive advantage. Information and IT are the main drivers and guiding factor in a knowledge based industrial revolution of the 21st century. In today's networking era, business use IT as leverage to survive, grow and thrive in a highly competitive environment.

[1] Durai, Pravin (2010). *Human Resource Management*. New Delhi: Pearson.

The HR function has evolved over the years from the welfare officer to personnel manager and to the e-HRM of today:



(Figure 2: Evolution of HRM) [2]

HRM in this 21st century has been the impacted by advancement in the field of ICT (Information and communication technology) i.e. from standalone PC based attendance system to automated HRIS (Human resources information systems) to e-HRM (electronic expression of HRM system) which integrate the key HR processes in fully electronic form.

Initial e-HRM module focused more on the personnel administration by electronically organizing the data related to employees (human capital), but e-HRM understood more when information related to structural capital (organizational structures, procedures and know how) was considered in those systems.

The ICT (i.e. PC, networks, internet, intranet, e-mail, e-business, portals, websites, etc…) domain induced the breadth to HRM (i.e. Recruitment, Remuneration, Retaining, Record Keeping and Retirement), and HR Manager have to use both together with their peculiar techniques, to manage the Generation Y & Z workforce in a more contemporary way. **The management of intellectual capital is intrinsic part of e-HRM today.**

HR managers are required to enter fully into the "digital age", overseeing people in these times of the 21st century, demands competencies in HRM professionals too with demonstrable high command on ICT tools and techniques.

II. FUNDAMENTAL CONCEPTS

Many use different terms and definition to describe the scope of human capital management and capital intellectual. The author [Edvinsson, 2000] in its work reflected categorization of market value scheme of an insurance and financial services company, in which standing out is perspective, the value driver and true creator of value is human capital which is carried by the individual employee(s).

With the holistic conception that has been defended of "labor competencies" and the core competences of the organization [Cuesta, A.], that concept of capital would be identified human. Thus, the intellectual capital concept is the common among two major areas of human capital and structural capital, comprised of individual and their organization's skills and experience.

Intellectual capital means the possession of knowledge, skills, motivations and values, which employees bring to the table; coupled with the applied experience which organization bring in. In a broad sense, the objective of HRM is to further optimize the intellect capital and knowledge for organization growth.

Structural capital is defined as the infrastructure that incorporates & sustain human capital. Understand the organizational capacity that includes physical systems used to transmit and store the intellectual material, as well as factors such as quality and scope of computer systems, company images, patented data, organizational concepts and documentation. It is composed of three types of capital: organizational, innovation and process.

[2] http://hrdictionaryblog.com/2012/10/28/evolution-of-human-resource-management (visited 15/Apr/2019)

Organizational capital is the investment of the company in systems, tools & operational philosophy that accelerates the knowledge flow within organization. The innovation capital is the individual capacity coupled with organizational support for new innovation results in the form of IPR and other intangible assets.

The capital process constitutes processes of work, techniques (such as ISO 9000) and programs that is used in the continuous creation of value. The capital clientele is another category, equivalent to structural and human capital. It suggests that relationships of a company with its clients are absolutely central importance for the value of the company.

After that terminological statements, should be specified something more important i.e. relationships between these concepts. It is necessary to indicate that in the process of optimization of human capital, it's necessary to have relationship with structural capital as well as their relationship with capital financial.

In the optimization process, focusing in on those capital in a non-systemic way, it would lead to errors; there will be than to consider the qualitative and the quantitative aspect of tangible and intangible capital in fair/balance way.

Considering priorities and recognitions of intellectual capital in this context, it is interesting to consider to the human resource, not as the cost but as an investment into human capital. Contribute to the optimization of human resource as an investor, as opposed to the traditional model looking for their reduction, instead main objective of the HRM should be creating standard conditions for considering the worker in practice as an investor of his capital human. And that investment must be optimized for person, company and the society

On the other hand, it must be well understood that today this human capital investor surpasses the processes of manufacturing/manual workers. So, 21st century's work activity comprises of at least four types of work processes: Material, Service, Information and Knowledge processes. From each of these types of process, a value-added product or result is produced.

III. THE ICT AND ITS IMPACT ON HRM

The HRM is increasingly depending on the IT capacity, the organizational architecture and development of human capital. And in that articulation, the determinant factor is the labor competence manifested by that human capital that the person carries.

The first HRIS was implemented in USA during 1970's using large automated computing machines [Fitz-eng, J., 1999], it was not until the 1990's with the boom of PC that HRIS becomes viable in the business world. Initially HRIS was conceived to be used by specialists and it was kept accessible only to some/HR experts [Dolan, S.L. et al., 2003] limiting its potentialities to perform only basic HRM related activities which depends on personnel data. Since 1997, since it has been adopted by many companies in the world, HRIS has been has been subject to continuous improvement till this date.

In the new e-HRM systems, key HRM processes, especially concerning strategic control, management by competencies and learning organizations, as well as computer techniques that are linked to the treatment of many information using mathematical statistics, such as data warehouses and data mining are being incorporated.

The works continue at an impressive speed relating the ICT with the optimization of capital intellectual. In the experience achieved by, it is possible to establish an itinerary for the creation or increase of intellectual capital, which included the use of ICT. Thus the itinerary comprising five steps/phases (Mission, Measure, Compute, Decision, Standardize and Innovate) should be transmitted to classes on HRM, to HR specialists and managers, and also to consultancies.

The five steps/phases process experienced by companies implementing HRIS & e-HR is:
1. Mission: This first phase provides the first glimpses that the organization has when it recognizes the need to bring in their intellectual capital to the surface and clearly conveying message to the organization about the need of e-HRM.

2. Measure: The second phase deals with the development of Balance indicators for this new model. It also includes the development of the function of "controller" of intellectual capital and the initial work of arranging the measurement of said capital in the accounting system.

3. Compute: This phase emphasizes the development of technology and its administration to increase "transparency" (i.e. easy to see) and the packaging of knowledge, as well as the communication systems needed to share that knowledge to other stake holders.

3. Decision: The decision comes at several levels of the company, to act on the new concepts related to the perspective of the balanced report. In particular, what decision to be taken keeping in mind the past and to navigate in the future in terms of innovation and development.

4. Standardize: After the positive outcome derived from appropriate decision and its implementation using the packaged knowledge, standardize the process with proper documentation.

5. Innovate: This last step is systematic cultivation of innovation as the core competence of the organization, to sustain a continuous renewal and development and stay on the crest of the wave.

The HRM architecture will have to accommodate increasingly use of ICT, for the sake of an efficient and effective learning organization, where the horizontal flows of Knowledge to be managed in a decisive way.

In the aforementioned "horizontal flows of knowledge", the Internet and the intranet, together with the recurrence of e-mail, and e-learning, through corporate portals, web pages and other technical resources, will demand the appropriate treatment of that immense spectrum of information to obtain the knowledge, specifying the use of current technologies such as data warehouses and data mining

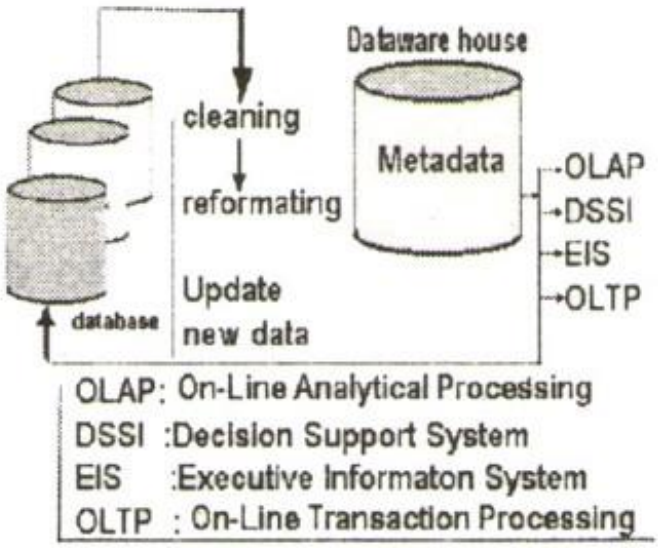
Information overload is a big problem for people and organizations, which has been increased because of boom of Internet and intranet, increasing in turn the difficulty in obtaining the necessary knowledge. That information is received in great variety of formats and through a large number of channels: electronic mails, articles, mailboxes of complaints and suggestions, faxes, presentations, web pages, database, social media, etc... Some of those information sources are relatively accessible and are organized or structured, and others are not absolute.

Among the structured information sources are the databases of customers and products, the data contained in business management systems, known as ERP (enterprise resource planning) and the data obtained through the points of sale (TPS – transaction processing system) or the company's website.

Among the unstructured information sources are account: email, legal contracts, files of word processor, excel files, presentations, videos, reports, articles and research papers, journals specialized, drawings, specifications of products, sound recordings, web pages, etc….

Both data warehouses and data mining are current technologies that try to reconcile all those sources of data and information, helping people to filter, catalog, access them in optimal and easy way, and above all, try to help learn of them to draw conclusions, reaching to necessary knowledge. From this, the people who work can: Make better decisions; improve work organization and improve their training and contribute to the improvement business.

DW - Data warehouse(s), constitute procedures or technologies that seek to solve the problem of dispersion or disaggregation of data, in order to help the people in charge of the taking decisions. DW provide access to aggregate information, classified and with added value. DW constitutes many database(s) that integrates information from many different systems, whose objective is to enable decision-making and the exploitation of that information.



(Figure 3: Virtual Warehouse)[3]

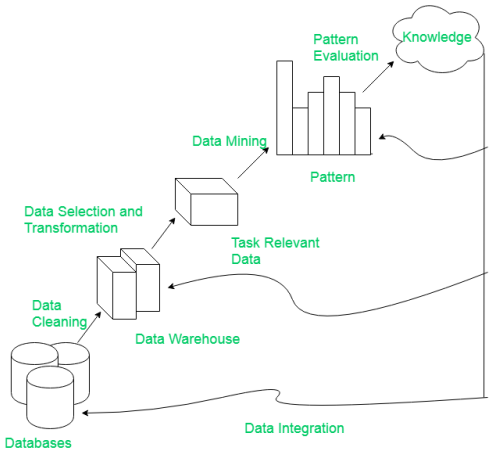
The use of DW is contrary to the systems of traditional databases, which are designed fundamentally for data collection, and not for your consumption, that traditional conception of database is often called OLTP: On-line transaction processing (a TPS). Most of the current databases in many companies are of the OLTP type, where data is accumulation of all areas of the institution, including of course the business areas.

As opposed to OLTP systems, DW, organize information and optimize it exclusively for reading and exploitation. To the varied procedures or techniques to achieve that purpose of the "DW" are called OLAP: On-line analytical processing (online data analytical process). In OLAPs associated with DW, the analysis is performed entirely by a specialized person/human, who knows how to interpret the information that the data warehouse offers you.

Data mining (**DM**) constitute processes automatic discovery and quantification of relationships hidden among the data, to describe and predict behaviors and patterns that enrich and facilitate decision making. This offer the possibility that data analysis and obtaining derivative

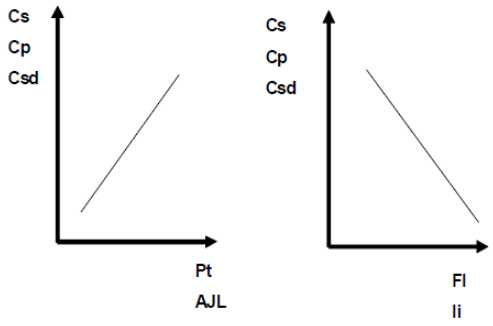
[3] http://www.sciencehq.com/computing-technology/data-warehousing-and-data-mining.html (visited 15/Apr/2019)

conclusions are made by computers automatically, without human intervention human, except to validate the reliability of the conclusions obtained by the machine.



(Figure 4: Data Mining)[4]

Data mining will be increasingly useful in the evaluation of the intangibles indicators comprised by the HRM, given that their know-how or impact implies the correlation with tangible indicators. As it has been shown (figure 6) intangible indicators such as job satisfaction (Cs), perception of perspectives (Cp) and socio-metric coefficient of the manager (Csd), they show/translate positive impact through linear correlations with productivity of work (Pt) and use of working hours (AJL); whereas negative correlations with the fluctuation (Fl) are and incidences of indiscipline (Ii).



(Figure 5: Correlation of intangible and tangible indicators)[5]

This may differ for different companies, they can reveal the peculiar correlations between intangible and intangible indicators, where data mining will make its fundamental contribution in making decisions.

On a perspective of the strategic nature of HRM though e-HRM, DW will help companies to make strategic HRM decision making, fundamentally those associated with the perspective of learning and development.

In another aspect of the HRM, referred to the treatment of labor competences, they are especially interested in correlations with successful performance, inherent in definition of labor competence. The possession of data related to profiles and dictionaries of labor competencies in DW, together with indicators of individual and organizational performance, will help the data mining process in a more dynamic way. On the other hand, gap(s) in labor competencies and competencies key to the company, for training, for management of learning organization, they will have to manage constantly, and DW will clear the way for decision making.

IV. CONCLUSIONS

The IT had a significant impact on HRM functioning in the 21st century, expanding its purpose to manage intellectual capital more efficiently. The breadth of intangibles reflected in a variety of HRM concept(s) here will have to be properly utilized to understand the relationship between different capital(s). At the same time IT (DW & DM) will filter information diversity, organize and classify them to obtain the necessary actionable knowledge.

Human capital is the generator of all value in the company, requiring its correct management using integrated concepts and techniques of both HRM and IT, in order to increase work productivity and in the treatment of intellectual capital.

Managing people in these times of the 21st century, demands competencies in HRM professionals too with demonstrable high command on ICT tools/techniques in order to manage human capital together with structural capital

[4] Rajput A., www.geeksforgeeks.org/data-mining-kdd-process (visited 15/Apr/2019)
[5] Cuesta, A. (2005), Human resources management technology, Ed. Academy, Havana

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