



ELECTRONIC HUMAN RESOURCE MANAGEMENT ADOPTION IN THE STATE UNIVERSITIES OF THE PHILIPPINES

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ABSTRACT:

This paper presents the need of an organization like educational institution to redefine its strategy to address the HRM changes due to globalization. The HRM practices in the said organization were discussed and the different challenges/problems with each functions. The factors to be considered before adoption to e-HRM were discussed to determine the level of implementation to this technology. The identification of the level of implementation will be useful to plan the adoption of the technology according to the need of the organization that can lead to the achievement of organization's goal.

Keywords: *Electronic Human Resource Management (e-HRM), e-HRM adoption*

I. Introduction:

One area in the business process that is undergoing a major change is Human Resource Management (HRM). The onset of globalization and technology has prompted the HRM department to redefine its strategies to make them more responsive to the changing times [1]. The changes can be viewed as different challenges that can affect the implementation of the HRM can be an opportunity to further enhance the strategy of the HR department in managing "People" the main resource of an organization. This can result to the achievement of the organization's goal and to gain competitive advantage to others.

Information Technology extremely infuses HRM in this global networking era. Digital possibilities have been challenging the traditional ways of delivering HRM services within business and public organization for more than a decade now [2]. E-HRM essentially transfers HRM functions to employees and managers. It can range widely in scope; at the low end it can be a simple web-based system to access Human Resource (HR) related documents. At the high end e-HRM is a fully integrated, organization-wide electronic network of HRM related data, information, services, databases, tools, applications, and transactions that are generally accessible at any time by the employees, managers, and

HRM professionals [3]. E-HRM is also considered to be useful for leadership purposes in public and private organizations because it works as the tacit signal method for strategic planning, more flexible working practices, and more importantly produces valid data for decision making and for overall effective human resource management [4]. As promising as e-HRM is adapting to a technology must need to be investigated.

This study was done to investigate the challenges and factors that hinder the adoption of e-hrm in an organization.

II. Business Process Reengineering

Different companies find ways to improve the productivity and competitiveness of their organizations. An improvement of these will mean an increase of ones organizations' ability to compete, to survive and to sustain its future for itself and its employees. The traditional business practices have been challenged for the past years and because of this a strategy of redesigning business operations to take full advantage of information technology and human resources was made. In such an unstable environment, information system developers were challenged to develop systems that can meet the requirements of modern organizations. The paradigms of Business Process Reengineering and Business Process Improvement contrast with traditional

information system development that focused on automating and supporting existing business process [5].

The effects of different emerging technologies, policies and the continuous pursue to globalization lead to different adjustment in the decision of both consumers and business management.

Fleming stated in his paper that business strategy of an organization can be integrated in HRM to achieve the growing evidence that a distinctive set of human resource practices results in a superior performance[6]. Linking HRM with business strategy may be particularly problematic in the public sector since the strategy making process here is complicated by a range of factors including conflicting objectives, multiple stakeholders, short-term political pressures, and existing structures and processes. One must note that a good Human Resource Planning (HRP) process can act as a useful link between business strategy and the development of HR strategy. It enables the organization to identify the level and the quality of human resources required to meet its business objectives. The successful implementation of an HR strategy will be dependent on the extent to which HR policies are cascaded through the organization, through the identification of the specific links between HRM policies and activities and divisional plans. In this regard, the personnel section should play a key role in facilitating and advising heads of sections or divisions in identifying the meeting the HR implications of business plans. The embedding of HR strategy can also be assisted through the development of service level agreements between the personnel section and other sections.

III. Human Resource Management Practices

Procuring, developing and maintaining competent resources in the organization so that the goals of an organization are achieved in an effective and efficient manner defined a Human Resource Management [7]. According to Mello (2006), the following are the different descriptions of the HRM functions: staffing involves job analysis, human resource planning, employees specific tasks and responsibilities and the abilities, skills and qualifications needed to perform a job are identified. To summarize, HRM, is an art of managing its resources (people) and ensure that they will perform their job to their best ability for the organization.

In implementing the HRM in an organization different views can be considered. Resource-based view (see Fig. 1) is one of these views, this view emphasizes that a firm utilizes its resources and capabilities to create a competitive advantage that ultimately results in superior value creation. [8]. In HRM this model can be viewed as employees its HR capital pool (Resources), HR practices to make sure that there will be a result of competencies, sometimes innovation, which may include different technologies, of these practices will be implemented for the company to be more responsive to its customers, efficient and create superior importance to their customers and superior profits.

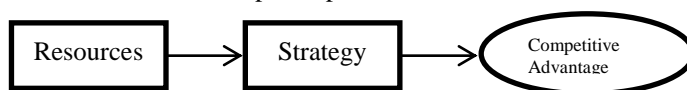


Fig. 1: Resource-based View (Source: Nierras, 2012)

The best practice of HRM includes training which allows the employees to improve their performance, prepare themselves for senior positions and allow them to achieve career goals. In HRM, the process of determining how well employees are doing their jobs is called performance management. In this activity the employees are being assessed and given feedback on their strengths and areas of improvement.

a. HRM in Education and its challenges

In an organization like educational institutions, the function of HRM is the same as any other organization. In the university setting, the human resources is divided into: Faculty Members (Academic Staff) and Administrative Staff. It has to be noted that for every category the university has different set of policies.

The design of integrated human-resources systems at the university level is one of the most powerful ways to ensure the creation of value for all stakeholders. In today's competitive environment, high performing universities have learned how to deploy human-resources (HR) practices to enhance competitive advantage. The five categories of best practices are: leader development, training and knowledge building, staff empowerment, staff recognition, and cost management [9].

In the Philippines, Higher Education Institutions (HEIs) is being governed by Commission on Higher Education (CHED). CHED categorizes HEIs into private and



public (state) education institutions. State Universities is also categorized as public/government agency. The set of rules being implemented with regards to recruitment, benefits and salaries, promotions and record keeping are based on the policies and guidelines by different government agencies like CHED and Civil Service Commission (CSC).

The function of the Human Resource office in state universities can be divided in four different section: (PUP website)(MSU website) recruitment section, personnel welfare and benefit section, records management section and training section. State universities like Polytechnic University of the Philippines somehow decentralize the functions of HR in different offices, in this case the recruiting and training part.

The role of ensuring that the organization has adequate supply of human resources at all levels and in all positions at the right place at the right time is very crucial. In this regard the HR must be able to devise a good system for recruiting the prospective employee. In recruiting a new faculty member, the office of Academic Affairs does its part in evaluating the applicant and once the evaluation was done the result will be submitted to the HR department to continue its recruiting process. The entire process of recruiting the administrative staff applicant will be done by the HR department under recruitment section. Cordova [1] stated in his research that there is a significant difference in the method of recruiting in a private and state university (in the case of Central Bicol State University of Agriculture and University of Baguio). He stated that there was a difference since state universities are governed by the policies mandated by CHED and CSC. Challenges in doing the objective of recruitment in any public agencies in the hiring of competent people is the political appointments to formal positions [10]. This practice undermines the constitutional notion of “merit and fitness”, leading to demoralization and the destruction of initiative in the regular service. The problem of presidential prerogative, according to Monzod [11], that emanates from what is called the ‘residual powers of the President’, which provides that when there is no stipulation in law as to who the appointing authority is for a certain position, the power redounds to the President. The CSC has no power, whether to veto or to protect, when the subject is a ‘presidential appointee’; a career civil servant in a position subject to presidential appointments is not protected by security of tenure. The functions of personnel welfare and benefit section comes once hired as a government worker. It must be

noted that the salaries and benefits are being mandated by CSC with accordance to the law. The salary of government employees are prescribed by Republic Act 6758, or the Salary Standardization Law (SSL) which was motivated by the constitutional mandate to ensure the standardization of compensation [11].

One of CSC’s rules is that a government worker has security of tenure once hired, and can only be removed for serious administrative offenses, such as graft, dishonesty, immorality and others, as well as for poor performance, and only after due process [12]. A challenge that can be encountered by HR manager/head is that according to Luz [12], when performance monitoring and evaluation mechanisms are weak however, secure tenure becomes a major source of long-term problems for the bureaucracy. This is demonstrated in the public school system where the Magna Carta for Public School Teachers provides all teachers, good or bad, with security of tenure starting from the date of hiring. For a good teacher, this is an incentive. For a poor or under-performing teacher, however, the system is stuck with that individual for an average of over 30 years that is the average tenure of a public school teacher.

To minimize this problem in efficiency the CSC and CHED provide some measures in checking the performance of the government workers and every worker are adhere to be evaluated . Every end of June and December every government employee shall be evaluated thru a Performance Evaluation System (PES). PES is based on the provision of Rule IX of the Omnibus Rules Implementing Book V of Executive Order No. 292, that took effect on February 14, 1992 [13]. Every evaluation period, employees need to submit documents about their accomplishments within the period. The documents that were submitted will also be used in some other decision making needed by the university like promotions and planning. The promotion for faculty is being evaluated guided by PD. 985, that rationalizes the academic ranks/salaries/advancement of faculty members in SUCs. The Department of Budget and Management (DBM) together with the Philippine Association of State Universities and Colleges (PASUC) were the one who deliberated for the scheme in upgrading/promoting qualified and deserving faculty members through a process of object evaluation. (NBC 461) There are documents needed for this promotion which is almost the same as what was submitted for the past PES. The faculty evaluation for promotions are being done every three years, while the PESs happened every 6 months each year. The challenge lies with the



record keeping of these documents, every time there is a need for such documents the employees keeps on submitting a lot of documents and the administrators need to give them ample time to submit it. The time needed to submit the information needed to make decision can become very costly to an organization.

IV. ICT in HRM

Information Communication Technology (ICT) is now being incorporated in the management of human resource through different tools and techniques. In the mid-1990s, due to business process reengineering and integration of information from diverse applications, Enterprise Resource Planning (ERP) became popular among organizations. The value of ERP is its ability to integrate other function with HR under a single vendor and common technology standards. In some of leading ERP systems, some of the Human Resource Management Systems (HRMS) components permit the use of internet to reduce transaction costs. By integrating financial and HRMS applications, the value of HR function itself has increased for the organization as a whole and now, in the best administrative systems, HRMS is a subset of ERP solutions [14]. It was reported that HRMS are used for such employee productivity applications as communications, retirement services, enrollment for health benefits, benefit enquiries and training registration. In some systems this was expanded to include managerial productivity applications, the supply request forms for employees, time card approval and reporting, budget analysis, and such managerial reports as head count salary listings and timesheets [15].

With the emergence of “e-wave” reaching the area of HRM, the term e-HR or e-HRM is being used increasingly when referring to the next development stage in IT-based HRM. Electronic Human Resource Management known as e-HRM means “the adoption of technology in delivering Human Resource (HR) practices due to the digital revolution in the world”. It refers to conducting human resource transactions using the internet technology [16]. E-HRM has resulted to new options for “employee self- service”(ESS) routines for various HR functions. In terms of e-business, the implications for the HR function are not yet is, fully visible, but it is certain that e-HRM will revolutionize the HR function within the next few years. Researches about e-HRM can be read both in Information Technology journals and Business related Journals. Issues and challenges were also mentioned and need to be given importance in this field. According to De

Alwis [17], we have to consider the impact of e-HRM to the role of human resource managers, we have to keep in our mind that the critical success factors for the implementation of e-HRM in order of importance are employee attitudes, organizational culture and characteristics, collaboration of HRM and IT, management commitment and individual IT skills, and this may differ from country to country but in general is expected that, for a change to take place it is important that the people are ready to change and the top management makes commitment towards the initiative. The main challenge in e-HRM is the alignment of process in the HR function according to the future e-business challenge [14].

V. E-HRM in Education

Many educational institutions are contemplating on adopting e-HRM in their HR department. They can see that this move has potential advantages for a faster information processing, greater information accuracy, it can help them in improving planning and program development, and enhanced employee communications [18]. The number of organizations using e-HRM is continuously increasing, and as it is being considered a mature practice in organizational life [19] [20]. There were studies contended that an ample acceptance of e-HRM methods in higher educational institutions will construct broader corollary regarding organizational structure [4]. A research by Volery in 2000, stated that if higher institutions of learning do not cuddle this technology of e-HRM they will left behind in the quest for effective decision making and technological development. With the challenges of HRM in education that were discussed earlier, the need to update and maintain records that can be used for planning and decision making can be seen as application of e-HRM that can make changes in the way an organization uses its information from the employee. Others can be done through automation of their functions. It will not be as easy as it looks since the organization needs to consider factors that can hinder or influence the adoption of this technology. When adopting an e-HRM one needs to consider how implementation will be done. There are models that can help guide in adopting technology. Another thing to consider is the level of implementation of adoption of this technology.

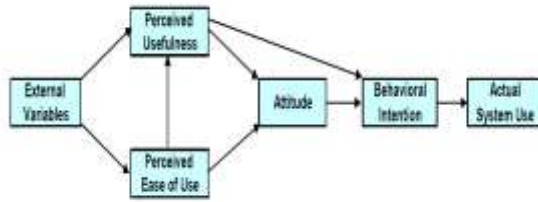


Figure 2: Technology Acceptance Model (Davis et al., 1989)

Technology Acceptance Model (TAM) (see Figure 2) is one of the most influential models used in explaining the acceptance of information technology [21] [22]. According to Davis [23], perceived usefulness (PU) and perceived ease of use (PEU) of IT are two major determinants of IT usage. PU was defined as the extent to which a person believes that using the system will enhance his or her job performance and PEU defined as the extent to which a person believes that using the system will be free of effort. TAM posits that computer usage is determined by a behavioral intention to use a system, where the intention to use the system is jointly determined by a person's attitude toward using the system and its perceived usefulness. This adoption process depicts that Actual use of the system being implemented can only be attained if the perception of the two determinants is positive. With the scenario in education employees perception plays a big role in implementing e-hrm that is why we need to have a study of these perceptions before implementing such technology.

The rapid development of Internet in recent years has propelled HR systems towards the new e-HRM approach. New technological opportunities are a bridge that could help connect the two sides of the working relationship; for organizations, e-HRM solutions are a way to support organizational flexibility and knowledge-sharing, while for the new and 'technologically embedded employees', they represent a way of managing their working preferences [2].

E-HRM can be designed with three kinds of goals in mind improving traditional HRM strategic information, improving efficiency and improving client service orientation, thus resulting in three (3) different types of e-HRM [2]:

1. Operational, concerning the basic HR activities in the administrative area (such as payrolls, on-line conference systems)
2. Relational, concerns more advanced HRM activities, its emphasis is not on administering rather than HR tools that support basic business process such as recruiting and the selection of new personnel, training, performance management and appraisal, and rewards.
3. Transformational, concerns HRM activities with a strategic character. In this type we are talking about activities regarding organizational change processes, strategic re-orientation, strategic competence management, and strategic knowledge management.

According to Ruel, et al.[20], these can be considered to types of HRM that can be observed in practice. Different companies only emphasize their e-HRM in only one of the types, depending on their preferred HRM outcomes. Here are some of the possible outcomes:

1. If the emphasis is on operational the outcome must be for the organization to identify which amongst the processes must be face-to-face and/or web-enabled (e-enabled). For example must be a provision for the employees to choose either to keep their own personal and up-to-date through an HR website or to have an administrative force in place to do this.
2. For relational HRM there is a choice between supporting recruitment and selection through a web-based application forms and letters.
3. Transformational e-HRM focused , it is possible to create a change ready workforce through an integrated set of web-based tools that enables the workforce to develop in line with the company's strategic choices or to have paper-based material.

As with the case of educational institutions to implement e-hrm the HR manager needs to understand first the need of the organization, they may opt to adopt the first level, some may adopt the third level of the second one. In some institutions like PUP, building an HRIS is their first step to e-hrm, but the challenge is the time needed by the employee to update information in the system. The problem of multiple document submission to different committee still is the problem that given time may be resolved. It is good also to educate organization to understand that good record keeping can help the organization in the implementation of e-HRM since the information can be reused by different committee/offices in planning and decision making. No more time needed to wait for submission and preparation of different documents repetitively. E-HRM can be used by an organization to be connected. Relating



to this need is the study of Srisvatava [4] e-HRM was considered an interface through which we can directly communicate or know about the right talent through traverse some list or records in our personal database without creating any issue.

The study of Nura and Osman [24] investigated of the impact of using e-HRM on Performance Management System and effective decision making. The reason for integrating these two in effective decision making is because it is the overall PMS that translates effective decisions all of which are made easier and simpler with an E-HRM adoption. The application of PMS on e-HRM can also be considered in the adoption of e-HRM is the educational institutions by making use of the records available to enhance the capabilities and efficiency of their organization. It is not specific stage in the development of HRM, but a choice for an approach to HRM. In the case of Business enterprise, in planning and designing the objective, toplevel management is looking at Management Information System (MIS) which works as a Decision Support System (DSS) as like as there must be an Implementation Support System (ISS) which helps to do better management and human resource [4]. Basically e-HRM is a concept of ISS which helps HRM for taking decision to manage a resource for a given task. ISS can also have the same phase as DSS as intelligence, design and choice. The study of Intelligence helps to identify any problem or opportunity and gather related to such problem. Design refers to formulating a problem or an opportunity developing solutions to solve the problem. Choice will make able to choose right talent to the particular opportunity.

Factors affecting the adoption of e-HRM

Before considering the adoption of e-HRM in education institutions a review on the factors that may affect/hinder the adoptions must be considered. The paper of Panayotopoulou et al., [25], studied the dissemination of e-HRM technologies in thirteen countries in Europe. They highlighted the effect of socio-cultural factors on the adoption of e-HRM technologies and differentiated between different levels of e-HRM technologies. These technologies were categorized into front-end and back-end systems. Front-end or e-HRM are usually web-based and their primary task is to connect different actors. This includes HR portals, self-service systems or interactive voice response systems and they are considered core categories of e-HRM. Front-end systems require the support of various back-end systems, such as HR data warehouses or HR modules of ERP systems, which are

used for storing, processing and retrieving data (HRIS). The study adopted the consideration of HRIS as backbone of e-HRM from the study of Hendrickson [26]. Findings of the study revealed three main clusters of countries, Northern European cluster, Central European cluster, and Southeastern European cluster, using different levels of e-HRM diffusion and socio-cultural characteristics. According to them their study is the first one to link the dimensions of natural culture in e-HRM. They have found out that when it comes to the adoption of front-end systems (e-HRM), the amount spent on training and firm performances, can be used to extend its back-end HRM. The priority high performing organizations they have investigated place on allocating resources to support e-HRM policies, as suggested, plays an important role only in the cluster comprising of countries with lower Internet penetration and economic robustness. They have concluded that there appears to be a difference in the way companies decide vis-à-vis the adoption of HRM systems, depending on the cluster in which they operate. The different national variables, such as culture, economic and technologic conditions proved important in categorizing the level of HRM systems adoption. This conclusion is true given the scenario of education as discussed. Culture, technology acceptance and training are important factors for the user of the technology to be considered useful that will later produce the outcome needed by the organization.

The implementation level is also considered one of the factors affecting the adoption of e-HRM. The study about the implementation level of e-HRM in some Jordanian shareholding companies [9] found out that internal and external environmental attributes have influenced the implementation level of e-HRM practices in Jordan. They have defined the internal factors as: organizational resources, organizational readiness & commitment, organizational sharing culture, demographic: type, size and experience, perceived IT applications benefits and perceived barriers to the implementation of e-HRM. The external factors on the other hand are composed of industry characteristics, macroeconomic factors and government policies. This study concluded that the level of implementation of e-HRM practices for the participating companies is moderate. The most important internal determinant factors that are associated with the implementation of e-HRM practice ranked from the highest to the lowest are: the perceived benefits of e-HRM applications, the perceived barriers of the use of e-HRM, organization readiness and commitment, organization resources, demographic characteristics, structural IT characteristics of HRM and organization culture. The most external



factors that determined the implementation of level of e-HRM practice ranked from the highest one are: macroeconomic factors, industry characteristics, and government policies and support. The main barriers in the implementation of e-HRM among their respondent companies are the lack of expertise and IT professionals. The technical infrastructure however was in place and would not cause any problem if the companies decide to implement e-HRM.

VI. Conclusion and Recommendation

The main objective of this paper is to review related literatures about the adoption of electronic human resource management (e-hrm) in an organization. There are different literatures about the benefits of e-hrm, the adoption of e-hrm in an organization and investigation of the best practices of hrm [2][20][24]. It is not new how technology changes a traditional hrm into an automated one but what interest the author's the most is the use of e-hrm on how information in an organization can be fully utilized in performance management, that can easily be used in promotion /reports needed and how it can be used in decision making capability of the school administrators the time they need it to make the decision timely and efficient. It is yet to be proven how e-hrm can be used to change an organization decision making capability to obtain the goal of the organization. However before adopting a technology like this, the administrators need to assess the capability or technological condition of the subject organization. The challenges that were discussed in the previous section must also be considered although it is true that the external factors like government policies/law cannot be changed still there can be ways to integrate e-hrm to a system that can perform well under this limitation. There is also a need to understand how implementation can be done by understanding the levels of implementation of e-hrm which according to Ruel et al.[20] plays a crucial factor for a successful implementation of e-hrm.



REFERENCES

1. Cordova, W., "A Comparative Analysis of the Human Resource Management and development Practices of Central Bicol State University of Agriculture and University of Baguio", The International Journal of Social Sciences, ISSN:2305-4557, Nov. 2012, Vol.4 No.1.
2. Ruel, H., Bondarouk, T.V. & Looise, J.K. "E-HRM:innovation or irritation. An explorative empirical study in five large companies on web-based HRM". Management Revue, 2004, 3, 364-380
3. Hussain, Z., Wallace, J. & Cornelius, N. "The use and Impact of Human Resource Information Systems on Human Resource Management Professionals", Information and Management, Vol. 44, 74-89.
4. Chakraborty, A.R., Mansor, N.N.A., "Adoption of Human Resource Information System: A Theoretical Analysis", 2nd International Conference on Leadership, Technology and Innovation Management, Elsevier Ltd., 2013.
5. Guha, S., Kettinger, W.J. and Teng, J.T.C., Business Process Reengineering, Building a comprehensive methodology, Information System Management, Summer,1993, 13-22.
6. Fleming, S., "From Personnel Management to HRM: Key Issues and Challenges", Retrieved Aug.7, 2014, from <http://www.cpmr.gov.ie/CPMRDiscussionPapers/paper16.doc>
7. Shrivastava, S., & Shaw, J.B., "Liberating HR through technology", Human Resource Management, 42(3), 201-222.
8. Nierras, E.M. "Strategic Human Resource Management Practices", International Journal of Information Technology and Business Management, Nov., 2012, Vol.7 No.1.
9. Zabalawi, I.H., "Human Resource Management in Public Universities in Jordan", Tempus Seminar on Human Resource Management in Higher Education in the Southern Mediterranean countries, 2012.
10. Constantino-David, K., "Politics, Perils, and Pains of Building Institutions", Keynote Address to the IIDN General Assembly March, 2007.
11. Monzod, T.C. "The Philippine Bureaucracy: Incentive Structures and implications for performance", Human Development Network Discussion Paper Series, PHDR Issue:2008/2009, No.4.
12. Luz, M., "Governance in the Education Sector", Background Paper for the 2008 Human Development Report, 4 October, 2008.
13. Civil Service Commission, Memorandum Order No. 12, s.1993.
14. Mishra A., Akman I., Information Technology in Human Resource Management: An Empirical Assessment, in: Public Personnel Management, 2010, 39(3), p. 243-262
15. Logue, A.C., Person to Person: web based HR systems may be your best human resource. PROFIT Oracle's e-business magazine, February, 2003, 77-78.
16. Kovach, K., Hughes, A., Fagan, P., Manggiti, P., Administrative and Strategic Advantages of HRIS. Employment Relations Today [online]. 2002.
17. Alwis, A. Ch., The Impact of Electronic Human Resource Management on the Role of Human Resource Managers. Economics and Management, 2010, Vol. 13, no. 4.
18. Overman, S., "Reaching for the 21st Century", HR Magazine, 37, 61-63.
19. Stone, D.L., Stone-Romero, E.F. & Lukaszewski, K., "Factors affecting the acceptance and effectiveness of electronic human resource management systems". Human Resource Management Review 16,2006, 229-244
20. Ruel, H.J.M. Bondarouk, T.V. & Van Der Velde, M. "The contribution of e-HRM to HRM effectiveness". Employee Relations 29, 2007, 3, 280-291.
21. Lee, Y., Kozar, K.A. & Larsen, K.R.T, "The technology acceptance model: Past, present, and future", Communications of the AIS, vol. 12, pp.752-780.
22. Fisher, S.L. and Howell, A.W., "Beyond user acceptance: examination of employee reactions to information technology systems", Human Resource Management, 2004, Vol.43, Nos. 2/3, pp.243-58.
23. Davis, F.D., "Perceived usefulness, perceived ease of use, and user acceptance of information technologies", MIS Quarterly 1989, vol.13, no. 3, pp.319-340.
24. Nura, A.A., Osman, N.H., "The Proposed Relationship connecting e-HRM adoption, Performance Management System and Effective Decision Making in Higher Educational Institutions in Nigeria", European Journal of Business and Management, ISSN 2222-1905, Vol.4, No.18, 2012.
25. Panayotopoulou, L., Galanaki, E., Papalexandris, N., "Adoption of electronic systems in HRM: Is national background of the firm relevant?", New Technology, Work and Employment, 2010, 25(3), 253-269.
26. Hendrickson, A.R., "Human resource information systems: backbone technology of contemporary human resources", Journal of Labor Research 24, 2003, 3, 381-394.