DO WE HAVE SUFFICIENT LITERATURE ON E-RECRUITMENT AND SELECTION
AN ANALYTICAL REVIEW BASED ON E-RECRUITMENT AND SELECTION

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Abstract
Recruitment and selection is one of the most prominent and primary function of all sorts of organizations regardless of public or private sector. The vitality of this function has been known by the factor that this function decides about the success and failure of an organization. Historically this function had been executed through a traditionally adopted mechanism which in somehow is still continue even in the era of information technology. The basic objective of this review study is to analyze the earlier literature that has been generated by the different researchers in the field of recruitment and selection by keeping in view a specific focus on the use of information technology. Another rational of this study is to understand how far these studies have addressed digitalization of the recruitment and selection to align it with the needs of modern trend where the issue of digital immigrants and natives has adopted a serious debate. A rigorous approach has been adopted to scrutinize the existing literature keeping in view its relatedness and importance to conduct a thoughtful analysis with a detailed logical discussion. This study has elucidated the various scenarios in the light of existing strength of related literature. It has been concluded that research in the field of electronic or digital recruitment & selection is at infancy level. There is a vital need of conducting further review
studies to enhance the depth level of understanding the impact of information technological tools on the effective selection by comparing it with the scenario of traditional recruitment and selection.

Keywords: E-recruitment; Digital Recruitment; Internet Recruitment; Web Based Recruitment, Digital Selection

INTRODUCTION

“The internet will help achieve friction free capitalism by putting buyer & seller in direct contact and providing more information to both about each other”- Bill Gates (as cited by Maurer & Liu, 2007). Today in the era of modern globalization when everyone and everything seems connected across the globe through the revolutionary development in the field of information technology. Since from the beginning of the 21st century the boost in the field of information technology has brought huge changes in almost all profession of mankind on this planet and in such the world has turned into a global village which is connected through different sort of sophisticated technology. This has coined various terminologies related to a particular field of specialization in a related area. The main examples we can refer are e commerce, e governance and e banking etc which are actually based on technology in which computers play a dominant role. In the present era it is very hard to find an area in which we don’t see the involvement of the computer directly or indirectly which connotes its significance in enhancing the performance. Computers play a dominant role in boosting the efficiency of using the already scarce resources of a particular entity with targeted effectiveness of the outcomes. Right from the basic primary education institutions to highly specialized universities in the research the computer plays a dominant role and has made the human effort more meaningful and productive. The world is making swift development in information technology that drives change in all walks of life which drive the individuals, organizations and governments to adjust themselves accordingly to sustain in the surge of competitive challenges that does exist both in their internal and external environment of a particular entity.

The world is now connected through have heavy and specialized digital technology due to which the government structures are being restructured gradually. Technology and humans have a long standing relation in the various fields where technology facilitated humans in making fast development in research in all fields (Cronin et al, 2006).In this surge of technological revolution, the emergence of e-governance is most crucial due to its nature and scope in the economic development and governance. “E-governance is the public sector’s use
of information and communication technologies with the aim of improving information and service delivery, encouraging citizen participation in the decision making process and making government more accountable, transparent and effective” [UNESCO, 2003]. This is a one of a comprehensive definition that links the association of the technology to connect the government executive functions with its role that it has to play in the running the country affairs in an effective way. E-governance can support to the governments in bringing cleanliness & transparency that makes the government more honest (Ma et al., 2004). Although the use of technology in the governance affairs has becoming a main focus of the governments in the world to maintain the smooth running of the government function, however there are multiple factors that hamper in the implementation of e-governance. The main factors in government failure of implementing the e-governance are the vivid gaps in the area of human capital, objectives and management system (Dada, 2006). This is one of a most sensitive aspect of the e-governance the availability of the talented and well suited professional with specialized asperities in the field of information technology. For the effective e-governance one of an important aspect is the governance of digital world in which presently there are multiple layers of demographic dimensions who are not have equal understanding about the nature and requirements of digital world. The digital natives and digital immigrants have different learning attitude towards the understanding and implementation of new technology where the natives of the digital era are being taught by the digital immigrants who doesn’t know their language (Prensky, 2001). Digital world for this study means the total dominance of the governance through digital technology governed and manipulated through computerized information technology.

Figure 1. Process of Electronic Governance

The application of information technology tools in the government functions bring the effectiveness in the government functions e.g., e-commerce, e-business, e-banking and e-HRM etc. This has also brought a major impact on the human resource management activities as well
and has become an essential part of various human resource activities especially in the job analysis selection and trainings (Chapman & Webster, 2003). Among these functions the electronic human resource management (e-HRM) is one of a most significant as it is directly related to the employee function to run the government affairs. Various definitions have been interchangeably used in earlier studies like, HRIS, web based HRM, HRIT (Parry & Tyson, 2011) and there seems no consensus about the valid definition of e-HRM (Bondarouk & Ruel, 2009). However, e-HRM is mostly known definition that encompasses various functions that govern various aspect of the human factor working for the government to cater its services for the nation. The fast change in the information technology from the past few decades will have a substantial influence over the human resource management processes (Dianna L. 2015). Although e-human resource management has various advantages to the organizations in increasing the efficiency & control the cost but has not focused on creating an effective HR processes e.g., selection system (Stone & Dulebonn, 2013).

The recruitment and selection are most key and significant function among all functions in the organization on which the failure and success of an organizations depends (Compton, 2009 & Canton, 2004). The use of internet in the recruitment of the employees for the government or organizations is commonly known as e-recruitment and is very sensitive as it is dealing with the matter of bringing human capital for the organization. Various studies have identified that the use of internet in the online recruitment has enabled the organizations and potential job applicants to communicate conveniently (Cronin, 2003); Drasgow, 2005). One of a major reason of adopting the information technology in the selection process is enhance the efficiency cycle of a selection process of an applicant (Chapman and Webster, 2003). The recruitment through information technology has many advantages over the traditional way of recruitment (Luckaszewski, 2009) and by positive use of this the organizations can foster transparency (Nabi et al., 2014d,e). The question of the effectiveness of the electronic recruitment has been addressed by the researchers in different ways (Rudin et al, 2012). Recruitment and selection effectiveness in the public sector universities had always remained one of a central issue which can be somehow controlled by use of digital technology (Nabi et al., 2015a, b,c).

This is the main underlying objective of this review papers to analyze the researches that has been taken place in the field recruitment and selection which is one of a pivotal key organizational function. This review focuses on recruitment and selection simultaneously because both functions are interrelated and interdependent on each other (Rynes & Barber, 1990). However, the focus of this review will be limited only to those researches that have been conducted from the information technology context in field of recruitment and selection. The
process of elaboration in analyzing these researches are linked with the e-governance to understand the logical flow of the association between various concepts keeping in view the public sector that is controlled by the government. Furthermore, the mode of analysis also focuses on the different aspects of traditional and electronic recruitment with a particular attention to the application of information technology in selection. This study is very significant because the electronic aspects related to the human resources in the organizations needs special attention to understand the ongoing research direction and analyze it from multiple dimensions, particularly its comparative impact from the traditional approach and underlying objectives by the organizations of its use.

**Information Technology in Governance**

In order to improve and modernize the public sector, the e-governance is a key and basic element to make an effective coordination between the various stakeholders to reduce cost (Ebrahim & Irani, 2005). E-governance brings various government layers close by enhancing the strategic connection between them that facilitates in the policy formulation & implementation (Cabinet office, 2000). The web portals of the government are being considered growing rapidly that maximize the electronic interaction between government and its all stakeholders especially employees & citizens (Chan & Chung, 2002). Although there are various potential obstacles in the way of effective e-governance among which the shortage of needed information technology experts are one of an obstacle to provide digital service to the next generation (Chen & Gant, 2001). In the internal environment of the government there are various officials that are not in favour of the e-governance because they perceive it a threat to their power control that may challenge to their direct authority (Ebrahim & Irani, 2005). In a US based study it was noted that large portions of the government employees have identified that financial constrain is the main hurdle in the way of e-governance nativities (Norris et al., 2001).

E-government can support to the governments in bringing cleanliness & transparency that makes the government more honest (Ma et al., 2004). The fast change in the information technology from the past few decades will have a substantial influence over the human resource management processes (Dianna L. 2015). Generally it is being thought that the e-human resource management has the ability to cover larger area then the traditional HR (Gueutal & Stone, 2005). Various organizations are using different online selection tools to conduct the self assessment of the personality fitness with the job to understand their suitableness with the job requirements and culture (Yahya & Saho, 2013). The governments in different countries has different objectives e.g., increasing the efficiencies among the governmental agencies in United States is a basic objective while is in the Peoples Republic of China the basic objective is to
sing efficiency of the agencies is common objectives of the United States and in China the
government has used e-governance to bring transparency in their administrative reforms across
the China (Ma et al., 2004).

E-Governance is one of a most important and emerging area of 21st century which world
bank has defined that “Government refers to the use by government agencies of information
technologies like wide area network, the internet and mobile computing that have the ability to
transform relations with citizens, businesses, and other arms of government”[World Bank,
2002]. Whereas the UNESCO has identified this concept as “Governance is the public sector’s
use of information and communication technologies with the aim of improving information and
service delivery, encouraging citizen participation in the decision making process and making
government more accountable, transparent and effective”[UNESCO, 2003]. The implementation
of e-governance process happens in gradually as this process involves public servants,
governments and the public to interact each other (Bedi et. al., 2001). The e-governance
projects have been associated with the term SMART that is based on bigger vision for the
implementation of e-governance strategy (Nichiel Backus, 2001). The main factors in
government failure of implementing the e-governance are the vivid gaps in the area of human
capital, objectives and management system (Dada, 2006). In a study regarding digital
governments in USA where it was found that the governance doesn’t mean the development of
the websites for the government but it consists more than this, especially security and privacy
aspects of the citizens (Pardo, 2000). Various discriminatory biases have been noted in some
studies regarding the use of information technology about race and sex (Graves & Powell, 1995;
Pingijore et al., 1994). One of a major reason of adopting the information technology in the
selection process is enhance the efficiency cycle of a selection process of an applicant
(Chapman and Webster, 2003).

Information Technology in Human Resource Management
Technology and humans have a long standing relation in the various fields where technology
facilitated humans in making fast development in research in all fields (Cronin et al, 2006). This
has also brought a major impact on the human resource management activities as well and has
become an essential part of various human resource activities especially in the job analysis,
selection and trainings (Chapman & Webster, 2003). The fast development in the information
technology and internet, the use of websites has become a common place for posting the jobs
by the state agencies and organizations to recruit the employees (Cronin et al., 2006).
Organizations are using internet in making screening of the job applicants, job application banks
and their selection tests through structured interviews (Bartrain, 2000). The online tools for
making a selection of an employees have a multiple advantages e.g., time & cost saving, prompt feedback of the results but these tests have also certain draw backs e.g., availability of the computers and remote accessibility to assess an applicant’s sustainability (Crespin and Austin, 2002). In order to make a data collection through a job analysis by using computers for recruitment are being conducted because of its efficiency as compare to the traditional mechanism in which paper & pencil were used (Drasgow, 2005). Government agencies and large organizations whose employees are working in large geographical area can avoid the perception of unfair treatment and inconsistent data by using the automated software related to the human resources that can save the time and cost as well (Cronin et. al., 2006).

Generally e-HRM is known that the stakeholders can have access with the HR related information through internet & organizational specified websites (Lengnicks-Hall and Mortiz, 2003). The use of technology in the field of human resource management has substantially been increased in making various key decisions (Strohmeier, 2009). One of a limitation of using the information technology in the organization may increase the distances between organizations & individuals (Diana et. al., 2015). By the use of information technology the organization has become able to get a long pool of applicants but it lacks the quality aspect of these applicants that maximize the transaction cost of an organization (Chapman & Webster, 2003). It has been reported in some estimates that 90% large entities normally use information technology for their advertisement & job forms submission (Mackelden, 2013). However, some studies report that IT use has become beneficial in recruiting the employees especially self removal by an individual according to the requirements of job (Dineen & Allen, 2013). In order to make a selection based on diversity from the available pool of potential applicants the larger organizations in the US have started using technology to achieve this goal (Cedar Crestone, 2010). It has been noted that mostly the governments and other major technological companies control the processing & administrative by using electronic human resource management (Lengnick-Hall & Moritaz, 2003).

Various studies have identified that the use of internet in the online recruitment has enabled the organizations and potential job applicants to communicate conveniently that saves the time and cost (Cronin, 2003); Drasgow, 2005). The effective selection by using the internet largely depends on the goal and type of assessment tolls of a selection process in an organization (Drasgow et al., 2005; Marrell et., al., 2004). There are multiple issues that are related to the technical aspects e.g., applicant tracking which system to use internally or externally developed, type & content of feedback and before making online selection effort the organizations must consider these aspects (Lievens & Harris, 2003);Marrellie et al., 2004). In the online testing of employees selection the computer processing capability and internet
connection speed may lower the chances of positive outcome of such applicants (Curtin et al., 2005). The organizations can generate a larger pool of qualified applications, through internet tools that will help to maximize the right selection ration (Buijck & de Lange, 2003). Although there are various issues in the internet based recruitment but still this is considered one of a powerful tool in maximizing the applications pool and help the applicant to make a self assessment for a particular job qualification (Bartram, 2000). Earlier studies have identified that the use of computer in assessment has close relationship with computer anxiety and those having more are performing lesser as compare to those having less computer anxiety because of their more experience in using computers (Bradley & Russell, 1997; Levine & Donista-Schmidt, 1998).

**Online Recruitment through Websites**

Corporate websites are now mostly being used for the recruitment of employees but this is also facing complications in dealing these websites by the job seekers (Brown, 2004). “The internet will help achieve ‘friction free capitalism’ by putting buyer & seller in direct contact and providing more information to both about each other” - Bill Gates (Maurer & Liu, 2007). One of a significant aspect of the e-recruitment is reduction of the recruitment cost by a considerable size as compare to the advertisements through newspaper (Lee, 2005). One of an essential issue for the managers of those organizations who use web based recruitment technique is the possible or expected discrimination (Flynn, 2002). Employers of the high technology industries & multinational firms gain more advantages because of their needed employees across from a large scale geographic area in the world (Maurer & Liu, 2007). For the employers the recruitment through internet has become one of a major potential to control the cost of recruitment by reaching large number of potential applicants (Cappelli, 2001). Various HR functions including recruitment and selection can better be streamlined by utilizing information technological tools (Strohmeter, 2009) which is also known electronic human resource management (Parry & Tyson, 2011). Various definitions have been interchangeably used in earlier studies like, HRIS, web based HRM, HRIT (Parry & Tyson, 2011) and there seems no consensus about the valid definition of HRM (Bondarouk & Ruel, 2009). Although e-human resource management has various advantages to the organizations in increasing the efficiency & control the cost but has not focused on creating an effective HR processes e.g., selection system (Stone & Dulebonn, 2013).

The recruitment through information technology has many advantages over the traditional way of recruitment particularly from the cost saving and time wise (Luckaszewski, 2009). The question o the effectiveness of the electronic recruitment has been addressed by the
researchers in different ways in which real applicant was not the subject of analysis instead of this they used self generated websites of non related sample in analyzing this issue (Rudin et al, 2012). Earlier researchers have established a real relationship about the attractiveness of an organization with the content usefulness of a particular website (Cober et al., 2003; Williamson et. al., 2003). The websites of the governments are being able to gain maximum application for jobs which is due to the organizational attractiveness (Selden and Orenstein 2011) although in a study about the online recruitment by the government & private sector, the private sector websites were found more qualitative as compare to the government websites (Mareshal and Rudin, 2011). The management effort to expedite their recruitment process by using the company's websites has caused a huge number of applications with an issue of larger number of unqualified applications (Maurer, 2011). Governments and the larger organizations have mostly used the information technology in order to control the cost component and expedite the processing time (Lengnick-Hall & Moritaz, 2003).

In the US the corporate sector and the governments have made substantial effort to use the technology for making the online recruitment more public for the public (Wager & Libkumma, 2010; Young & Foot, 2005). There are many reasons due to which the traditional recruitment is being replacing online recruitment mainly due the cost element for the organizations (Cappelli, 2001). In a study it has been found that an employer can save around 87% by hiring an employee then hiring through traditional recruitment sources (Maurer and Liu, 2007). Various factors have been identified by the researchers regarding the response by the job seekers and those employers with well designed websites to attract best applicants (Cober et al, 2003; Goodrich & Howard, 2004). Earlier studies have been analyzing the level of impact regarding web based recruitments where they have identified the response rate has increased without any further organization cost (Breaugh & Starke, 2008). In a study it was found that the female applicants view the websites on the basis of organizational attractiveness and their suitability with the job fit (Pfieffelmann et. al., 2010). The researchers have argued the studies in the government side of human resource management are very crucial because this is the gateway for the most precious resource of public jobs (Sims & Slack, 2007). Earlier before the internet the job seekers wanted to have job related information but were unable to get it properly and now in the era of technology this has been overcome by the use of internet (Maurer & Liu, 2007).

The importance of the technology among the young generation can be understood by the popular names being associated with them e.g., google generation, digital natives and net generation (Gibboson, 2007). The digital natives and digital immigrants have different learning attitude towards the understanding and implementation of new technology where the natives of
the digital era are being taught by the digital immigrants who doesn’t know their language (Prensky, 2001). This situation has been coined as “digital disconnect” that does exist between the students of different academic institutions at all levels and teachers (Underwood, 2007). It has also been noted in a study that the young people are using the new technology more as compare to the older people (Dutton and Helsper, 2007).

It has been identified in a study regarding the website recruitment in the state government where, the government website proved to be complex and fewer users friendly which may be due to the digital divide and this may be the reason that government can’t depend on any single method (Mareschal & Rudin, 2011). Recruitment through online has multiple advantage over the old and traditional methods of the recruitment mainly it is speedy and saves money (Lukaszewski et al., 2009). There are two main concerns of the research that has been taken place earlier, the one is that these researches are not based on the real situation and the other is that it doesn’t cover the entire recruitment process (Mareschal & Rudin, 2011). On the other hand there are researchers that has used the original websites of an organization but these were limited only up to job search not originally applying for the job (Allen et al., 2007) while as in some cases the respondents consists upon the recent graduates with the reality that these too were not actual job applicants (Van Bergelen et al., 2008). One of an important factor is the quality aspect of the websites which is difficult to assess in the government websites due to the fact that many state governments use outsourcing from the private companies (Franzel & Coursey, 2004).

SUBJECTIVE ANALYSIS

Focus of E-recruitment Researches

The first and foremost aspect of the different researches that has been covering the field of recruitment and selection from the information technology aspect is their focus. The focus has mainly remained to the private sector organizations more and public sector organizations less. Most of these studies have been paying their attention in the field of recruitment only while as one of a significant aspect of the hiring process is the selection. Another aspect of these studies is the geographical focus which is dominated by the English speaking countries or developed countries. This is one of a key and significant aspect because the information technology infrastructure and development is not same across the globe. Therefore, these studies doesn’t portray the real picture of the under developing countries. Furthermore, the nature of industry
and company has always remained very closely associated with the attraction and retention of the recruitment and selection, whereas the focus of research studies from the electronic aspects has mostly remained limited to the top international or multinational companies. Furthermore these studies have been based on such a sample which doesn't represent the original population. Researchers have devised fake websites and recorded responses mostly from the students who have no prior experiences about the real selection process, thus it is hard to understand how findings of such studies generalized can. Thus these have serious validity and reliability issues particularly from the potential and real applicant’s context. In some studies it has been found that website contents play a significant role in selecting deciding whether to apply for the job or not whereas earlier studies had identified the closer link between the organizational attractiveness and image with response rate of job applications. These studies are not mentioning any relationship of e-recruitment campaign with the building organizational image and attractiveness as compare to the non e-recruitment process.

**Traditional and e-recruitment**
The first thing that we have to understand is the issue of traditional and IT based recruitment and selection. The questions is that whether traditional recruitment means the recruitment and selection before the revolution of information technology or the recruitment and selection process by following the routine pattern. This seems very simple but the issue is very important when researches are being constructed particularly when making comparison with the IT based recruitment selection. This seems relatively a key issue because can we infer that electronic recruitment is a substitute of the traditional recruitment selection which has a gigantic challenge based on remote areas both in developed and developing countries. Most studies have been analyzing their studies by making the comparison of IT based recruitment with the traditional recruitment without involving the context of ground realities e.g., the job characteristics, description and specification before and after information technology revolution. We are facing the conflicts of opinion and findings among researchers in which one group argues that the response rate of the online application against the job increases as compare to the traditional recruitment response rate that raises the question of validity in terms of which medium has been used in disseminating information of the job posting. Another view in this regards is that although the response rate of electronic recruitment increases but it lacks potential applicants for a particular job which is worthwhile to pay attention. This is because how can we assess the increase by comparing two different scenarios based practices where the reach of medium does matter. This validates the findings of studies that have identified that organizations are using electronic recruitment practices just to control administrative and processing cost component.
From the other aspect is the question of does online recruitment help the job applicants to get a real picture of the job eligibility according to the job description and specification. Here the most significant perspective of analyzing e-recruitment from the cost component is very short run and these studies ignores the strategic impact of such administrative initiative especially from the context of quality applicant and person fit organization.

**Digitalization of Recruitment and Selection**

Globalization, digitalization and revolution in information technology have drastically changed the total scenario of work structure across the globe, somewhere more and somewhere less but it has changed. This has converted the world into global village where the governments and organizations are striving to bring efficiency and transparency in the working structure. But presently there are different set of minded people present in the employment structure both in private and public sector who have different orientation and understanding about the extensive use of information technology. One who have little understanding about the IT and this consist of the 45 years old or more employees and in developing countries they comprise the top and the next group is 25 to 40 who have good understanding about the IT but still have different set of frame of mind. Fresh employees and future employees are the most emerging challenges for the organizations because the nature of work and its functioning are changing swiftly. Now setting the employment pattern and selection mechanism has to respond to this challenge which stresses the issue related to the digital natives and digital immigrants. The studies do lack their concern about the total picture of the recruitment and selection because unless the government lobbies and bureaucracy will not promote digitalization in their processes, these studies will face the issue of usefulness. This is because just seeking application through online process will not solve the issues for the organizations and researchers from the context of complete digitalization of recruitment and selection. On the basis of existing researches in the field of information technology in recruitment and selection is not at sufficient level to derive any substantial conclusion. Furthermore, mostly studies are lacking a comprehensive approach in their design because online seeking application and then manual selection may have different research outcomes with different interpretation.

**CONCLUSION**

This review concludes that the research studies in the e-recruitment are at the infancy level and will develop sharply in the coming decade. The researches that have studied the information technology in recruitment are not sufficient because on the basis of existing literature, it has been noted that most of existing recruitment and selection system has progressed mainly up to
the web or online based application systems, thus is far from the overall digitalization. Other aspect of research studies related to the overall recruitment and selection till now is the coordination and interlinks between well matured researches before and post IT era. The reason of this is that most of the organizations and governments are not involving digital computer based technology in their selection mechanism at all that becomes limitation itself for the research scholars in this field. May be this is one of a reason that so far the concept of electronic involvement has only been limited to recruitment phase and is known e-recruitment. It is evident that digitalization in whole processes and functions is the most emerging and immediate challenge for the academicians and governments particularly both in practice and theory to solve the existing and upcoming challenges keeping in view the digital natives and digital immigrants. So on the basis of existing literature related to this filed, this review claims that digitalization of overall recruitment and selection is essential from the perspective of productiveness to the organization at all levels and research fruitfulness for the research scholars.

FUTURE RESEARCH DIRECTIONS

It becomes pertinent for the research scholars to make extensive applied researches in the field of public sector recruitment and selection from the context of using digital technology. This in correspondence will not only help to organizations to smooth themselves with the pace of technology but also to the research scholars related to this field. Researches need to focus on those factors which have been commonly identified influencing selection decision from the context of information technology. Furthermore, there is a vital need of conducting further review studies to enhance the depth level of understanding the impact of information technological tools on the effective selection by comparing it with the scenario of traditional recruitment and selection.

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