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E-recruitment and Applicant Tracking System

New age of technology based applicant screening. Threat or opportunity?

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The purpose of this study was to provide reader with in-depth information of new technological instruments, which recruiters apply in order mitigate application data. This study examines how applicant tracking system has integrated in Finnish organizations´ human resource department and how it helps managing labour force.

This case study was executed in nature of qualitative research, where subjected organizations were interviewed via telephone and e-mail conversations. Findings were analyzed to elaborate and contextualize an untapped potential of e-recruitment processes and applicant tracking system.

E-recruitment and ATS became more influential in recruitment processes and important element in web-based recruitment. As labor market shifts more and more in digital platforms, the importance of processing tools is emphasized.

Efficiency of e-recruitment and ATS were examined by inquiring and analyzing survey data of systems utilization in human resource management in Finland. Findings aim to present advantages and opportunities that are made possible through automated electronic tools for experienced users in Finnish organizations.

Keywords	Human Resource Management, Recruitment, Applicant tracking system, E-recruitment, Hiring, Screening, Application

Table of content

List of Figures and Tables

1. Introduction

Digital era has introduced new technological tools as part of our everyday work activity. Courtesy to modern technology and ever-developing manpower with relation to economic climate, application pool has grown to become very challenging task in candidate sorting.

To be able to maintain with evolving world, engineers have developed applicant tracking system, a software to handle pre-selection process. "Screening robot" is designed to filter applicants based on their capabilities, work experience, education and other qualifications that are suitable for the open position. Employing the right person is most fundamental part in executing successful strategic planning and well-consolidated work force with capable competencies improves competitiveness and influences on every operative functions and decision-making.

Companies that implemented ATS (applicant tracking system) found traditional human performed preselecting ineffective. This type of candidate monitoring was not only costly and time-consuming, but success rates of pre-selected applicants did not meet the expectations. Application has provided solution to sort applicants with less man-hour and expenditure on searching the right person, while allowing HR-managers to pay more observation for candidates who match the requirements.

Applicant tracking system brings added value especially to companies that need technical manpower, where hard skills and are growing equally imperative to be soft skills. In addition, companies who are active in summer job employment and look for further assignment though internships, can benefit by selecting applicants account to criterion.

While applying ATS does not result automatically in recruiting the best applicant, this study investigates the gain and threats that surrounds sourcing module in personnel recruitment and selection. Basis of this research is to carry out thorough qualitative analysis via interviews and define how differentiated and substantiated data of applicant results in objective evaluation. We analyse results and reflect to general performance of recruitment process, personnel turnover, cost-efficiency and measurement of competency.

1.1 Research questions and objectives

Main goal of this research is to understand the mean of applicant tracking system in e-recruitment and what effects online application provides from employers perspective. Objectively, study aims to provide secondary data of experiences related to new methods of technological application in recruitment and candidate screening. While automated procession of job applications has built controversy on ethical and technical level, it has been increasingly perceived as a future instalment in recruitment procedure.

Before going into details of e-recruitment and implementation of modern technology in traditionally human-aspect required procedure, we must understand the characteristics and principles recruitment consists, and how personnel selection influences in human resources management organization strategy.

Once we understand the principals of traditional hiring process and aspects of human capital in organizational operation, we can contrast them to contemporary e-recruitment process and output of ATS in modern recruitment and value-creation.

Consequently, this study aims to answer research question of: *How does e-recruitment/applicant tracking system improve recruitment process?*

This question should provide answer on how technological tools influence and modernize today´s HR-work, and whether screening robots can be considered as a future utility and scope of recruitment.

The research problem is approached through qualitative research and scope is limited to scrutinize employers' perspective. Focus group is segmented on large retail companies that utilize ATS as a tool in recruitment with a large volume of job applicants.

Through investigation of recruitment process in these organizations, study will aim to accord perspective on research question of benefits of technology based recruitment.

1.2 Structure of research

Structure of this thesis is to guide reader to the subject by introducing studied topic via literature review. Background information will convey from fundamental human resource management to evolving trend of technology based recruitment processes.

In following chapters 2-4 reader is provided with basic concepts and theory of traditional recruitment processes and organizational strategy behind hiring procedure in human resource management.

Chapters 5-7 will explore modern implementation of e-recruitment and applicant tracking system in today´s recruitment processes.

Chapter 8-9 of the study indicates research results and analyzes outcomes of e-recruitment processes and ATS within studied companies. In these chapters research aims to analyze through primary research how well technological tools have integrated and effected in subjected companies that have applied the system. These results focus on comparing the empirical material to existing theories with purpose of finding benefits and disadvantages of technological application in recruitment processes.

The last chapters will summarize and conclude research, as well as discusses the possible topics for future research.

1.3 Methodology

Nature of this thesis is to provide qualitative data though empiric research. This study is based on existing theory and collected data trough primary research.

This thesis relies on formed data and information gathered from subjected organizations through primary data which is why this thesis will follow composition of basic case study research strategy because it investigates a contemporary phenomenon within its real-life context and the boundaries between phenomenon and context are not clearly evident. (Yin, Robert K., Case Study Research: Design and Methods 1984: Newbury Park)

Terms that can be found in the terminology are marked with an asterisk (*). That terminology aims to help the reader to understand different nuances of the topic more deeply.

2. Literature review

To be able to understand technological impact in human resource management and personnel recruitment, we need to understand the essence of strategic management and hiring process. The theoretical framework is formed by studying existing theories utilizing textbooks, articles and available data in Internet about the product. The research databases Ebsco, Google Scholar, Theseus and Libguide were utilized to collect necessary literature structuring the thesis.

Theory regarding HRM, personnel planning and forecasting is gathered from academic publications. Armstrong´s (2012) Handbook of Human Resource Management Practice and Bulmash´s (2010) Strategic Planning for Human Resources were important textbooks to cover fundamentals of recruitment part of HRM. Over the years organizations has been highlighted the importance of effective HRM practices in both scholarly and practitioners focused journals and magazines (Barber, 1998). Previous studies and basic theory of personnel planning and human resource process is presented to reader as the identification of relationships between recruitment strategies and developing applications that enable more successful practices to reach better outcomes.

E-recruitment theory has been growing up since beginning of 21st century. Theoretical material is endeavored to keep up to date with most current experiences and developments in e-recruitment. Peter Cappelli (2001), Professor of Management at the Wharton School of the University of Pennsylvania was one of first to present four-step model of e-recruitment. Previous studies have thrust forward new models that illustrate the evolution and role of e-recruitment in HR-activities. Anna B. Holm (2013) studied core function and distinction between traditional e-recruitment and modern electronic recruitment process which aims to show how implementation of modern technology is changing the traditional recruitment process to more interactive and alterable solution.

Reference material regarding e-recruitment processes and application tracking system was mainly gathered from scientific publications and previous academic researches, as well as existing material on Internet regarding examined subject. To this date there are no generally acknowledged models that assess relationship between recruitment sources and pre-hire recruitment outcomes to effectively quantify the results of e-recruit-

ment. Material gathering regarding e-recruitment and applicant tracking system was conducted mainly from English sources, because there is limited amount of scientific research and unestablished terms in standard language.

Unlike human resource management and recruiting, ATS has limited scientific publications, as it is rather new phenomenon and scientists has yet to discover wider effect of technology in modern human resource industry. Main source of information regarding ATS is gathered from find research, software guides, and infographics. Studied ATS softwares were: Workable, Greenhouse, Applicant Pro and SmartSearch. Due to limited source of bibliography applicant tracking system is presented from practical point of view as a supportive tool in e-recruitment through various examples and cases.

3. Human Resource Management

The first incidence of the concept of human resource management as we know appeared in 1980s and the meaning and definition of it has grown coincidentally along with range of activities HR-managers began to perform. One approach has been to try to contrast HRM with traditional personnel management (Foot, Hook 2002), while some consider HR-work should be finding best hire, nurturing the stars and enhancing a productive work environment (Robert L. Mathis, John Jackson 2008).

Human Resource department has become necessity past decade with increased governmental regulations and legal requirements enacted to ensure and protect equally rights of an employee and employer. Whether employees are part of big corporation or in a small non-profit agency, employees must be recruited, selected, trained and managed effectively. (Robert L. Mathis, John Jackson 2008), while taking into the account that employee has to be adequately and lawfully compensated.

In a nutshell from personnel point of view, HR department´s function is to enhance organizational performance, while ensuring that human resources activities support organizational efforts in regards on productivity, service, and quality.

Figure 1. HRM primary activities and external influences (Robert L. Mathis, John Jackson 2008)

Strategic HR Management

Strategic planning is one of most essential part of human capital management, where managers try to anticipate changes in market and economical activities in order to organize labour force to level future supply and demand of workers.

In order to monitor future needs effectively, managers need to measure, assess and analyse performance to ensure required human resources meet operational and strategic goals to maintain organizational competitiveness.

Employee and labour relations

Unions work closely with Human resource department to ensure that companies comply with laws and regulations and ensure that workers are compensated properly regarding salary and benefits, hours of work and working conditions.

HR managers are also obliged to make sure that organization policies are met under the Non-discrimination Act. Companies are therefore prohibited to discriminate employees on the grounds of age, ethnic or national origin, nationality, language, religion, belief, opinion, family ties, trade union activity, political activity, health, disability, sexual orientation or other personal characteristics. Both direct and indirect discrimination are identified. Furthermore, harassment, denial of reasonable accommodations and instructions or orders to discriminate are prohibited. (Finnish Ministry of Employment and Economy, Non-discrimination Act 1325/2014)

Staffing

Companies ensure with organized manpower planning future needs of employees with right competencies at the right time in the right place. Thought, proper analysis of demand in manpower companies can meet better set overall objectives. Competitive forces may regulate whether companies need to hire or reduce number of employees to maintain financial and competitive position.

As Steven P. Berchem, Vice President of American Staffing Association, cites: Labour force size, skill sets, and ambition and motivation all combine to imperative variable to success or failure of an enterprise. A company that can get the right people in the right

positions at the right time and at the right price has a tremendous advantage over less astute competitors (2010).

Agonists in organization recognize staffing as a key strategic opportunity for enhancing competitive advantage. Talent is scarce and valuable, difficult to imitate, and hard to substitute. Organizations that can attract, select, and retain best workers should outperform other competitors (Barney & Wright, 1998).

Talent management

Human resource development is a strategic approach of organizations that implements training, development and orientation within and outside of the company to develop the job-skill training, values and policies. Training helps new employee to settle faster into their job and well-instructed induction to new tasks results in more efficient and productive employee. Orientation of work force facilitates adaptation to new strategies, technological inaugurations and economic environment. Internal development in career planning provides paths for employees to seek opportunities to further evolve inside the organization. (Farley,2005)

Total rewards

Performance management activity to ensure that companies goals and efficiently met by employees. Through performance appraisal managers monitor, review and plan how company can promote and achieve set goals. Often workers are motivated by intrinsic and extrinsic incentives meet performance related goals. (Kanter, 1987)

To establish functioning compensation for performance, companies need to structure their basic wage and salary system and incentive program to support performance related work environment as well as to benchmark efficiency of work.

Risk management and work force protection

Companies need to comply with health and safety regulations, to pay regard to necessary standards and ensure secure environment for employees. By monitoring work force and their mental and physical wellness, employer eliminates errors, accidents and injuries inside and potentially outside the company.

Employee and Labor Relations

Human resource managers are responsible in consulting in questions, complaints and conflicts that arise in workplace. To establish functioning working conditions and fair environment managers need to develop clear policies and rules, handle grievances and assist in disciplinary acts. Companies have to address labour relation services to administer the collective bargaining agreement, by negotiating with labour unions in matters regarding wage scales, working hours, training, health and safety.

4. Personnel planning and strategy

There has been long tradition of trying to foster efficiency and effectiveness of the operation in organization through work study and related management services techniques. Fredrick Taylor was forerunner in (The Principles of Scientific Management,1911) undertaking scientific research on efficiency studying, productiveness and task management. His approach was to observe employees engaged in the performance of tasks and to document and analyze his findings. Based on his analysis, he set up new strategies to improve techniques to implement more time-efficient and economical methods in view of increasing productivity. He also introduced incentive and training systems which are also in place today to increase employee performance.

Today managers have many practices to analyze productivity and forecast staffing levels, as well as changing skills and character accordingly. According to Emiratus Professor Eugene McKenna(1995) Human Resource Planning is concerned with matching the organizational demand for quantity and quality of employees with the available supply. The demand is derived from current and forecasted levels of company´s operations. The process of human resource planning is often defined concerning following activities: assessment of personnel demand, selection of recruitment sources and channels, the comparison of applicants and conducting with selection of candidates and final decision making.

With well-analyzed personnel planning strategy, companies optimize costs in employing people, keep personnel levels structured and monitor future demands in right positions, while maintaining balance in staffing. Companies can avoid though succession management production deceleration from employee shortage and the profit-eroding effects from

unnecessary staff expenses, while shaping personnel levels with optimum amount of workers with adequate skills.

Dr. McKenna has stated three facets that comprises human resource planning:

Demand for human resources
**Utilization of human resources in a cost-effective manner**
Supply of human resources= internal vs. external supply

Regardless of what objectives and goals corporate sets, they can be achieved only by the application of human skill and effort. One of the primary stages in the human resource planning process is therefore to estimate what will be required in terms of skills and numbers of people to achieve the target. (Hook , Foot 2002)

In contemporary web-based recruitment it is is important to emphasize that companies have to develop internal recruitment process strategy to be able to successfully IT implementation in operations. With properly designed and studied framework of candidate screening and sourcing organizations can add value by improving competitiveness by hiring skilled and educated staff. Yeates (1991) underwrites the importance of good managerial preparation and strategical formulation in order to carry out technical implementation. While Krishnan and Singh(2006) support Proper management as a critical factor for the success of implementation. This implies the importance of strategy planning, forecasting and project management in adaptation of IT services in human resource management.

5. The Process of Human Resource Planning

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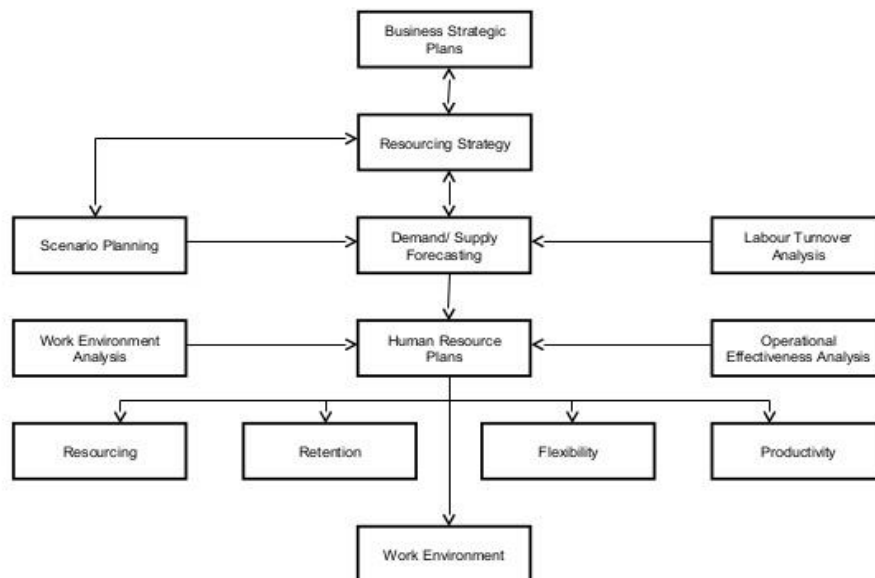
Source: Michael Armstrong, A Handbook of Human Resource Management Practice

Figure 2. The Process of Human Resource Planning (Michael Armstrong: Handbook of Human Resource Management Practice, 2012)

Human resource planning is a strategical undertaking, where company anticipates future business and environmental forces to adjust for upcoming challenges and opportunities. In Human resource planning companies try to assess the required manpower for future period of time to optimally perform organizations activities. (Bulla & Scott 1994)

HR planning is a continuous process evaluating needed manpower through analysing scenarios, external forces and strategies to achieve set goals. Comprehending strategic implications for the organizational structure is a first step towards to an efficient planning for future job requirements and needs. Set goals benchmark the impact of new strategic goals and tactics on the existing structure. It also shapes organizations to potential ad-aptations and adjustments in activities, organizational processes, and business opera-tions. (McLean, G. N. 2006).

5.1 Scenario Planning

Scenario planning is an analysis of external forces, that are likely to affect the organization. Scenario planning is perceived to have utility in planning for the future opportunities or threats. The main factors that drive organizations to change and contribute companies losing their competitiveness includes globalization, increasing environmental turbulence and volatility, hyper competition, demographic diversity, and the explosion of information (Grant, 2005).

World is in constant transformation and changes are difficult to predict fully accurate, but certain scenarios are possible to foresee as a sum of consequences. Scenario planning is gaining credibility as an effective tool in preparation for an uncertain future, alter mental models, test decisions, and improve performance in a dynamic environment (Chermack, Lynham, & Ruona, 2001). Scenario planning works as a strategy preparation for future uncertainties. By weighting in future threats and opportunities, company increases chances of adaptation and capacity to react for possible outcomes. Companies need to analyze their position in the market and react to their capabilities by preparing for a list of strategic foresights.

Companies operate as an entity on multiple levels. To be able to foresee the full scope of forces that affect business it is important to break down actors to individual, group, organization, and industry level.
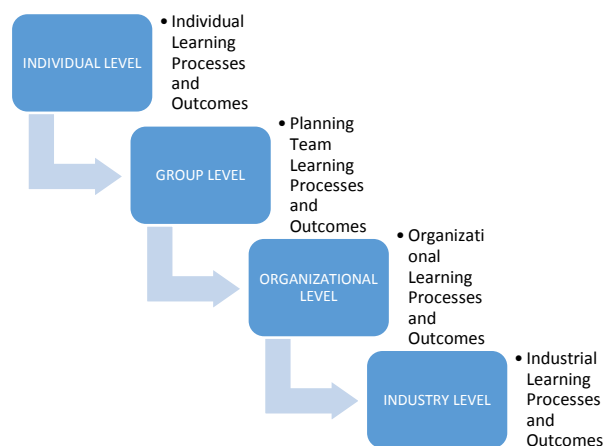

Figure. 3 Implementing the Outcomes of Scenario Planning Across Levels of Analysis

Most common strategy implementation and scenario planning occurs in group level, where top management presents goals and guidelines to reach them. (van der Heijden, 2005). Albeit, group level implementation is most used tactic, it is important to distribute the information and adapt at all parameters to enhance learning and build capability at the individual, organization, and, possibly, the industry levels of analysis in order to execute a successful strategy (Grant, 2005).

Scenario planning can be enforced by supporting learning from individual level practices and routines and which collectively effects group dynamics and slowly becomes operationalized at organizational and industry level. R.A Swanson (2001) remarked that viability of organizations involves a complex synergy between continuous learning and performance both of which are core functions of human resource development. Future staff demand and strategic goals and could be analysed and estimated through scenario planning and adapt by enhancing learning and performance of individual and collective groups.

Scenario planning is best viewed by assessing and scanning environment surrounding organization (Figure 1, outmost shell). The PESTLE analysis is a useful tool for understanding market growth or decline, and as such the position, potential and direction for a business. By understanding potential future outcomes organization can define the general personnel requirements, potential supply of experts and managers, technology transfer/implementation and potential expanses due changes. Therefore, scenario planning presents personnel based element to traditional strategic business planning for future business ideas and uncertainties

5.2 Demand forecasting

Demand forecasting is integral process of estimating the future need of employees required along with skills and competences they will need to meet organization´s future objectives. Demand is based on the annual budget and longer-term business plan, translated into activity levels for each function and department or decisions on 'downsizing' (Armstrong, 2012).

The traditional approach of calculating demand is characterized by making use of ratios to devise strategy in order to confront opportunities and threats from external environment. (McKenna 1995) A greater utilization of technology helps to analyse competitive forces that could reflect and consequence in increase or reduction of staff levels.

Forecasting demand involves at practical level determination size of personnel and type of workers that company will require in the future. The demand for the organization's product or service is integral part of the optimization; therefore, it is important to project beforehand markets and sales figures. This will determine the personnel needed to serve the projected capacity. Other factors that influence forecasting the demand for personnel include budget constraints; turnover due to resignations, contract terminations, transfers and relocations, retirement; new technology in the field; decisions to upgrade the quality of services provided and minority hiring goals (Noe, 2012).

To simplify the big picture, the sales budget would translate into manufacturing plan, giving the numbers and types of products to be produced in each period. Estimated production level would result in x-amount of required man hours. It is therefore imperative for HR-managers to have necessary instruments and details along with organization plans to forecast in increased or decreased demand of manpower. Based on existing data upper management can have estimated level of staff for new regional organization, creating a new sales department etc.

5.3 Supply forecasting

Main goal of recognizing the future HR supply requirements is to determine how many potential employees are available for each job that meet the boundary condition of knowledge, skills, abilities, and other characteristics. In addition, forecasting external and internal supply is important when determining the characteristics of hiring sources within the predetermined planning view to be able to understand whether future supply is sufficient to match future demands**. (**Bulmash, 2010)Supply forecast can be viewed from inside and outside of the organization to evaluate existing and potential labor force.

External supply information can be gathered from various sources through a number of State departments, statistic institutions, the Ministry of Labor. Company can analyze their

position in future labor markets based on graduation levels in specific majors from academic institutions. Statistical data can envisage the number of new entrants in the external labor force with specific compliance required in industry and positions needed.

External HR supply forecasting is related to labor market analysis where external factors are examined to determine available sources of labor outside the company. These factors are:

Figure 4. Human Resource Planning: External Supply

When analyzing *internal supply,* company looks at requisite resources from inside. In this process managers need to assess qualitative and quantitative data available to paint a picture what forces may influence labor movement and if existing work force may possess untapped skills that may be utilized instead of recruiting and training new employees.

According to Bulmash (2010) the internal labor force may be affected by temporary absences such as:

- leaves of absence: educational leave
- maternity/paternity leave
- permanent absences(e.g., death, disability, retirement)
- turnover (e.g. resignations, dismissals, layoffs)

Companies are also affected by actuarial losses when natural events occur and companies are forced to act in time of death, disability or retirement of an employee. Actuarial losses are hard to forecast but to some degree analyzing mortality rates, understanding occupational health and safety risks can provide valuable information for assessment.

5.4 Managerial judgement

One thing that technology has not been able to replace so far is human aspect. When assessing knowledge, abilities, skill, talents and aptitudes of an organisation's workforce or candidates human experience and consciousness is unique attribute that no machine has been able to duplicate.

Managerial judgement is intangible resource of analysing resources, requirements, skill, knowledge and ability to forecast future work force demand. Management assessment is normally conducted in meeting between upper management and middle management where future workloads are defined based on experience and future changes. Typically meetings are established in bottom-up principle where line managers proposing ideas to top-management. Another approach is top-bottom where upper management forecasts future demands based on future trends, measurements and strategy and supplies information to line managers to review and the feasibility of it and advise how it can be applied in practise. Although both methods are commonly in use by organizations the most popular way of using managerial judgement is "participative approach" where both sides of judgement are adopted.

Armstrong (2012) states that guidelines for departmental managers should be prepared to indicate broad company assumptions about future activity levels that will affect their departments aligned with target that company wants to achieve. Armed with these guidelines, departmental managers prepare their forecasts to a laid-down format.

Another increasingly popular technique is where top-management meets with focus group of staff members to view strengths and weaknesses of company and determine guidelines based on information and data gathered.

Focus group technique is important, because it provides information on things that may be invisible between the turnover figures, performance data and other parametrises. Through panel discussion company can gain knowledge of job satisfaction, motivation, management performance, opportunities and issues in operative relations.

Managers are also responsible in forecasting skill and competence requirements. Managerial judgement is in practice when analysing projected product-market developments and the introduction of new information technology or computerized manufacturing.

5.5 Work study techniques

Work study technique is utilized in companies where productivity and work efficiency is possible to measure and calculate precisely. For example in manufacturing and production it is possible to calculate output and requirement of people to fulfil the task. Work study techniques for direct workers can be combined with ratio-trend analysis to calculate the number of indirect workers needed.

6.   Development of E-recuitment

Dysart (1999) and Taylor (2001) have given simplistic definition for e-recruitment as the online process of persuading potential candidates through electronic intermediary. E-recruitment provides convenience for recruiters in selection process by instantly matching candidate's qualification, skills, experiences with job description, consequently informing candidate for its selection prospects.

One of the main reasons e-recruitment has thrived is growing access to world wide web. From 2000 until 2008, internet usage increased by 305.5 % (Internet World Stats, June 2008). 1,463,632,361 of the 6,676,120,288 people in the world use the internet. This is 21.9 % of the total world population. In North America, 73.6 % of the population uses the internet, in Oceania and Australia 59.5 %, and in Europe 48 %, which to a large extent outweighs newspapers. Internet became available to users at home, workplace and school and large organizations had to respond to shifting digitalization of markets by providing corporate site recruitment services. Applying by mail become rare, and organizations realized profit by using this development in their own favor as well (Bartram, 2000).

E-recruitment has brought job application and head hunting to digital era where interaction happens in world-wide-web and social media. Job-seeking online has brought seller and client closer to each other (see. Figure 5.). Round-the-clock service enables seekers to view applications in real time and direct communication is much easier thought communication tools such as e-mail, social media and web-pages. Direct communication between different parties (line managers, recruiting agencies, HR-department, candidate) enable better results and consistent actions.
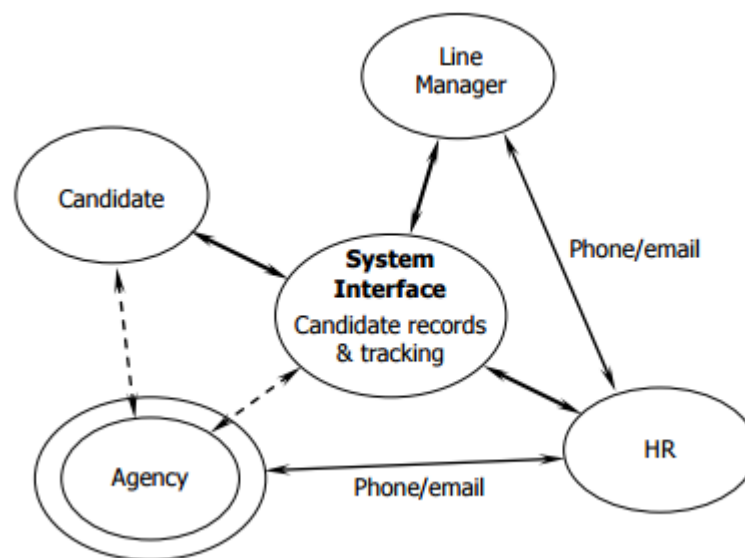

Figure 5. Landscape of e-recruitment (Source: Institute of employment Studies, 2003)

Companies consider recruitment online more secure and trust-worthy due the transparency of system, and it gives more visibility in the market for employer. Online recruitment has also increased applicant pool significantly which has brought leverage for job/worker-seekers in bargaining for salaries and perks are easier than the traditional recruitment practices. Therefore, it is beneficial in both cases for the candidate and the organization as well (Elkington 2005).

The Internet first emerged as a recruiting tool in the mid-1990s and was beckon in the management world as the modern driver of a 'recruiting revolution' due to the benefits it could bring to recruiters (Boydell, 2002). Main advantages web-based recruitment provided was, that it reduced inefficiencies which occurred in traditional recruitment processes. With much faster, cost-effective and easier procedure, recruitment became more

popular through web-based channels (Singh & Finn, 2003). Advantages of digital economy marginalized traditional print advertising and mobilized Human Resource operation to much wider scope.

According to In Lee (2005), professor in the School of Computer Sciences at University of Illinois technological trends are emerging, because e-recruiting has shifted recruiting from a "batch mode" to a more efficient "continuous mode" which has resulted to reduced hiring costs by about 87% as compared to traditional recruiting through newspapers and magazines ($183 versus $1383, respectively). Another visible factor that has contributed to this growth are reports of success from prominent employers. As an example Dow Chemical was able to reduce its hiring cycle in 2001 from 90 to 34 days while cutting its cost per hire by 26% (Gill, 2001).

In Linda Barber´s E-recruitment development-study (2006) states, that online recruitment has risen steadily during recent years and there have been a number of research studies that have measured employer take up and progress. Based on research conducted in 2003 (Taleo) 93-96% of Global 500 companies from Asia, Europe and America were utilizing e-recruitment as their main source head hunting. Another evolving trend that became noticeable was development of advertisement and online application at corporate career site from 27% in 2000 to 77% in 2005.

Parry and Tyson (2008) conducted a 6 year survey and performed qualitative interviews amongst HR-mangers in UK. The sample of 25,224 respondents represented 935 organizations. Main motives of organizations that implemented e-recruitment were:

- cost savings
- ease of use for candidates
- larger candidate pool
- ease of use for the organization
- increasing the speed to hire success
- finding candidates keeping ahead of competitors

Online recruitment has been favorable especially for large corporations, as they are able to take full advantage of technology in recruitment process. Large organizations with own

HR-department and modern IT-technology can utilize company´s web page career site and offer effortless and quick mediums to attract top talent via LinkedIn and mobile-applicable web-browsing sites. Even though implementation of electronic recruitment could prove to be costly for some companies, there are many financial incentives to implement it. Just as internet, job application works around the clock online. Companies who have adopted e-recruitment in their domain provide option to leave open application for future vacancies. This processes attracts serious candidates and saves time, money and working hours of advertising, scanning and waiting for right person. (Rozelle , Landis 2002)

Internet has shifted recruitment advertisement and communication between company and candidate to web service, where organizations and clients are provided three channels to link:

- Implementation of e-recruitment to organization´s career-site
- Employment web-sites and boards that are designed to review, post and advise job advertisements.
- Social networks: LinkedIn, Twitter, Facebook
- Online banners, that have replaced print media due to its flexibility to reach target audience and cost efficiency.

Broadband connection has made possible for candidates outside the country to apply. Videoblogging, chat-features and telecommunication (i.e Skype) has enabled organizations to prospect candidates with different skills, background and attributes due to possibility of remote interview.

7. Implementation of Application tracking system in E-recruitment

Applicant tracking system is a software instrument developed for HR-managers to support recruitment, screening, sorting candidates, assess and track applicants efficiently based on their skill set, age, salary demand etc. ATS is a software, where organizations can create pre-requisitions for opening post jobs on career site or employment sites to facilitate screening and filtering applicant pool. ATS, or so called recruitment "robots" in many cases filter received applications automatically based on relevancy and given criteria such as keywords, skills, former employers, years of experience and schools attended (Weber, 2012). Applicant tracking and recruiting systems are relying on keyword-

matching algorithms to identify candidates with the right skills and experience for a position—and to rule out unqualified candidates (Nanda, 2010).
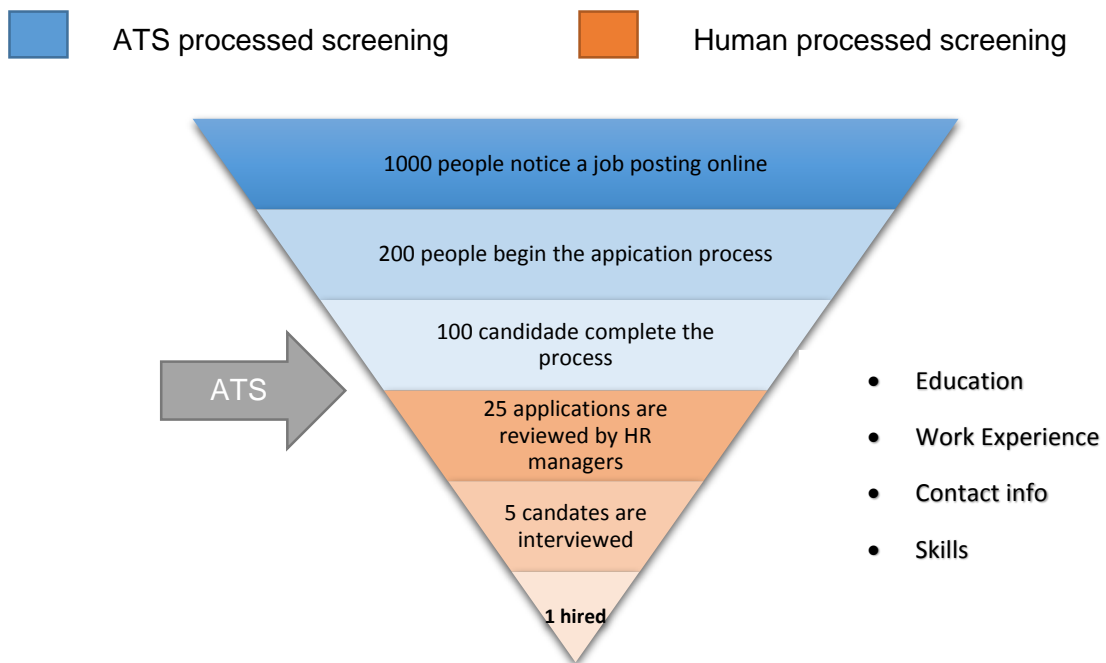

Figure 6. ATS sorting procedure. Business Weekly 2013

ATS is a relatively new technology, but its long-term aim is to become essential tool for HR-managers to improve quality and control of recruitment process. Recruitment robot serves best when outlining and endorsing key targets of applications at each stage and to reduce time in hiring period by identifying issue areas and roles. Newest ATS-applications provide analytical data and reporting functionality. With processed data, managers can measure the marketing effectiveness, generate qualitative and quantitative performance of recruitment companies and deliver diversity statistics. Companies can also fish the information of referral source and capitalize by allocating jobs to right place and audience (Roythorne,2011).

Tracking system is designed to bring added value in recruitment process by sorting out the biggest asset to the company- human capital. Staffing is one of the key human resource management activities and ATS works as an intermediate to ensure the best possible result with following supporting functions:

Job Creation, Management and Posting

ATS can speed the job posting process by guiding and recommending most relevant keywords and phrases when forming job posting. Keywords can be nouns, adjectives, or short phrases -- and describe unique skills, abilities, knowledge/education/training, and/or experience. With job posting template, managers can easily form job advertisements with all there relevant information (Quintessential careers, 2013).

Candidate Search and Apply

Candidate search and apply, is ATS-functionality to identify candidates with the skills, education, and experience that are most desired and relevant. With search-function hiring managers can single out candidates based on search criteria instead of going through all of received. This ensures that all the required important qualifications are matching with the cover letter and CV, preventing human observatory mistakes and oversight.

Candidate Communications

Candidate communication allows ATS-users to create your default communication templates. Communication is highly important element in recruitment, because job seekers are often applying for several jobs and lack of communication can lead to missing out on top talents. Introduction messages, auto-reply of reception of job application and communicating personalized messages to successful and unsuccessful candidates improve brand image and help retain best talent in the future.

Candidate Screening and Ranking

Applicant tracking system can organize applicants based on skills, work experience, education, and contact data. System then analyzes the extracted information for criteria relevant to the position being filled i.e. years of experience, IT-skills, location and rank candidates, based on the relevancy and suitability for the given position. Hiring managers can use this information to support their conclusion or to identify the optimal candidate based on strategical variables: salary, age, potential, possibility of maternity leave.

Metrics and Reporting

To take full advantage of ATS, managers can access to wide variety of recruiting metrics that has been recorded to database. With assessment of intelligent source of time to fill-

cycles, candidate comparison, vacancy rates, cost -per-hire and workflow ratios, organizations can plan and execute their talent acquisition budgets. ATS can also provide HR-performance reports indicating success rates of division, department, HR business partner, recruiter, date range and job status.

8. E-recruitment vs. Traditional recruitment

With emerging globalization and growing role of information value in social, economic and technological role has pushed aside traditional recruitment process due to inefficient gain compared to much faster and cost-effective e-recruitment. Another factor has been global competition, which has evoked companies and industries to become more skill intensive, which has increased demand for talented workers. Internet has established race atmosphere for creative, skillful and innovative employees, and it has become essential part for the companies to adopt sophisticated recruitment and selection strategies to get the right employee at the right time. (Yoon, Sivanand,2005)

According to Feldman and Klaas (2002), Internet is perceived by applicants as an useful source to locate general information on a wide array of industries, companies and jobs. E-recruitment on the other hand allows applicants to filter job by different variables such as geographical location, job type and industry type allowed applicants to assess their position in labor market.

Due to nascent nature of e-recruitment and ATS, there has not been enough studies concerning revolution of web-based recruitment in HRM. Some scientists have created flowcharts that illustrate processes in web-based recruitment.

Peter Cappelli (2001),Professor of Management at the Wharton School of the University of Pennsylvania was one of first to present four-step model of e-recruitment in Harvard Business Review in 2001.

Cappelli states that recruiting should not be viewed as a reactive, largely clerical function buried in the human resources department, but treat labor market as a true market that is wide-open, uncontrolled by individual companies, and unconstrained by geography. In Cappelli´s column he describes job applicant as a prospective customers that need to

be carefully identified and targeted, attracted to the company and its brand, and then sold on the job. This will provide competitive advantage for companies that can overcome with fierce competition for talent and master the art and science of on-line recruiting to attract and maintain the best workers.
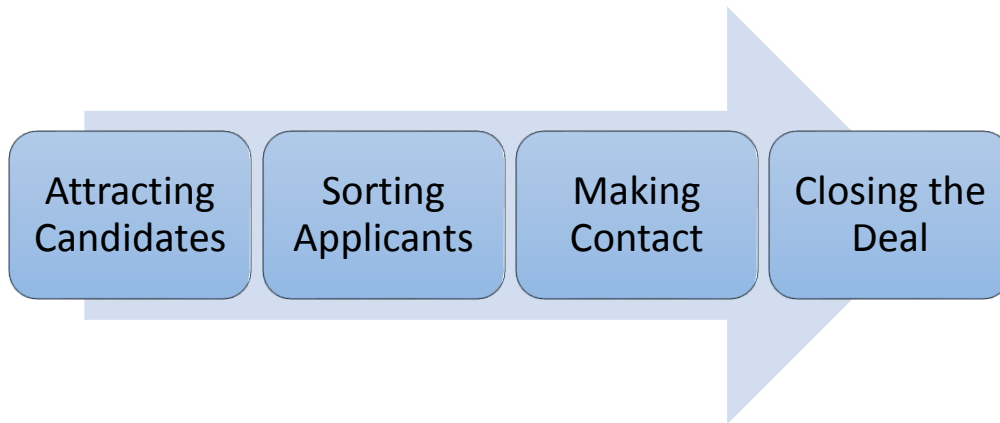
Attracting Candidates Sorting Applicants Making Contact Closing the Deal

Figure 7. Cappelli´s e-recruitment process, 2001

Cappelli´s model illustrates how online hiring can be brought in four simple step along the recruitment process. In initiation process, the attraction of candidates, companies should use their visibility in the market, image, reputation and online advertisements to allure as many candidates as possible. Greater the applicant pool, the higher variety of choice and diversity. 'Companies who attract high volume of applicants should employ sophisticated, standardized tools such as application tracking system to screen applicant to a manageable number. Communication management is important especially in contact making as companies in labor market work aggressively to capture and hire most desirable candidates.

Where Cappelli´s model provides insight to how e-recruitment is executed in fast-moving online labor market, there are other scientists who draw distinction between how tradional and modern recruitment progress along the recruitment process.

Dr. Anne B. Holm(2012), Professor of Business and Social Sciences of Aarhus University studied core function and distinction between traditional e-recruitment and modern electronic recruitment process.

Conventional recruitment process before technological development was conducted in a consequent linear process where one phase initiates a set of activities only after the

previous phase is completed (Lee, 2005). Reliance on hard-copy documentation and scheduled stages of recruitment processes made traditional process exclusive and inflexible once one stage of recruitment process was conducted, where as in e-recruitment, processes can be easily performed simultaneously and reverted when necessary without costly and time-consuming operations. Unlike traditional recruitment process, e-recruitment is an ongoing mechanism where screening and identification of candidates is constantly in motion thanks to recruiting robots that assist with ranking based set criteria.
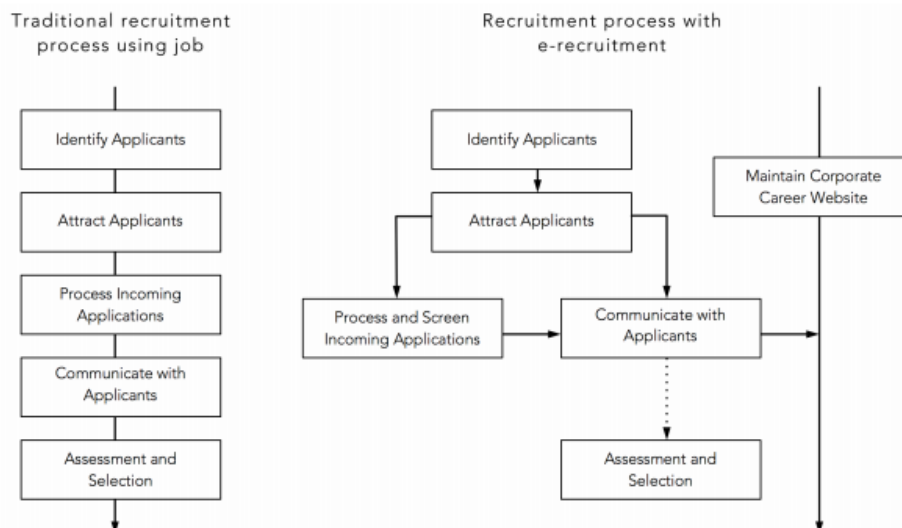
Figure 8: The design and sequence of tasks in traditional paper-based recruitment process vs. the (new) recruitment process using e-recruitment (Holm, 2012)

Concept of both processes are mainly similar with consistent functions to identify, attract, screen and select the right candidates. Main disparity with e-recruitment is integration level of automated corporate information system, which makes e-recruitment more flexible and communicative as it is conducted in fast-paced information exchanging environment, where HR-managers can revert, intervene and communicate in real time and thought communication tools such as e-mail, social media and web-pages (see. Figure 5).

9. Research findings

This research was conducted on basis of qualitative research, with methods of inquiry for collecting and analyzing survey data of e-recruitment and applicant tracking system utility in human resource management in Finland. Findings aim to present advantages and opportunities that are made possible through automated electronic tools for experienced users in Finnish organization.

For this subject, as a research strategy author has chosen case study-method, to examine and analyze individual unit stressing developmental factors in relation to environment. Case study focuses on influence of applicant tracking system and e-recruitment in hiring processes, and what effects online application provides from employers 'perspective. As a data collection method case study compose from archives, interviews, questionnaires, and observations. The evidence may be qualitative (e.g.feedback), quantitative statistics), or both (Eisenhart, 1989).

As an empirical material for this thesis is used user experience of two large multinational organizations in retail industry. On request of subjected organizations, research sources will be held anonymous and participants unidentified.

9.1 Qualitative research

As a data acquisition for qualitative research, author interviewed senior recruiting managers of two multinational organizations that work in retail sector. Interviews were held via individual e-mail conversations and video chatting. Questions presented for interviewees were identical, but presented in different order to avoid leading questions and vary interview narration.

Companies were selected on basis of their online application system practice and activity of web-based screening in recruitment processes. By investigating target organizations´ corporate websites that provided online recruitment option author could recognize, that application forms that required data input were most likely using ATS as a recruiting tool. Furthermore, both companies have diverse workforce and recruit widely from staff to executive positions in different field of work.

Due to companies leading position in the market and large rate of application flow, organizations are applying automatized online application system to facilitate and streamline recruitment process. Companies aim this way to build relationships with targeted pools of talent, and increase internal talent deployment across the globe. To distinct subjected companies, interviewees are labeled in this research as A1 and B2.

Objectively, study aims to provide secondary data of experiences related to new methods of technological application in recruitment and candidate screening, therefore interviewed recruiters explain their perception of implementation of technical instruments in analytical job. Received views are important data source for the current study to determine assessment of user experience and analysis on development of recruitment processes as a result of technical implementation in procedures.

The interviews were held via telephone/video chat individually in 45-1h long sessions. Interviews were held in semi-structured fashion to allow interviewee for open dialogue and free-flowing discussion around topic. Recruiters were aware of explored topics and questions when inquired about the possibility of arranged interview for the study purpose.

The questions for the interviews were developed after literature review was developed and more in-depth background research completed. Questions were generated in exploratory manner to allow HR-practitioners to embrace knowledge and experience in relation to researched questions.

Interviews were conducted during on period of 15.6-22.7. Questions are presented in attachment list on page 40.

9.2 E-recruitment findings

In this research author searched for user experience of e-recruitment from employee´s point of view. The main theme of interviews wrapped around advantages and efficiency research via implementation of electronic recruitment processes. According to findings, both companies shared the same opinion, that e-recruitment has made recruitment process much faster and facilitated personnel planning. Both companies have high turnover and hiring rates yearly which keeps HR-managers constantly searching and screening though thousands of applicants. Especially in lower level positions and summer jobs, e-recruitment has been important tool in sorting out large amount of applications.

A1: Our company employs yearly over 40 summer job workers and part time workers, while dealing with several employee turnovers (e.g. resignations, dismissals, layoffs). That is a lot of work for a division of 4 workers who go through recruitment and interviewing.

B2. Benefits of Internet and computable data allows to screen and rank candidates to much more manageable number, rather than simply losing time on going through all applications or ignore majority of them once there is few potential candidates.

Companies preferred acquiring and luring potential employees through the Internet, mainly through corporate´s own career site. Job boards, and sometimes social channels such as LinkedIn were also preferred channel in finding the right person. For the upper management position or vacancy that required expertise, companies chose to use career site, more traditional news advertisement or LinkedIn job-post, to segment and locate scarce talent in less prominent, but more distinguished forums.

Chapman and Webster (2003) remarked, that one of many benefits of e-recruitment included expansion of applicant pools beyond limited geographical boundaries and improved efficiency in the hiring process. Interviewed companies were asked about the e-recruitment and whether there is straight correlation in increased number of applicants and geographical expansion of candidates' locations:

A1: Our company values diversity and e-recruitment has enabled applicants to apply not only locally but from other rich backgrounds with different abilities and perspectives. For us it is a great opportunity to grow and evolve technically, but also culturally.

Internet and technical application forms have pushed recruitment process to deal with more candidates that submit their application materials. Both companies see as a positive effect, when company reach more candidates from diverse backgrounds, but underline that as the applicant pool expands, focus on the qualifications of the candidates becomes more complicated and detailed, therefore recruiters put more work and though in decision making.

Main economic benefits achieved by electronic recruitment tools were the low hiring cost on vacancies via corporate site that involved almost no cost at all. Corporate sites attracts many passive applicants who send open résumé to work exclusively for the applied company. Interviewed companies made some financial profit by utilizing open résumés that reduced the usual cost of putting advertisements for certain vacancies and saved recruitment costs in general. Other advantages that Internet based recruitment increases are: job awareness, candidate selection costs and productivity through time-efficiency (CIPD, 1999; Williams and Klau, 1997; *Workforce*, 2000).

Interviewees were asked about user experience of e-recruitment, and how it has been integrated effectively in daily routines and recruitment processes. What stood out from the interviewees' answers was, that with integration of e-recruitment, application process has become much more transparent. With applicant management system, recruiters can see whether applicant has applied previously for the company or other positions and if applicant has been interviewed before what kind of feedback he or she had received.

B2: E-recruitment has made internal communication much easier. Division managers and HR-managers make a decision to hire new employees and report specifics of job such as contract of agreement, duration, job tasks and requirements for position. We enter this data in ready-made template. Managers can do some fine-tuning if necessary and give a green light when advertisement is ready for posting. Electronic recruitment programme is usually administrated by recruiters who report of potential candidates for HR-managers and team leaders who do the interviewing and final decisions

Initiation phase is the main stage which has been revolutionized by corporate information system integration through ATS and e-recruitment procedure. Where identifying applicants are excogitated by division managers with help of HR-managers, the attraction of applicants and process and screening applicants are mobilized with support of job posting programs and ATS. Recruiters and managers save most of their time at first stage of recruitment, where daily of job posting process routines are facilitated by a framework software that guides and recommends fitting keywords for the position.

Some researchers have analyzed the impact of integrated applicant management system in recruitment processes and come to conclusion that companies who can successfully automate recruitment processes by integrating tools can reduce significantly the bureaucratic load of work – which, in addition, also saves time (Malinowski, Keim, & Weitzel, 2005). Others studies found that most significant advantage is the one of diminishing the administrative burden of the HR-department (Kerrin & Kettley, 2003).

Main advantages that emerged from theoretical and empirical research material comprised of how e-recruitment and ATS facilitated application screening and administrative work surrounding HR-tasks. Companies who applied electronic applicant management system felt that without automated tool processing, screening through thousands of applications would be nearly impossible due to organizations´ size and image, as handling thousands of applications by e-mail would cause e-mail flooding and carelessness.

> *A1: Obviously there are still a lot of administrative work included in HR-work such as employee-related documents, answer department telephones, and distribute information to employees. Some work "robots" cannot an probably should not perform e.g. scheduling meetings and appointments, but what comes to job posting, , sending automatic e-mail for rejected applicants or sorting candidates based on technical skills , it is extremely practical that computer fulfills these routines.*

Recruitment robots and electronic integration in recruitment processes has become a household equipment in large organizations big data is already a powerful tool in logistics, sales, production and other enterprise functions. Deillon (2014) argues that turning down application of technology for recruiting or postponing its integration could mean exposing the organization to competitive disadvantages against concurrent and an uncertain future. Biggest obstacle for implementation of e-recruitment tools are financial.

Small and medium size enterprises who weight in possibility of applying e-recruitment in their human resource operations bump into budget limitation, due to high maintenance cost and unprofitable use to counterweight potential benefits. Nevertheless, interviewed companies found that charge of e-recruitment tools were legitimate, when compared to working hours and effort it saved by increasing the performance of recruitment processes. Interviewees saw great potential in future of companies implementing recruitment tools, once it becomes affordable for smaller enterprises. OECD (2010) supports this by stating, that modern labor markets are characterized by high levels of turnover between jobs, resulting in high flows in and out of unemployment. HR-departments will face even greater task of finding replacements for aging working population and mobile labor market. E-recruitment could play a big part in operative transition of new age of fast flowing employment.

9.3 ATS findings

ATS is has been a crucial software in facilitating modern recruitment processes. With authorized data collection and filtering system, recruiters can sort received applications automatically based on relevancy and given criteria such as keywords, skills, former employers, years of experience and schools. Function allows recruiters to focus on selected candidates that suit the requirements. In comparison to traditional recruitment, ATS allowed users to filter all applications by positions instead of dividing received applications to their own files. Candidate search and categorization of applicants enabled recruiters to identify candidates with right skills, education, and experience most relevant. Interviewed companies also praised the functionality that allowed them to see applicant´s recruiting history in their organization thanks to data recording. Streamlining this process has shorten first stages of sorting significantly. Some reports show that applicant tracking systems have reduced average recruitment cycle time from approximately 12 weeks in 1995 to 5 weeks in 2001 by eliminating unnecessary steps and clarifying processing standards. (Bingham, Ilg, Davidson 2002)

> B2: "Applicant screening is done by computer, that is true, but instead of going through thousands of applications manually looking for the same key factors and attributes, software does it on behalf of us. What is saved in time in searching for

right candidates, we can centralize in providing consultancy and communication between different parties."

E-recruitment has vastly increased the amount of applicants companies receive, which effects positively especially on candidate pool and talent acquisition. Round-the-clock service and inexistent geographical borders lead to influx of applicants. CMA Management reported that Internet usage for recruiting purposes in Global 500 companies increased from 29% in 1998 to 88% in 2001. Although, recruitment "robots" have received some critique because the system has not been error-free, there has been significant development in ATS which has received commendation from employers and applicants. Ph.D Elisa Grant-Vallone (2002), from California State University wrote in her study that stream of increased applicants has improved the quality of applicants, through access global talent.

> A1: "Screening and job posting is much easier today than what it was 20 years ago. Cost per hire is much lower than earlier and we can hire relatively fast new worker in urgent needs. We draw some analytical conclusions from existing data and make quality metrics which we can implement in our strategical decision making. This can improve our workforce planning and budgeting. "

So the process of human resource planning is today evolved to a point where certain activities are being assisted by computers to expedite most time-consuming procedures such as job posting and the comparison of applicants. This allows engagement on activities that demand analytical thinking like personnel demand, and conducting with selection of candidates and final decision making.

10. Conclusion

Purpose of this study was to establish user experience of automated recruitment tools and benefits it offers in recruitment processes. E-recruitment and applicant tracking system is relatively new phenomenon in human resourcing, although large organizations have implemented them as a recruitment tool for over a decade. With help of ever-developing IT, computer and mobile technology, job application has become much easier procedure for applicants. Although digitalization in human resources has become in many large organizations ordinary, the awareness of electronic recruitment is insufficient. Collected research material has been gathered from dissertations of the subject, as well as some published literature available.

The objective to this research was to understand how technology has been applied and integrated to recruitment processes. Research question *"How does applicant tracking system improve recruitment process*?" is aimed to open through exploratory theoretical relationships of HR-activities and concepts of e-recruitment.

Empirical material and literature view aims to provide practical answers on how technological tools influence and modernize today´s HR-activities and how contemporary recruitment process is perceived scientifically. Study concentrates on employers stand and results from qualitative research shows, that electronic applicant management system has successfully integrated in HR-activities and technical transformation has been fluent.

Traditional recruitment process is forced to step away for more efficient and cost-effective e-recruitment. Large companies do not view it only as ancillary application, but also as a competitive advantage via talent acquisition. Internet has accelerated the recruitment process and applicant tracking system has become essential for the companies maintain to sort best candidates from increased pool of applicants. Traditional methods will still have foothold in most of the administrative work, such as employee-related documents, telephone communication, and information distribution to employees, but master data, that can be processed and analyzed will be processed in the future by sophisticated softwares.

As we look into the future, automated applicant screening becomes more involved in large organizations who use corporate career sites, e-recruitment and social media as a channel of recruitment. This implicates that HRM will need to further integrate information technology in recruitment processes and train managers in effective use of candidate

management system. It is important to emphasize that companies should further develop internal recruitment process strategy to be able to implement successfully e-recruitment. With properly designed and studied framework of candidate screening and sourcing, organizations can add value and improve competitiveness by hiring skilled and educated staff. Poorly executed strategy may lead to malfunction of mismatched hiring. Companies should not only view Internet and social media as an additional channel to source the candidates, but thrive to develop strategies that will improve the e-recruitment processes and technical skills of HR-managers in using ATS as a tool, in order to obtain full effectiveness from the system. This will require organizations investment in training of HR-managers to interpret ATS data to be able to assess correctly the capabilities in scope of e-recruitment.

As labor market becomes more agile thanks to Internet, companies are flooded with applications received. Although high volume and wider applicant pool may statistically improve the diversity and even the quality of the candidates, companies should not be too overwhelmed over progress to maintain competitive advantage. In order to strengthen the performance, companies should measure constantly the successfulness of their recruitments and monitor candidate comparison, vacancy rates, cost -per-hire and work-flow ratios in order to improve the technical know-how and data assessment of human resource professionals.

Based on the research, we can conclude that e-recruitment and ATS have become more influential in recruitment processes and important element in web-based recruitment. As labor market shifts more and more in digital platforms, the importance of processing tools is highlighted. That being said, e-recruitment and application of candidate management system is most efficient when performing pre-selection and attraction phase. Traditional processing and managerial judgement is still indispensable asset in analyzing personality, ability and adequacy and making final hiring decision.

11. Recommendations for further research

Current study aims to contribute to the research, on whether electronic tools and internet can improve organizations effectiveness in recruitment, subject is still largely untapped.

Whilst this study discuss over use of e-recruitment as a screening mechanism in different employment group, it is important to explore how organizations recruit across the diverse

vacancies. Some researches indicate that management and expert-level related positions are growing via internet (Bartram, 2000), further research on effectiveness of ATS and e-recruitment on non-manual labour would help to understand the holistic impact across the diversity of positions recruited.

Furthermore, another subject for further study is the dichotomy surrounding e-recruitment and automatized recruitment. Although coordination of potential candidates facilitate the daily work flow the integration of e-recruitment tools do not come without certain flaws and risks. With less human monitoring, software is exposed to mistakes and with automated reasoning it is possible to provide right and wrong answers which may deceive the program and lead to incorrect recruitment decision. The implementation process is constantly developing and it requires surveillance in order to avoid malfunctioning and technical issues which are at the first stage of recruitment considerable, because the system is usually rather complex. This process needs time and adjustments, which bring further costs to take into account (Kim & O'Connor, 2009). Another growing concern that should be investigated and researched is a possibility of discrimination and selectivity that online recruiting may encourage to. This is especially true for enterprises using selection tools on top of recruiting tools with their HR system. (Dhamija, 2012; Cappelli, 2001)

ATS and e-recruitment has radically developed and implementation emerging in many large organizations. As the program and e-recruitment begins to craft new attributes, it may further restructure the recruitment process and how daily HR-work is perceived.

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ATTACHMENTS

Interview Questions:

E-recruitment

1. What kind of e-recruitment program your company has implemented? Who has access to it?

2. How e-recruitment is applied in your company? Web-site integration?

3. What are the most visible advantages in everyday work tasks? Has it speed up some processes in your line of work?

4. Is e-recruitment economically beneficial for your company?

5. Has e-recruitment increased level of applicants and expanded geographically candidates' locations?

6. What kind of feedback do you get for implementation of e-recruitment? Has it improved your company´s image?

7. What kind of changes do you see in future of HR and e-recruitment?

ATS

8. How ATS has changed HR-activities in your company?

9. What kind of results has ATS produced? Has it helped in finding the "right" person?

10. How does your company screen applicants for different vacancies?