



**E-RECRUITMENT PERCEPTIONS: IMPORTANCE,
PROCESSES AND REQUIREMENTS**

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**E-RECRUITMENT PERCEPTIONS: IMPORTANCE,
PROCESSES AND REQUIREMENTS**

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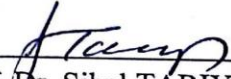
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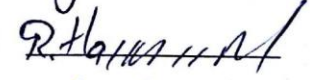
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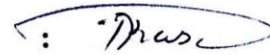


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ABSTRACT

E-recruitment Perceptions: Importance, Processes and Requirements

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Nowadays, the old-style methodology of recruitment has been transformed with the concept of on-line recruitment, or what we can abbreviate to *e-recruitment*. Because of the increasing number of end users of the Internet globally, e-recruitment has developed rapidly in recent years. E-recruitment has opened the way for new concepts in employment with easy to access to information, easy management and savings in time for both workers and employers. The main objective of this research is to demonstrate the importance of e-recruitment to any enterprise and to discuss the impact of using the medium of the Internet as a channel for the recruitment process. In addition, this study endeavors to show how we can decrease the overall cost of the recruitment process, and how to provide a more integrated functionality to the recruitment process in addition to identifying the benefits of e-recruitment for both employers and applicants. Moreover, this study suggests e-recruitment for the University of Kirkuk as a case study. An e-recruitment system implementation at the University of Kirkuk is also discussed in addition to identifying the benefits of using an e-recruitment system to jobseekers and stating the impact of e-recruitment in improving the human resources management mechanism. Finally, a number of recommendations by the researcher are presented regarding financial and administrative issues.

Keywords: e-recruitment, jobseeker, online job, recruitment system, human resource management system.

ÖZ

E-İşe Alım Algısı: Önem Derecesi, İşlemler ve Gereksinimler

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Günümüzde, eski usul işe alım yöntemlerini çevrimiçi işe alım kavramı ile dönüştürülmüştür ya da *e-işe alım* olarak kısaltabiliriz. Son yıllarda küresel İnternette, son kullanıcı sayılarındaki artış nedeniyle e-işe alım hızla gelişmiştir. E-işe alım bilgiye zahmetsiz erişim, zahmetsiz yönetim ve çalışanlar ve iş verenlerin her ikisi için zamandan tasarruf ile istihdamda yeni kavramların yolunu açmıştır. Bu araştırmanın asıl amacı, herhangi bir işletme için e-işe alım sürecinin önemini göstermek ve işe alım sürecinde internet ortamının kanal olarak kullanılması etkisini tartışmaktır. Bununla beraber, bu çalışma işe alım sürecinin tüm maliyetini nasıl düşürebileceğimizi ve işe alım sürecine ek olarak çalışanlar ve başvuranların her ikisi içinde e-işe alımın faydalarını tanımlayarak daha bütünleşmiş bir işlevselliği nasıl sağlayacağımızı göstermeye çalışmaktadır. Ayrıca, bu çalışma örnek olay incelemesi olarak Kirkuk Üniversitesinde e-işe alım önermektedir. Kirkuk Üniversitesinde, bir e-işe alım sistem uygulaması tartışılmıştır, ek olarak iş arayanlar için e-işe alım sisteminin kullanılmasının faydaları tanımlanmıştır, ve insan kaynakları yönetim yönteminde e-işe alım etkileri belirtilmiştir. Son olarak, araştırmacı tarafından finansal ve yönetsel sorunlara ilişkin öneriler sunulmuştur.

Anahtar Sözcükler: e-işe alım, iş arayan, çevrimiçi iş, işe alım sistemi, insan kaynakları yönetim sistemi.

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LIST OF ABBREVIATIONS

ATS	Applicant Tracking System
CV	Curriculum Vitae
ICT	Information and Communications Technology
GPL	General Public License
LAMP	Application Linux, Apache, MySQL and PHP
OSI	Open Source Initiative
OSS	Open Source Software
HRM	Human Resources Management System

CHAPTER 1

INTRODUCTION

1.1 Introduction

Tremendous developments have accompanied the growth of information and communication technologies. This has opened new horizons to many positive expectations in improving the management concept [1], currently this development has helped many institutions, businesses and organizations to develop resource management positively through the use of this modern technology. Resource availability on the Internet permits a new path for this development, as is the case in the evolution of many sectors affected by information and communication technology (ICT) development [2]. The recruitment process has also received a share in this development.

The recruitment process has undergone several stages of development; however, in general it has presented itself to us for the first time mainly through the United Nations Organization while the first orientations to electronic recruitment go back to paper issued in the 1990s [3]. This was due to actual need, such as the need for efficient management of human resources, speedy access to jobseeker documents, easy implementation and follow up of the recruitment process and the reduction of costs. The most important element is the transparency of the system and the access to greater resources around the world.

The recruitment process is one of the most important elements in an organization as this process will reflect either positively or negatively on the type of performance and human capital of an organization in the future [4]. Most organizations seek to hire the right staff, appropriately skilled, high-efficiency workers to gain a

competitive advantage [5]. Online recruitment processes include the use of an organization's resources on the Internet as an effective way to reach the largest number of these human resources at the lowest cost and with the highest efficiency [6]. At present, the demand for the recruitment process to transform from the normal form to online recruitment is growing in demand. In large organizations, we find that this process is included in the same human resources management systems used by the organization. Naturally, the new system is called the *electronic human resources management system* or E-HRM [7]. Despite the expected successes in this regard, not every organization that has used these systems has reported success stories [8]. Therefore, a study of the positive and the negative trends, which may result in the use of modern systems in the recruitment process, will provide many options to an organization before implementation of these systems and using them in practical life.

1.2 Research Problem

Large and medium-sized enterprises and organization always suffer from the problem related to effective human resource management [9], and as a result, they have been suffering problems in the recruitment process. These problems may be related to job seeker electronic document management, easy access to these documents and the effectiveness of decision-making and the opportunity to reach the largest number of job seekers in a timely manner and to ensure recruitment process transparency. In general, this research aims to assess the role of the transition from the recruitment paper life cycle into the electronic format life cycle and to evaluate the use of the Internet as a mediator between employers and job seekers. Therefore, this study aims to achieve the following objectives:

1. Suggest an e-recruitment system for the University of Kirkuk as a case study;
2. Discuss the importance of e-recruitment systems for an organization;
3. Identify the benefits of e-recruitment to candidates;
4. Examine the impact of top management provision for e-recruitment; and
5. Discuss the advantages and disadvantages of using e-recruitment systems in organizations.

1.3 Thesis Outline

This research consists of two parts: a theoretical part and a practical part. The academic content is distributed throughout five chapters thus: Chapters 1, 2 and 3 comprise the theoretical part; Chapters 4 and 5 comprise the practical part. The details of each chapter are as follows:

Chapter 1 comprises a review of the general objectives of the research.

Chapter 2 comprises a definition of the recruitment process and its historical development including mentioning the process of transition from paper to electronic format.

Chapter 3 includes a literature review and the approaches that have been used in previous research studies relating to our subject. In addition, the research challenges and the expected benefits of our suggested system will be highlighted.

Chapter 4 discusses the University of Kirkuk as a case study by proposing and implementing an online recruitment system and discussing the application process.

Chapter 5 consists of conclusions and future work in addition to a number of recommendations being made.

CHAPTER 2

RECRUITMENT PROCESS

2.1 Recruitment Process

The term *recruitment process* can be defined as the functions that include all administrative decisions and practices which may affect the type or number of people who are prepared to apply for a given position [10]. The recruitment process is considered to be an essential part of human resources management systems. The success or failure of this process can affect the function of organizations. This is a result of the importance of bringing specialized and highly qualified workers to work instead of relying on non-qualified workers. Moreover, it helps in advancing development within an organization [11].

With the contribution of economic and social factors, the recruitment process now becomes more important than ever before. These factors can be summarized as follows:

- 1- Substantial development of information technology that requires broad and diverse expertise to manage it, i.e. multi-skilled employees;
- 2- Some modern business strategy models evolved for public administration, which rely on skilled workers as a basis for development work;
- 3- Knowledge base expansion, which requires institutions to rely on the intellectual property rights of their employees; and
- 4- Economic factors related to the quality of production and the cost of a product.

Therefore, it becomes essential to develop an effective recruitment process in institutions, increase the interest in job seekers and support the process within the same institution, thereby increasing the productivity of the enterprise. Moreover, in order to construct a comprehensive picture of the recruitment process, we need to understand the nature of the work of the Human Resources Management System, which is a system considered to be one of the key parts of the HRM system.

The recruitment system is divided into two parts inside HRM. The first is Human Resource Planning where we make the right decision for hiring from an internal or external source. The recruitment of an internal source means enlisting skilled workers within the same organization or moving them to the appropriate position, while recruitment from an external source means enlisting workers from outside sources and putting them into an appropriate position. The second is the analysis of jobs, the process of which is related to the job requirements analysis and the development of its own hiring standards as the recruitment process can be divided into the following sources [12]:

- 1- External resources: the dependence on hiring institutions or advertising in newspapers as well as on social media, TV and radio.
- 2- Internal resources: referrals by managers, referrals from employees, reliance on HRM career records, or through an internal announcement or internal selection process. This may include competitive training sessions to select the best workers.
- 3- Formal resources: these rely on official sources as the basis of the recruitment process. It can lie within the largest framework and adopt transparency in the recruitment process.
- 4- Informal resources: these rely on unofficial sources as the basis of the recruitment process, such as a hearing officer and a recommendation by former managers, personal knowledge of employees, through previous working relationships, through or social relationships.

The advantages and disadvantages of every one of the sources of recruitment above will be discussed later in this chapter. The purpose of the recruitment process, which is used in any recruitment source, may seem stress-free at first glance, but in truth, it is one of the most complex tasks within an organization.

It may result in serious consequences, including for finances and for the time saved and even perhaps the entire success of the entire organization. It also highlights the importance of employment in several positions, such as the high proportion of applicants to fill the advertised jobs compared with the number of vacancies or the number of subscribers with high level skills within plain sight. One has to decide who is better to fill a particular post. Occasionally, converging-level applicants and the competition may cause confusion for the decision-maker, especially with the progress new technology and the vast number of available information sources. As is applicable to many other business functions, the recruitment process has been developed to help decision makers to take the appropriate decision. It is also possible to define the mechanisms of the recruitment process according to the following [13]:

1. A totality of the activity that regulates the relationship between the employee and the job seeker.
2. A totality of decisions aimed at bringing a number of skilled workers. The primary process is vacancy announcement and it ends with the submission and selection of applicants.
3. The totality of processes is that which leads to arranging the nomination in a group of candidates intended to regulate the application process to enable decision-makers to choose from the database, where the regulatory process is the main objective of this recruitment process.
4. Recruitment is a constant procedure whereby an organization endeavors to progress a pool of capable candidates for the upcoming human resources requirements even though exact posts do not exist.
5. Recruitment is the progression of determine bases of labor to lighten the prerequisite of staff hiring.

2.2 The importance of Recruitment Process

The importance of the recruitment process and the purposes of the recruitment process can be summarized as follows [14]:

1. To compile an interactive list of candidates for better selection from many applicants;
2. To attract and sweeten the largest number of applicants for the job to improve the probability of attracting skilled workers;
3. The recruitment process is the anchor point and relationship between an employer and a job seeker;
4. To reduce the costs required within the institution;
5. To control future and present necessities of the organization in combination with its job analysis activities and personnel planning;
6. The recruitment process contributes positively to the improvement of the process of selecting from a number of applicants.
7. To meet the institution's social and legal obligations regarding the organization of its employees;
8. An effective recruitment process will help the organization to fill the vacuum vacancy quickly, i.e. time saving;
9. To raise the individual's effectiveness and organization's recruiting practices;
10. An improvement of sources for every kind of job candidate; and
11. To prepare and identify any appropriate candidates.

The objectives of the recruitment process, as one of the organizational goals, can be listed as follows [15]:

1. What the occupation is:

This includes the purpose of the occupation, gathering information about the occupation, making up the occupation, and the skills and personal attributes of applicants.

2. Creation of an Occupation Profile

This includes qualifications, knowledge and experience, aptitude, skills, and personal potential relevant to the occupation.

3. Potential Candidates Judgement

This includes succession planning, staff referrals and job sharing.

4. Application Process Management

This is used for regulatory purposes, such as regulating the application form and curriculum vitae (CV).

5. Candidate Assessment

This includes shortlisting, a general interview and a presentation and competency based interview.

In addition to the recruitment process passing through several stages before it is possible to complete operations [16], this process may include preparation, announcement, application, a candidate selection process and an evaluation process.

2.3 The Sources of Recruitment Process

It is worth mentioning that there are two sources of hiring: internal sources and external sources. There are also many factors that determine whenever an organization should consider the internal or external source in the recruitment process. Figure 1 shows elements of the sources of adoption. Understanding the available sources for the recruitment process can help an organization to know when and whether they must rely on an external source to enlist new experiences into the

organization. Alternatively, an organization can exploit the expertise available within the scope of the institution to meet the actual requirements

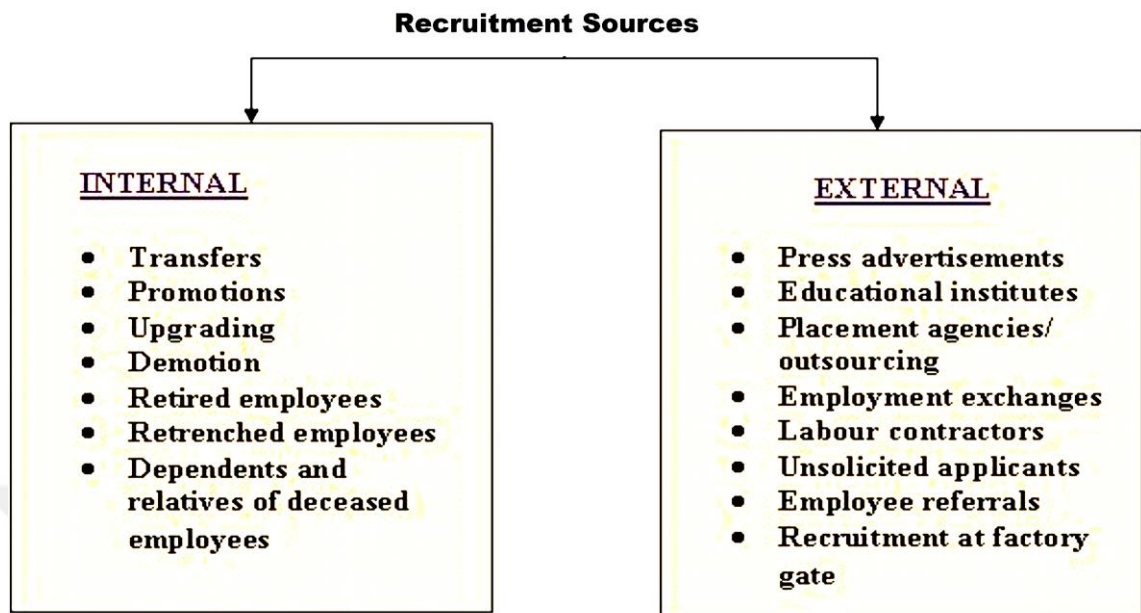


Figure 1 Recruitment sources

There are many benefits in cases of relying on internal sources in the recruitment process. Firstly, it is less expensive and the institution and managers know the candidates. However, this process is not without some drawbacks, such as missing opportunities to gain new foreign experiences. This process may produce an internal acting to get this functional post. It may also reduce the confidence levels of those not selected. Occasionally, employees of the company need to interact with new employees with new knowledge, enthusiasm and new ideas [17].

In some cases, the organization needs to be fully dependent on external sources to meet the variables of exchange of the business model. External recruiting can stress the institute in a constructive way. It can save on preparation costs by hiring cultivated employees, and simplify the fulfillment of predetermined goals. The disadvantages of external sources can include a possible risk that the candidate may not match the criteria, it can be time consuming, and there are high recruiting costs. In addition, the large numbers of applicants may burden an organization obsessed with how to process large numbers of applicants [18].

Each organization has the right to choose between internal or external sources based on the recruitment process. However, the knowledge of the most important points that separate the two sides of the recruitment sources should be considered. Internal recruitment includes any process for employees being transferred between divisions within the same organization, while external hiring includes all other sources.

2.3.1 Internal Sources

Internal sources of the recruitment process may include many operations, the most important of which are listed below [19]:

- Transfers: current workforces moved from subdivision to subdivision meeting their competence and knowledge;
- Promotions: workforces are promoted from one division to another division which can be of more assistance and greater duty grounded on competence and knowledge;
- The reduction of the number of staff depending on the quality of job performance; and
- Re-employment of a number of former employees such as pensioners and those with expertise that cannot be easily compensated.

2.3.2 External Sources

External Sources of Recruitment is the reliance on any external source as a basis for the recruitment process, including every operation below [20]:

- Press advertisements or newspaper advertisements: the dependence on external sources may include the announcement of any jobs available in local and international newspapers to recruit the most skilled workers. The merit of this process is its wide reach to a large number of recipients.

- Educational Institutes or Colleges: many educational and research institutions, universities and colleges are perhaps some of the most important sources of skilled workers for the labor market. The great merit of this method is the possibility of obtaining workers with high levels of education.
- Placement and Employment agencies: most large companies prefer to rely on recruitment agencies in order to produce the best results at the lowest possible cost. What distinguishes this method is the speed of access to resources at the lowest possible cost.
- Employment Exchanges or Employment Swaps: in some countries, a government may provide management offices for the staff exchange process within a state or within a country. This can contribute effectively to the exchange of employee experiences and provide greater flexibility to staff.
- Contractors of Workers: in number of cases, it relies on contractors to provide a good selection of workers, especially if any work is within a limited period of time. What distinguishes this process is its general low cost.
- Unsolicited Candidates: most job seekers may progress to fill multiple functions simultaneously. In some cases, may be organizing data base for unemployed worker will be useful for companies to look on it , this will help any organization to select the right of workers in time manner way
- Employee Recommendations or Employee Referrals: a number of institutions offer the possibility to some trusted employees to make recommendations or referrals to a potential job seeker. This may include a list of relatives and social relations. What distinguishes this method is its reliability. For some positions in some institutions, this may be an important condition to gain employment. This certainly is not reflective of transparency in the provision of employment opportunities; however, it is ultimately the policy of foundation

- **Factory Gate or Unskilled workers:** unskilled labor can be recycled in useful a manner to fill a more appropriate vacancy that matches their skills. This may include employment at a higher level than previously with lower salaries and more effort. What distinguishes this method is that it obtains cheap labor and provides job opportunities for the inefficient employment.

2.4 The Factors of Affecting the Recruitment Process

Many factors can affect the overall process of recruitment, including internal and external factors. Internal factors include every factor that can be controlled within the organization itself. While external factors include every element that an organization cannot control internally, i.e. they occur due to an external cause. Figure 2 shows the most important factors that affect the recruitment process [21].

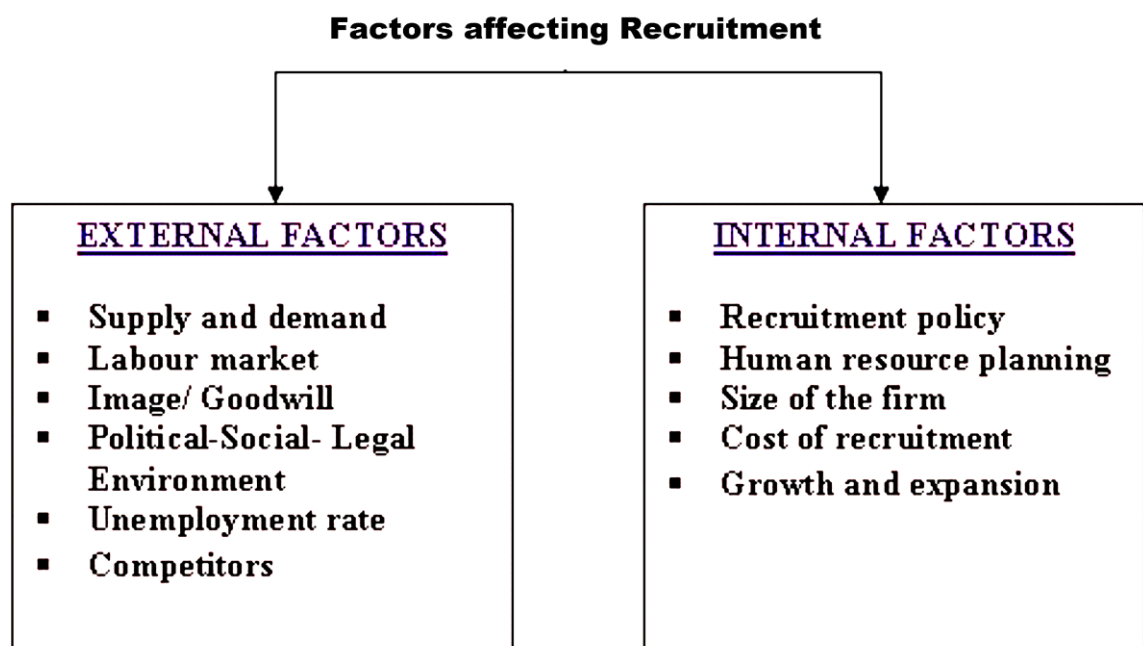


Figure 2 The most important factors that affect the recruitment process

2.4.1 Internal Factors

Internal factors can be summarized as follows [22]:

- **Recruitment Policy:** an enterprise may identify a number of control lists for the recruitment process. These controls may require a number of administrative changes in order to achieve these requirements. Perhaps it needs to develop some programs and procedures specifically for the recruitment process. This process can include employee policies within an association. Its constant, administration policies on grievances, organizational purposes, favored sources of recruitment, financial implications and employment costs.
- **Human Resources:** The efficient administration of human resources within an organization helps to identify gaps between workers and helps to determine the actual need for employment and when this employment needs to occur.
- **Size of the firm or organization:** The size of the enterprise is one of the important factors that affect the recruitment process. For example, in large organizations, there is a need for effective recruiting and re-employment operations as well as a need to continue to achieve the objectives process.
- **Cost effectiveness:** In some cases, the recruitment process from external sources can be expensive compared to internal employment that does not require significant resources. Internal recruitment is relatively less expensive.
- **Expansion and Growth:** If the institution has future or present plans for expansion and growth, this factor positively affects how to push the hiring process forward.

2.4.2 External Factors

There are many external factors that may affect the recruitment process. These factors cannot be controlled by the institution nor can they be outside the scope of the work, such as supply and demand, the labor market, good will/image, the political environment, the unemployment rate, and high competition. Below is a brief explanation of the external factors [23]:

- **Supply and Demand:** The supply and demand for skilled workers in the labor market is an important external factor that affects the employment process. For example, if a company needs to recruit a number of skilled workers and if this requirement is not reflected in the labor market in terms of workers not being immediately available, it will lead the organization to rely on internal sources of employment.
- **Labor Market:** Labor market variables in the community may affect the employment process, including the increase in the number of asylum work processes within a specific business or a specific area. The scarcity of labor in other areas is more likely.
- **Goodwill / Image:** A good reputation and positive image of the institution may play an effective role in attracting skilled workers to the company such that they would want to be part of the success of the organization. On the other hand, a negative image and notoriety about an organization will have a negative impact on the overall recruitment process.
- **Political Environment:** Political, social and legal factors play an important role in influencing the hiring process. In some cases, there are specific laws by governments concerning the recruitment process and how to control this process. Moreover, there are some legal problems regarding the minimum wage and other social concerns that may adversely affect the recruitment process.

- **Unemployment Rate:** The most important factor that influences the recruitment process is the economic factor in a specific country or region. This also affects the ratio of the number of unemployed to work, and in some cases, this effect can be positive or negative.
- **Competitors and High Rivals:** The presence of a large competitive environment affects the recruitment process in terms of bringing the largest number of skilled workers, salaries and incentives for these skill workers. Therefore, the presence of a large number of competitors in the labor market has heavily affected the recruitment process.

2.5 The Functions of the Recruitment Process

Many functions that are part of the recruitment process depend on [24], which creates a model for the recruitment process. These functions include strategy development, recruitment objectives, intervening variables, recruitment activities, recruitment results and evaluation. Academic philosophies explain the recruitment process obtainable by Miaoulis, Stolz and Nicovich (2008) [25], who addressed a model of process planning that includes the following: planning, announcement, application and screening, applicant selection, and applicant evaluation.

There are also other studies that give more detail about the recruitment processes provided by Armstrong (2003) [20]. This study makes distinctions between screening candidate selection, application, and the evaluation processor. It has benefits when evaluating the overall process and the recruitment process. Throughout these three stages of the process, a diverse set of information about the candidate is obtainable at diverse phases.

Another study presented by Cook (2004) [26] offers six variables which can be used to evaluate the influence of the selection progression. These variables include the following: practicality, acceptability, validity, generality, legality and cost. Each variable in the overall recruitment process can be evaluated and analyzed based on

these factors. For example, an organization can depend on the evaluated system to maintain a record of the knowledge of the actual needs of workers depending on the evaluated centers in spite of the fact that this method may be superficial; however, it is cost-effective.

2.6 Social Recruitment

The term *social recruitment* or *social employment* is a relatively new term, which has been recently activated with a large turnout on information technology. The recent economic recession that occurred in different parts of the world has forced many establishments to cut costs. Therefore, one of the solutions regarding the recruitment process was to resort to different methods in order to create a new rule for the recruitment process, i.e. to resort to less expensive ways [27].

Most companies realize that relying on social recruitment methods is an effective way to reduce costs. This accreditation includes both methods of electronic and social relations in itself. Moreover, this method has proved successful in appointing a large number of skilled workers in innovative ways. In addition to those candidates who accept the social means of employment, they find easy ways to find work through the availability of a huge amount of information and a sense of greater reliability. Moreover, the number of applicants through social means has increased steadily since the start of their use as a means of seeking work [28]. Therefore, we can say that the use of social means to serve the recruitment process has benefits for both employer and job seekers [29].

2.7 International Recruitment

The actual need for a variety of experiences has prompted many enterprises to seek these experiences in various fields around the world. This has helped to create a new concept for the recruitment process known as international recruitment. The first study to present this concept was made by Armstrong (2003) [20], who recognized some of the potentials need to be evaluated in selecting skilled workers in

international assignments. In addition, this concept also respects certain constraints such as the provision of adequate residences for foreign workers or impediments to change in language, culture and the environment.

This method is often an expensive way of employment due to the high wages and many obstacles regarding this process. On the other hand, there are many reasons that drive some companies to rely on this type of recruitment. These include a rare diversity of experiences in terms of references and the need for workers in various skills. In addition to the expansion plans of a company, environmental conditions and political factors make it imperative for a company to rely on both foreign and local expertise and many other factors.

There are also many strategies that are used to search for international workers. Sparrow (2005) [30] presented a study on the most important of these strategies in place, including long-term strategies (guaranteeing an organization's occurrence in the international occupation market), active recruitment strategies (directing a particular cluster of contenders with suitable channel selection), and passive recruitment strategies (in actuality the necessary high-quality skills for dynamic occupation seekers).

CHAPTER 3

ASSESSING THE METHODOLOGY

3.1 Introduction

Information and communication technology is constantly evolving. This evolution affects many aspects of life. The revolutions that have occurred in the service sector, and in how to provide this service in a new form, have become vital areas to be controlled within a specified range. These changes have affected much of the business sector both positively and negatively. We have seen during this era a rapid conversion to successful e-commerce as an alternative to the traditional mode of trade. Many of these changes took place in the economic, political and social sectors. These days, many institutions desire to focus their efforts on taking full advantage of this change [6]. As a result, the recruitment process has seen many significant changes in the level of understanding and implementation. This has paved the way for the emergence of a new term: *e-recruitment*. In Chapter 2, we review the recruitment process in detail and we discussed the factors that affect the recruitment process, including both the internal and external factors. In addition, we review social and international recruitment. In this chapter, we will review the e-recruitment process in addition to the most important previous studies in this regard and most of the challenges facing the process of research in this area.

3.2 Electronic Recruitment

There have been many attempts to standardize the definition of e-recruitment, but mostly it is defined thus: “*E-Recruitment, also known as online recruitment, Internet recruiting or cyber-recruiting, refers to the practice of advertising job vacancies online. Also it is the process of integration of recruitment and Internet technology*”

to improve efficiency and effectiveness in hiring new employers from all over the world.” [6].

In another definition provided by Marzulli (2002) [31], *“E-recruiting, embracing the term web-based recruiting can be described as any recruiting processes that a business organization conducts via web-based tools, such as a firm’s public Internet site or its corporate intranet. The terms of online recruitment, Internet recruitment and E-Recruitment are interchangeable.”* The definition provided by Mkory et al (2009) [32] states that *“E-Recruitment is the process of personnel recruitment using electronic resources, in particular the Internet. Companies and recruitment agents have moved much of their recruitment process online so as to improve the speed by which job candidates can be matched with live vacancies. Using database technologies, and online job advertising boards and search engines, employers can now fill posts in a fraction of the time previously possible.”*

E-recruitment, also known as Internet recruitment or online recruitment, is a term used to describe the process of applying for a job through the use of new technologies such as computers, smart devices and the medium of the Internet. This new concept contributed dramatically to the development of the recruitment process. These effects include simplifying process tasks, automating the recruitment process, making recruitment processes more productive, and efficient results and reporting. In spite of the development in this area, working with employment remains within the scope of business. As this process requires time and effort, many businesses resort to the electronic process as a solution to all these problems. With the presence of online knowledge, many factors have been added to the value chain, such as efficiency and automation [6].

3.3 Business Model of E-Recruitment

Many large and medium-sized companies are using online recruitment as an effective means to find new employees. Information technology has provided cheap ways to manage this process with the possibility of broader access. This has a greater influence than the traditional recruitment techniques. The old boundaries that

occurred between occupation boards, print media holders, recruitment consultancies, technology corporations and recruitment promotion agencies now no longer exist. In the past, job advertisements by conventional means took a considerable amount of attention into the business and advertising sector. Much of this effort does not yield success in the present day because of the reliance on online recruitment. Online recruitment consists of many phases [33], the phases of which are shown in Table 1.

Table 1 Online recruitment phases

Phase	Perception
Strategy planning	Provision of your recruitment plan by applying E-Recruitment that greatest outfits your occupation.
Available job	Preserve an efficient list of occupation posts on your business web-site.
Obtaining	Nevertheless, the source of applicants, all straight forward submissions to your web site.
Broadcast	Characterize detailed questions that will be used to filter the maximum number of appropriate candidates.
Admission	Web-based expertise delivers a real-time impression of your employment action.
Selection	Significant information collected throughout the submission process to support the applicant's CV.
Conference	Management tools to confirm and place all interview activity
Response	Modified patterns to connect the consequence of every submission
Evaluation	Amount of performance and cost of your employment approaches

3.4 Methods of E-Recruitment

An e-recruitment portal has several tasks, the most essential of which is forming a queue of applicants to check between them later. There are several ways to do this

within the online recruitment process, but usually it is divided according to skill. The employer explains the vacancy according to the skill required while the applicant fills in the information on the skills he has. An applicant can also provide an autobiography detailing his skills in the form of a CV document [34].

Moreover, most online recruitment sites offer a candidate the possibility to create an internal account within the site and allow him to complete the application process. After a successful account creation, which is usually free, the applicant can enter his personal information. It should be noted that in reality, this process is not free as most employment sites benefit from advertising revenues and they attract the largest number of candidates effected in a positive way to raising this revenue [34]. After completing this process, the candidate applies for a possible position and sends this information to the employer or to whomever is declared to evaluate the information and skills; the applicant may be contacted for an interview and another date is set.

Therefore, it is important to make these processes as easy as possible for users where one must take into account the different levels of applicants in terms of knowledge, the level of use of information technologies, and age differences and level of education. Maintaining ease of navigation and simplicity of the site with complementarity and inclusiveness are two of the most important factors that contribute to the success of this process. Many studies around the world have proved that users are attracted more too simple sites than to the complex sites [34]. There are also other studies that have shown that when adequate information is received by a candidate for a particular job in a positive way, it can contribute to bringing a larger number of candidates to a position [35].

In addition to the provision of Basic Information for the employer, as well as explaining briefly the most important reasons that may lead the candidate to work here, may be a decisive point that brings the large number of candidates. This information includes information regarding an employer's moral obligations to the institution, as well as incentives and salaries, social or humanitarian motives, and commitment in a green environment. The process of providing an information

database in which to search will be very helpful and will accelerate the application process. This leads to the need to provide a powerful tool for advanced searches in order to maintain the time for both employers and applicants [34].

Figure 3 shows the World Bank job portal.

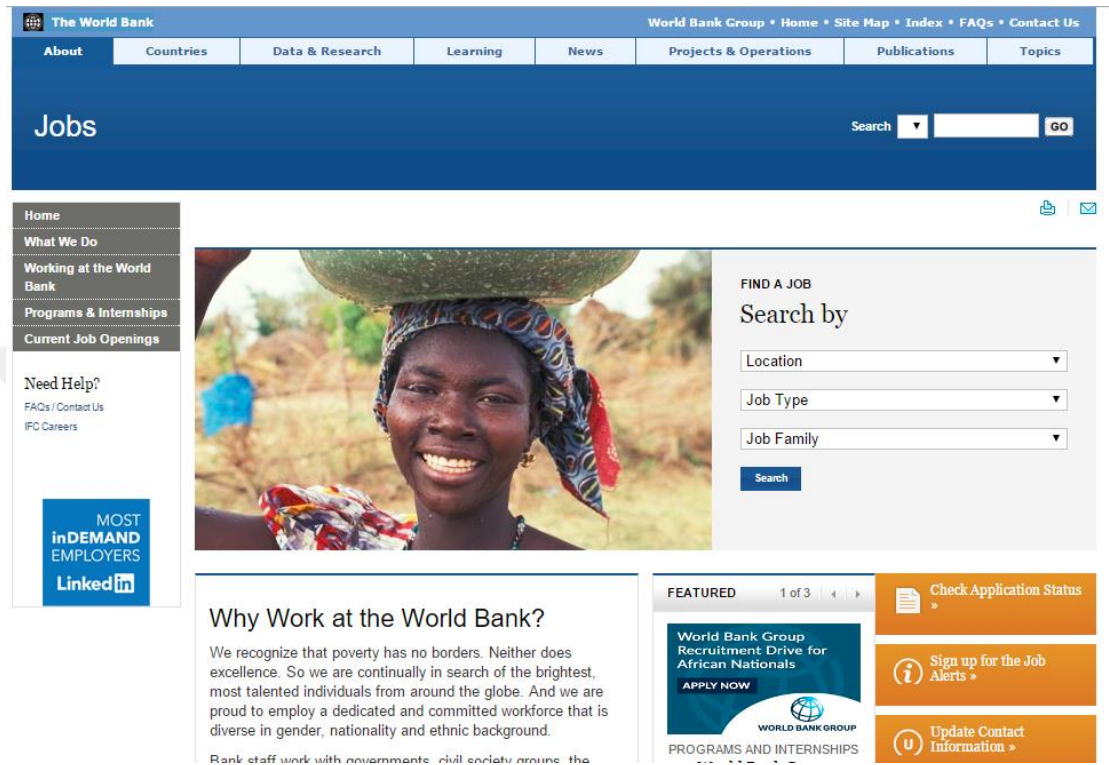


Figure 3 World bank job portal

3.5 E-recruitment Advantages

There are many benefits to be gained through the use of an online recruitment process and most important of these expected benefits include the following:

1. For organizations that provide online recruitment, service contributes to increasing revenues by increasing the percentage of advertising revenues on these organizations web sites [36].

2. For organizations providing online recruitment services, it increasingly contributes to attracting skilled workers as well as increasing access to many more skilled workers. It provides good opportunities for organizations to recruit specialist workers. In addition, for job seekers, it contributes to increasing the probability of acceptance into employment [36].
3. Reducing the routine associated with the recruitment process and the amount allocated to resources for this process with online recruitment is a significant benefit in terms of reducing costs, or access to the best results at the lowest possible cost [37].
4. The electronic administration process helps to reduce the time required to perform these operations. Additionally, it saves time for both the employer and the job seeker. [6].
5. Many studies have shown that the use of online recruitment contributes effectively to increased access to viable jobs being advertised and thus increased opportunities for many job seekers to find an appropriate job post [37]
6. The use of online recruitment provides great tools for the management, such as, the easy follow-up of applicants, powerful system reports, and more advanced system administration [6].
7. Flexibility and ease of use with the ability to innovate as well as the ability to receive more applicants interactively and the possibility of end user feedback and notification features [34].
8. The use of online recruitment is supposed to be a technique to address the exact employment market places by means of placement opportunities on web sites for specific interest groups [35].

9. The use of online recruitment provides a reliable recruitment process through organizations and functional monitoring without paperwork requirements and a greener environment where improved management processes and announced vacancies and all temporary and final documentation are delivered electronically [37].

3.6 E-recruitment Disadvantages

There are many benefits of the use of online recruitment; nevertheless, the process is not without some weaknesses, the most important of which are the following:

1. One of the major concerns is that the perception that comes from a web accomplishment can generate a high number of submissions. This consequence is recognized mainly from a wide range of geographical areas, which simultaneously becomes a benefit and an obstacle as the Web is a globalized marketplace. Moreover, it is often assumed that many potential candidates will admit to read the occupation being publicized from anywhere within the world. Additionally, because the mainstream of potential employees stores their CVs electronically, electronic submission means a smaller amount of effort and lower cost for the individual in comparison to traditional methods [36].
2. Occasionally the large number of applicants causes confusion among the administration due to the diversity of skills among applicants and perhaps also the close level of these skills. This contributes to making a selection and evaluation process more difficult than ever [3].
3. An increase in the number of applicants does not necessarily mean an increase in the efficiency and quality of the applicants. This will lengthen the queue of applicants and it may lead to the loss of opportunities for skilled workers [38].

4. Because of the ease of the application process on the online recruitment system, many applicants may not be serious in their job search and this will cause the consumption of system resources without efficiently achieving results [39].
5. The increase in supply and demand through millions of web sites scattered around the world using the concept of e-recruitment may lead to confuse the job seeker in the search and presentation of a suitable job as a result of the vast amount of websites available [40].
6. It is well known that online recruitment is an electronic process and this leads to the loss of the opportunity for physical and moral ratings and evaluations for the applicant. The result may lead to loss of many opportunities for skilled workers or to rejection by the electronic system directly [37].
7. The use of IT technologies is not necessarily an easy task as some applicants have difficulties in understanding the constantly changing technology. This may be a weak point in e-recruitment systems [6].
8. A number of studies have shown a high level of dissatisfaction among applicants who have been rejected by the electronic system, while other studies have shown a good level of satisfaction among applicants who have been accepted through the same system [39].
9. There are a number of weaknesses suffered by most applicants who had previously used online recruitment web-sites, including issues related to the amount of available information on a particular job. Therefore, applicants can have easy access whether or not the applicant is suitable for the job [40].

10. Many studies state the presence of an adequate number of applicants who prefer to use traditional methods in the recruitment process regardless of all the features provided by online recruitment systems [35].

3.7 E-recruitment Functions

One of the most important tools used by the recruitment process was the online recruitment form. The e-recruitment system provides the employer with a full-bodied solution to expedite applicant relations, the speed of the processes and the information stream so as to improve employment progressions. With only a few steps, administrators are able to categorize occupations, gather resumes, post position statements, select a qualified applicants and conclude the evaluation process, all in a timely manner [41]. E-recruiting facilities characteristically cross the threshold of industrial principles, such as interview information and applicants resumes, and put them in databases. E-recruiting systems develop advanced workflow technology and use a secure integrated database to report to prospective employers when skilled applicants are indexed. Consequently, the employer can control all operations through the development of a number of parameters and values within the system in order to control operations such as upcoming verdict steps and advanced searches methods. By taking into consideration the use of these advanced technologies, the employer can take advantages of internal and external recruitment sources, including local and international recruitment sources [41].

Moreover, the online recruitment process has many capabilities, including the following:

1. Personalized e-mail notification;
2. Dynamic construction of a business's occupations web page;
3. Ability to support multiple languages;
4. Improved communications and integration activities;
5. Ability to do background checks; and
6. Creative report and feedback systems.

3.8 Limitations of E-Recruitment

The online recruitment system, not unlike any other system, has a number of limitations while the basic functionality of the system is to allow applicants to develop a summary of their skills. In addition to the CV, it puts information into a database in order to enable an employer to search for potential candidates. The employer develops advertisements for jobs to enable candidates to select for themselves that which fits their skills and to apply for employment. Indeed, this process appears to be a smooth one; however, it actually suffers from many limitations.

A number of studies have suggested that reliance on electronic systems should not only be limited to the idea of expanding opportunities; they should also include reducing the risk arising from the employment process. Since the evaluation process is a very important stage in the recruitment process, we should carefully consider this process. For example, we must consider several determinants, such as input and output measures, including current use activity, the numbers of fruitful submissions, costs per employee, traffic analysis, and reporting system and advertisement rates. The organization must review these measurements from time to time in order to ensure the safety of the process [42]. Table 2 shows e-recruitment limitations.

Table 2 E-recruitment limitations

Limitations of E-Recruitment
Security, privacy and confidentiality
Technical difficulties and limited knowledge of using the techniques
Candidates do not want to apply for available jobs online because of their distrust of technology.
The procedure can convert to feel impersonal issues.
Applicants can turn away from the system if the e-recruitment website is poorly designed.

3.9 Related Work

E-recruitment systems have the attention of many researchers. Currently and in the past, there have been many studies that discussed the benefits of, and obstacles to, the implementation of such a system. Moreover, other studies attempted to offer some proposals to improve the online recruitment system framework and propose effective alternatives to manage the system, below the most important previous Studies related to our subject.

A study by Jansen (2005) [43] has attempted to show the importance of using an online recruitment system in that period with the increase in the use of information and communication technologies. In that period, there were a small number of companies and institutions that relied on online recruitment systems. Therefore, this study has contributed positively to show the importance of these systems in the development of the business sector. The study also showed how users are using the Internet to search for jobs in addition to the effectiveness of the business sector to respond to these requests. The study provided some useful recommendations for organizations on how to create e-recruitment sites in addition to review the most important information for possible candidates in order to attract the greatest number of skilled workers.

The study by Parry et al. (2006) [44], This study aimed to show the positive relationship between information technology and human resources management system (HRM), in which it stated the most important influences that have taken place in the human resources management system.

In this regard, the study shows that the use of information technology has contributed effectively to raising the level of human resources management systems. Such reliance on information technology needs to make effective changes in the level of knowledge of employees and managers in order to make better use of these techniques. In addition, the positive use of information technology can affect overall

operations in any organization, including online recruitment systems, which contributes effectively to raise the level of organizational performance.

Moreover, this study makes the recommendation that institutions ought to focus on electronic management systems for human resources as well as focusing on online recruitment systems as an effective means to recruit the most possibly skilled workers and benefit from their expertise in the development of an organization's work.

Another study by Furtmuller (2007) [45] discussed the most effective ways to maintain the employment of electronic renewables by taking into account the concept of the sustainability of the system, such as maintaining updated biographies (CVs) of the candidates and how to keep applicant profiles updated. This matter was the most important obstacle in ensuring the effective use of the electronic employment system as most users do not take effective steps to update their profiles in the system. This may be considered to be a weakness in the use of e-recruitment systems by companies. This study emerged with a number of recommendations for both companies and job seekers on how to take effective steps to keep information up to date in the system by simultaneously using effective means of notifications in addition to other recommendations on how to raise the level of performance of the e-recruitment system itself.

A study conducted by Al Jedaya (2008) [46] attempted to explain the relationship between the use of information and communication technology and the performance of companies. The study was intended to examine the functionality of companies in the Kingdom of Jordan. The results that were obtained showed a positive relationship between the use of modern techniques of information and technology. In addition, it raised the level of job performance in the company. The study concluded as follows:

- 1- The use of information technology in companies has contributed to high job performance;

- 2- The use of the Internet as a means to attract skilled workers was one of the most effective tools. This contributed to the development work of companies; and
- 3- The use of effective tools in information technology contributed to increased investment in the business sector.

A study by Othman (2007) [47] discussed the importance of the implementation and application of the e-government e-recruitment system in Malaysia. This study discussed the online recruitment system as an electronic service provided by the government. Since the Malaysian government will provide every service by the government in the electronic form by 2020, this study aims to propose a number of improvements to the online recruitment system to achieve the goal of an integrated service. This study also discusses the importance of the transition to the use of e-recruitment because of its great importance to the government and the commercial sector. It concludes with several recommendations, the most important of which is the development of infrastructure for information and communication technology and raising the level of knowledge among citizens. In addition to the creation of awareness programs, this study recommended the establishment of training systems for companies on how to activate online recruitment and show its importance to the business sector.

Another study by Olivas-Lujan et al. (2007) [48] discussed the reliability of end users in the online recruitment system. This study state a research model and a technology acceptance model (TAM) to measure the reliability and acceptability of the use of information technology by candidates in the online recruitment system. In fact, the study aims to establish an acceptance test model for online recruitment systems from the perspective of different applicants. The study showed a positive relationship between candidates and the online recruitment system.

While another study by Malherbe et al. (2014) [49] endeavored to discuss field selection for job categorization in online recruitment systems. The study focused on three classes of documents, social network user profiles, job categories and job

offers. Each class holds numerous fields with written information and the study proposed dynamic ways to fill these fields automatically in order to raise the level of performance of the online recruitment system.

3.10 Research Challenges

Throughout the literature review and previous related work, it has been observed that research in the recruitment system is facing a number of issues and challenges, the most important of which are [50]:

- 1- Applicant data security and confidentiality;
- 2- Knowledge and learning level of candidates;
- 3- Problems with simultaneously operating both online and off-line systems;
- 4- Lack of integration of e-recruitment systems and existing systems;
- 5- Problems related to maintaining updated information in a sustainable manner;
- 6- Quantity and quality of candidates;
- 7- Managerial challenges; and
- 8- Technical and infrastructure challenges.

CHAPTER 4

IMPLEMENTATION AND DISCUSSION

4.1 Recruitment Framework

Through a literature review related to the recruitment process, we have a clear understanding regarding the importance of this process. However, understanding this process through only a literature review will not give us a full vision as we also need to understand recruitment process models or recruitment frameworks. Moreover, we need to produce a model of this process that is based on this theoretical framework model. In fact, there are several stages through which the recruitment process passes. Nicovich and Miaoli's, and Stolz [16] deliver an operative classical model for assessing the differences between recruitment processes. This operative classical model agrees with another model made by Armstrong (2003) [20]. While Ume-Amen (2010) [51] makes simple adjustments to the overall shape of the model, it actually suggested to count recruitment systems as the preliminary stage. The amendments made to this model can be summarized as follows in Figure 4.

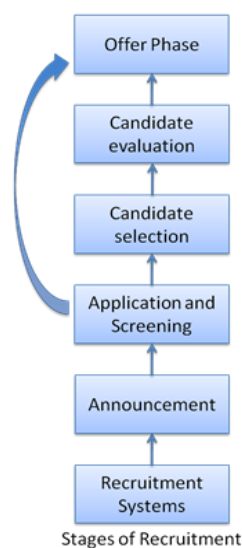


Figure 4 Process of recruitment stages

The essential objective of this proposed framework is to describe the elements during this process and examine the potential pointers of efficiency of recruitment process outsourcing. In order to investigate these two different points of recruitment process outsourcing, we need a hypothetical framework that can make statements about these two detailed sets throughout every stage of the recruitment process. A study of the e-recruitment framework made by Breauph and Starke (2000) [52] has suggested a model that is consistent at several stages of the hiring process, that is five parts, including the purpose of the recruitment process, namely strategy development, recruitment activity, investigating the process value, and the recruitment process results. The suggested model framework made by Breauph and Starke (2000) [52] along with the process included is shown in Figure 5.

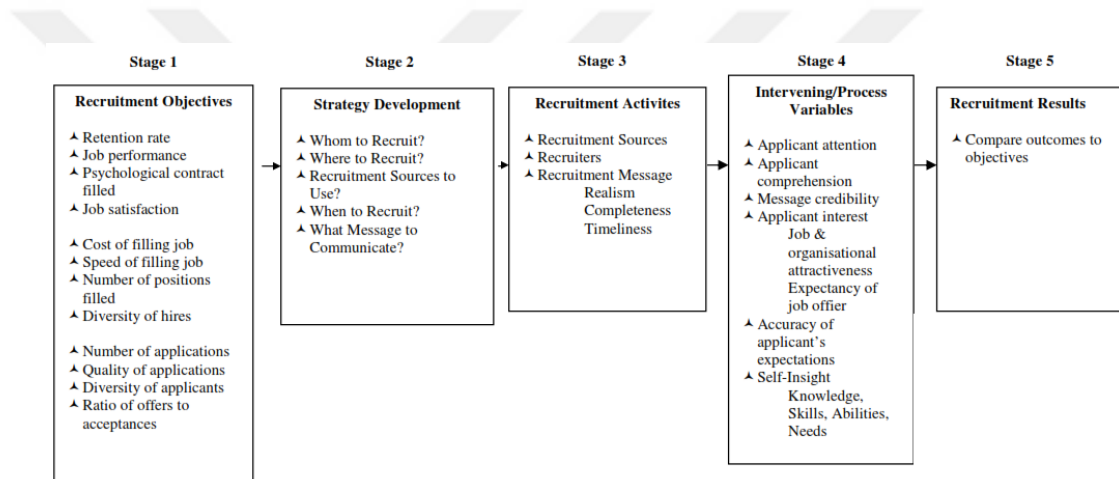


Figure 5 Recruitment process [52]

The determination of the recruitment process outsourcing originates from the supposed value generating accomplishments inside every step of this method. The category has distinct meanings of function that require that it be achieved to confirm the success of the accomplishment method itself. Within this framework, they are recognized as functions of comprehensive stages within the accomplishment model. Miaoulis et al. (2008) [53] proposed a subsequent framework that attempts to solve the problems known from reviewing the educational literature review. Figure 6 shows the academic framework of e-recruitment made by Nicovich, S. et al , (2009) [53].

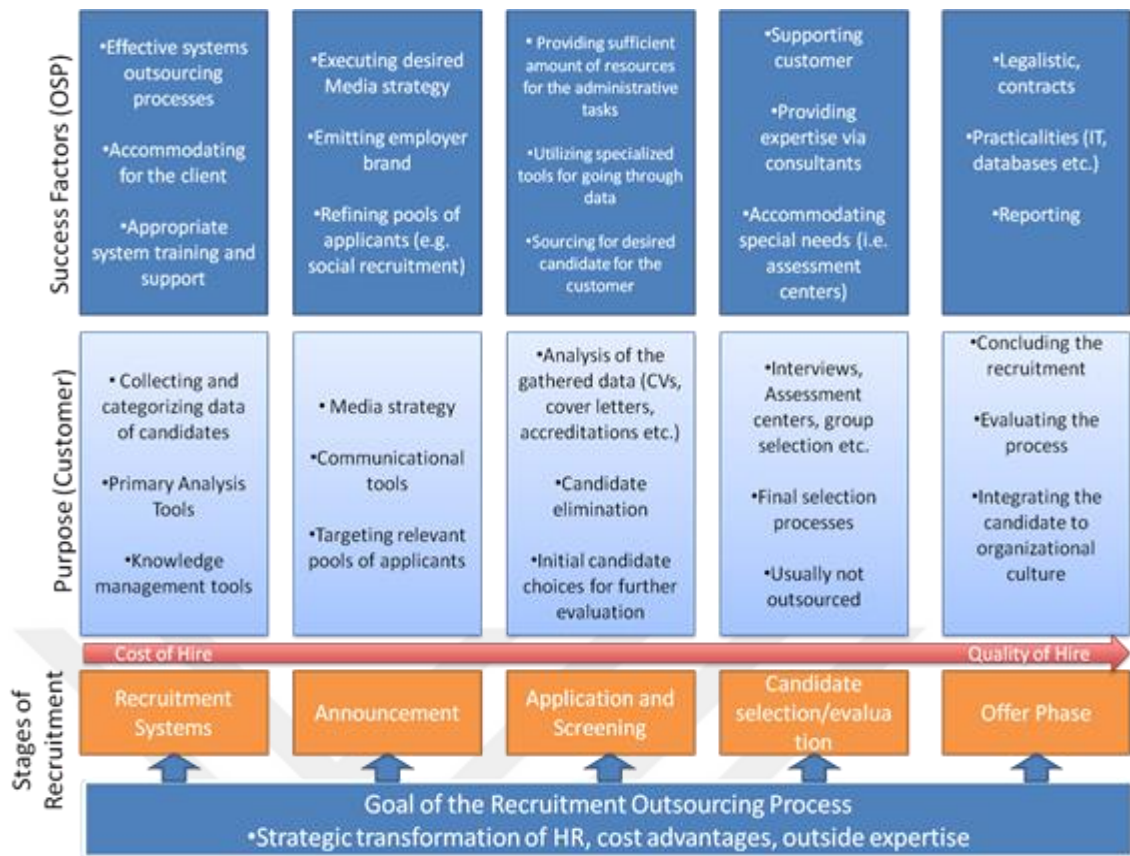


Figure 6 The Academic framework of e- recruitment made [53].

4.2 Open Source Software

Open Source Software (OSS) can be defined as “[a] piece of software released with a software license approved by either the Open Source Initiative (OSI) or the Free Software Foundation (FSF)” [54]. Open Source Software occurs in nearly everything, from desktop tools (such as Thunderbird, OpenOffice.org etc...), object relational libraries and web servers (such like Apache Torque, Hibernate etc...), and operating systems (such as Open Solaris, Linux, etc...). In addition to many other areas, the user can enjoy a unique experience with these applications in terms of freedom of access or re-use. Users are often free to access source codes, modify it, re-publish it, redistribute it, study it, and improve the software according to certain controls and policy. However, this does not mean that this type of software is completely free as there is the possibility to pay a small amount for other services such as technical support [55].

The use and development of open source software had its greatest influence on the work of establishment in many organizations. This type of application provides many options and benefits to these establishments in order to reduce costs and save time, along with the distributed development. An effective collaborative and associated paradigm in open source software schemes has encouraged many administrations to progress their private expansion processes (Wesselius 2008) [56]. Some research in this regard shows that informal and broad access to open source software applications has transformed how administrations buy or decide to develop software. In addition, this has dramatically and significantly increased the reliability of this type of application (Ghosh 2006) [57].

Many applications have been used for the development of online recruitment processes. In addition, naturally, several programming languages have been use for this purpose. Building an e-recruitment system from scratch is a costly option from several points of view, including the time required to program the system, the cost, the design process and the required expertise in different programming languages. Another option was use to use open sources software for e-recruitment systems. At this point, there are too many companies and programmer communities which provide many options for this type of system. Since one of the objectives of this study is to propose an effective portal system of recruitment for the University of Kirkuk, in this section we will compare the best available open source software and then select one to build a job portal site for the University of Kirkuk.

Through reading many analytical studies on many websites and other previous studies in this area, we found that there is much open-source software that can be used for this purpose. We are able to re-allocate it to fit with the natural work of the University of Kirkuk, in particular within the action mechanism that is suitable and intended for this purpose. For this, we have selected three of the most open source systems dedicated to serving the electronic recruitment process, and we have downloaded them, configured them in virtual environment, and tested them individually.

4.2.1 OpenCATS

OpenCATS is open source software that is considered to be applicant-tracking software designed for recruitment processes and can be used upon the premise of a recruiting software solution. It is based on PHP, MySQL and is a simple-to-use, free-of-charge web based applicant-tracking system. The software supports both Linux and Windows operating systems. It offers many features including candidate application, organization of resumes, job posting, selection management, demonstrations of all activities on a dynamic dashboard and reporting. On the other hand, as it is open source software, technical support is only provided through the developer community. However, there is a commercial version of the product that is of high efficiency and is supported by the company at a low price. Figure 7 shows the Recruiting process supported by OpenCATS [58].

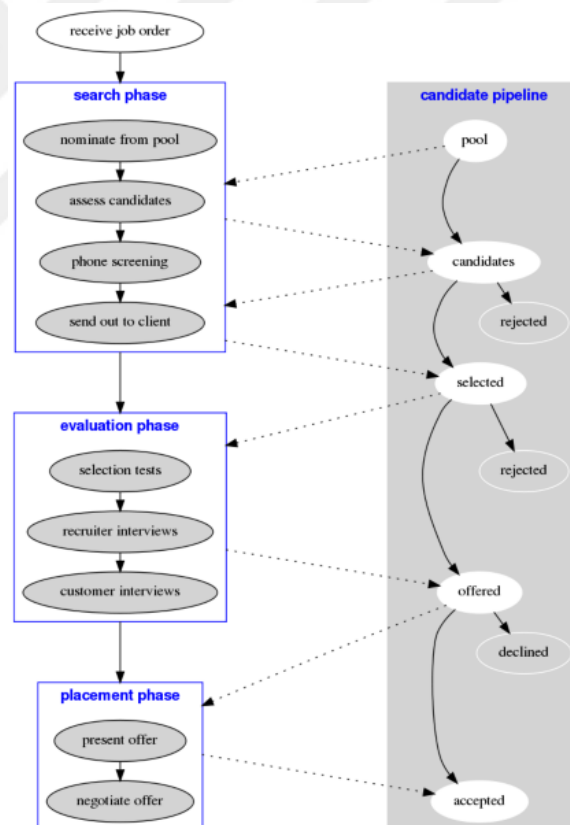


Figure 7 The recruiting process that is supported by openCATS [58].

4.2.2 Open Applicant

Open Applicant was developed by Originate Labs and the Open Source community. It was written in the Java Runtime Environment and uses Tomcat Application Server and MySQL database. It is a powerful ATS and is used widely as an applicant assessment tool. It is published under GNU GPL and supported by the developer community. It has a multiplicity of features including applicant tracking, a user friendly interface, an organized workflow, automatic resume parsing, and a powerful candidate search. It also provides customized tests and job simulations, candidate benchmarking, reporting, the ability to access community databases, and many other features [59]. Figure 8 shows the screen shot of Open Applicant.

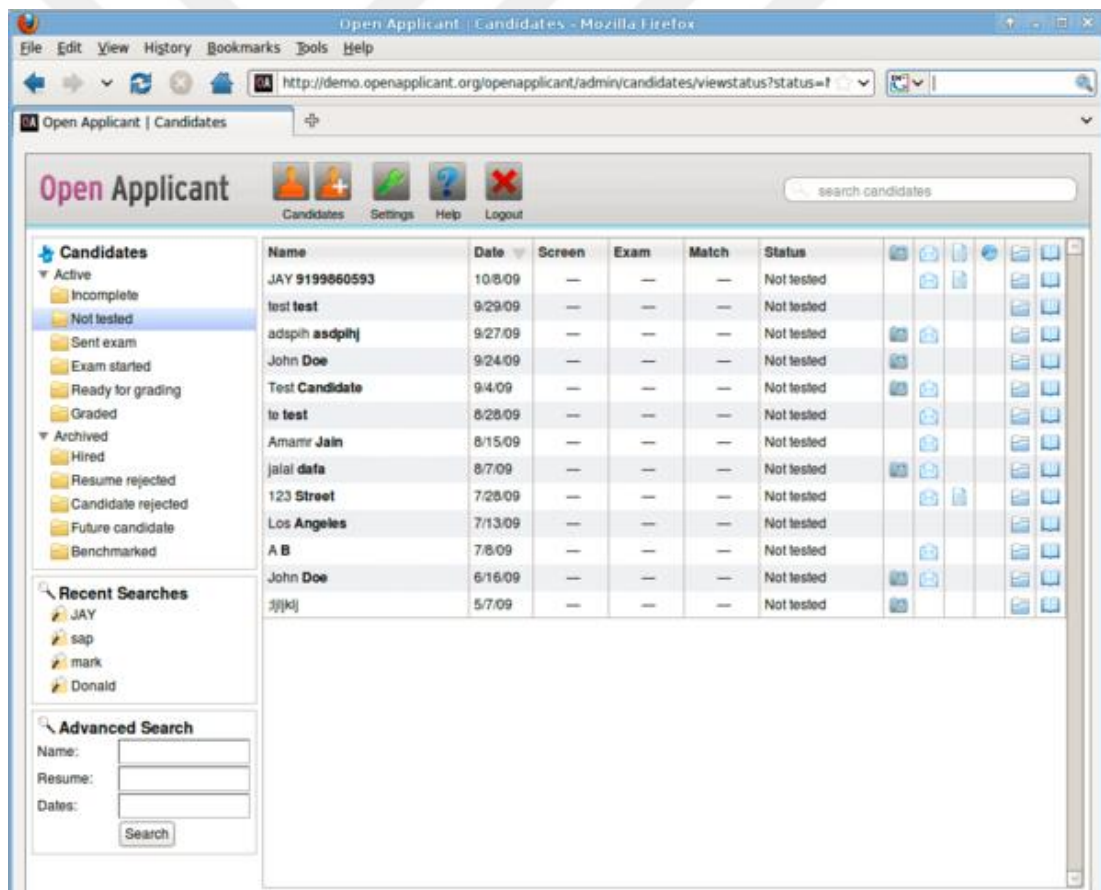


Figure 8 The screen shot of open applicant

4.2.3 Jobberbase

Jobberbase is a web based applicant tracking system and is open source software that works on multiple operating systems, including Microsoft, Linux and MacOS. LAMP Application Linux, Apache, MySQL and PHP (Zend Framework) were first developed in 2009 by a team of engineers and developers in the community. The most important characteristics of this system are that it is fully customizable and it can be integrated with others systems. It has a customizable hiring workflow and can search inside applicants' resumes. It has a powerful reports system along with effective search tools and support from social networks in addition to email Integration and support from a variety of add-ons. Jobberbase is a good choice for small and medium-sized enterprises. Despite its being an open-source program, it is not fully free. The company charges a small amount of money per user on a monthly basis; therefore, it may not be a suitable option for organizations with long-term plans [60]. Figure 9 shows the portal pages of Jobberbase ATS.

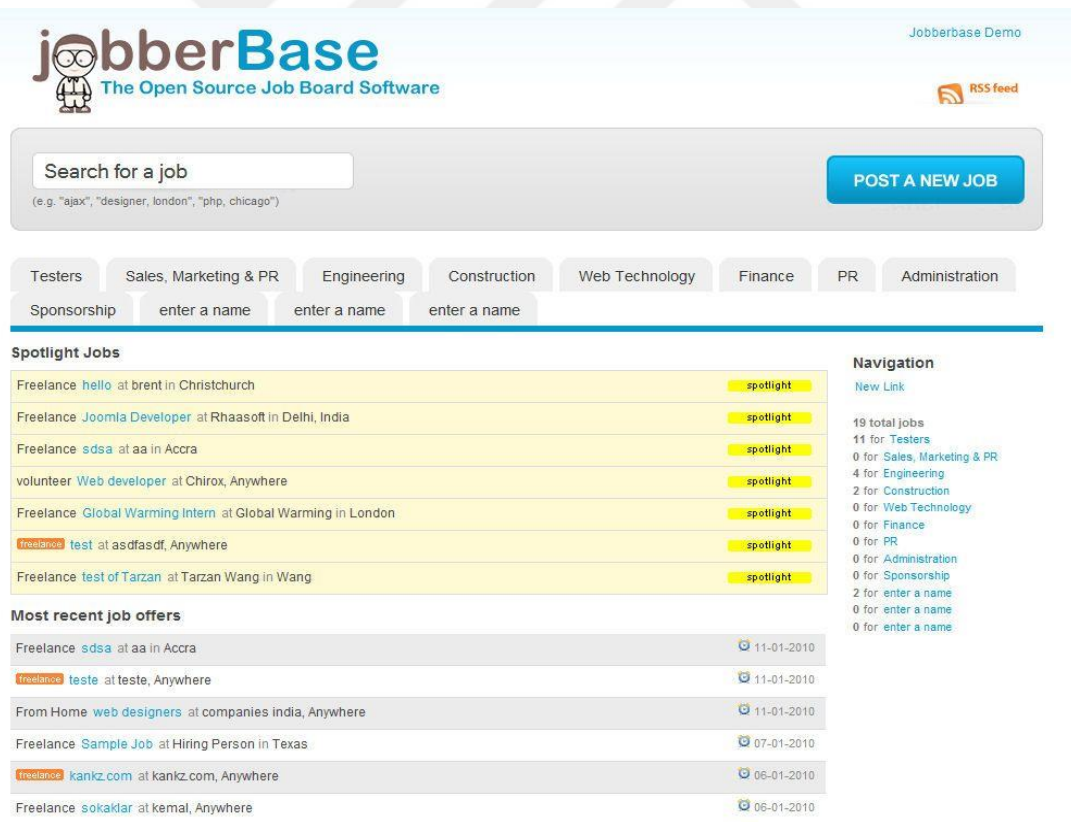


Figure 9 The portal pages of jobberbase ATS

4.2.4 Jamit Job Board

Jamit Job Board is an open source applicant tracking system (ATS), that has been written in PHP and MySQL since 2008. It is one of the most important systems in the process of online recruitment management. In addition, it is a suitable choice for organizations of any size. It offers a broad spectrum of services such as support in multiple languages, which is the main feature that made it a distinct piece of software from other ATS platforms. It is designed with separate interface areas for administrators, employers, and job seekers. This feature gives unique possibilities for institutions to manage an effective employment system and to save time and cost where necessary. Other features include a fully customizable platform, an easily followed tracking system, a powerful search engine and reporting system, broad support from the developer community, and flexibility and reliability. Its scalability and compatibility with other systems makes it an excellent choice for many organizations [61]. Figure 10 shows the Jamit Job Board job seeker page.

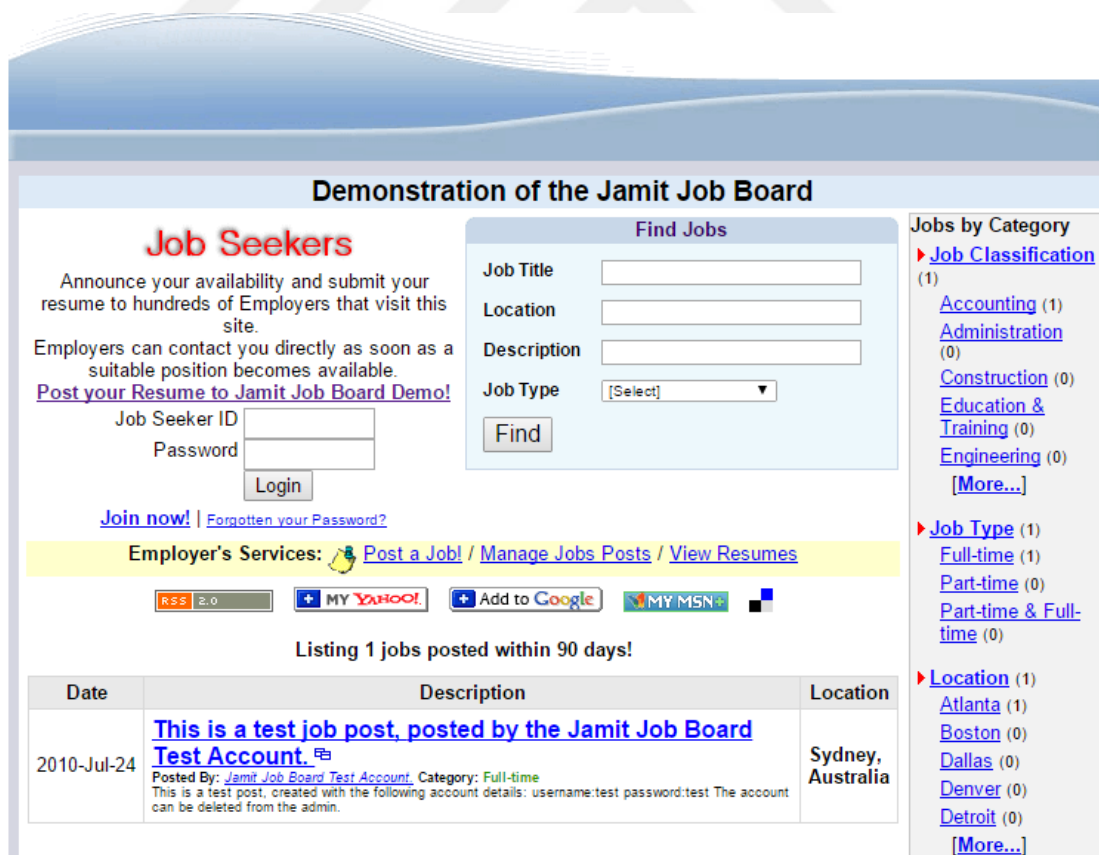


Figure 10 The jamit job board job seeker page

4.2.5 Applicant Tracking System Comparison

For a deeper understanding of the most important differences between the systems that are overviewed in the above section, we have downloaded them, configured them in virtual environment, and tested them individually. Table 3 shows a comparison of the main ATSS.

Table 3 Comparison of the main ATSS

	OpenCATS	Open Applicant	Jobberbase	Jamit
Operating Systems	Windows, Linux and MacOS	Windows and Linux,	Windows, Linux and MacOS	Windows, and Linux MacOS
Resumes can be made anonymous or public?	Yes	No	Yes	Yes
Developed by	Recruitment community	Originate labs	Team of engineers and developers community cations	Recruitment community
Map Feature	Yes	No	No	Yes
Program language	PHP	Java	PHP	PHP
Profile Manager	Yes	Yes	No	Yes
Database	MySQL	MySQL	MySQL	MySQL
MPI Support	Yes	No	Yes	Yes
Administration Panel	Yes	Yes	Yes	Yes
Employers Interface	No	No	No	Yes
Job Seekers Interface	Yes	No	Yes	Yes
Reporting	Yes	Yes	Yes	Yes
Billing System	No	No	No	Yes

Table 3 Comparison of the main ATSSs (cont.)

	OpenCATS	Open Applicant	Jobberbase	Jamit
Published	2009	2005	2009	2004
File Transfer Manager	Yes	No	Yes	Yes
Flexibility	Limited	Limited	Limited	Yes
User Friendly	Yes	No	Limited	Yes
Upload/Download Manager	Yes	Yes	Yes	Yes
Resource Information	No	No	No	Yes
Multilingual	Limited	Limited	Limited	Yes
User Admin.	Yes	Limited	Limited	Yes
Job Monitoring	Yes	Yes	Yes	Yes
Retrieval System	Yes	Yes	Yes	Yes
Credential Manager	No	No	No	Yes
Customize Forms	Yes	No	No	Yes
Export to CSV File	Yes	No	No	Yes
Stability	Yes	No	Limited	Yes
Input Filtering	No	No	No	Yes
Community Support	Limited	Limited	Limited	Yes
Online Application	Yes	Yes	Yes	Yes
Ability to Expand (Integrity)	Limited	Limited	Limited	Yes
Customize Lists	Limited	Limited	Limited	Yes
Customizable Look and Feel	Limited	Limited	Limited	Yes
Plug-in System	Yes	No	No	Yes
Documentation	Limited	No	Limited	Yes

4.3 University of Kirkuk Case Study

The University of Kirkuk is a modern university that was founded after 2003. It is managed by the Iraqi Ministry of Higher Education and Scientific Research. The University is located in a private geographic area in the north of Iraq and consists of several colleges such as medical and engineering colleges, Faculties of Education, Law and Agricultural Engineering in addition to the College of Arts and Sciences and the Institute for Higher Studies. In addition to many of the administrative and service units, the department includes the university. An emerging university of this size needs many advanced systems in order to meet the requirements for the advancement of the education sector and the services provided by the University [62]. The current classic form of the recruitment system is considered to be an obstacle for skilled workers to join university staff. Figure 11 shows the current recruitment system in comparison with e-recruitment, where e-recruitment is proposed to establish an online recruitment system that consists of several interfaces in order to facilitate and increase the efficiency of this task from one side so as to save time, reduce costs and increase the transparency from the other side.

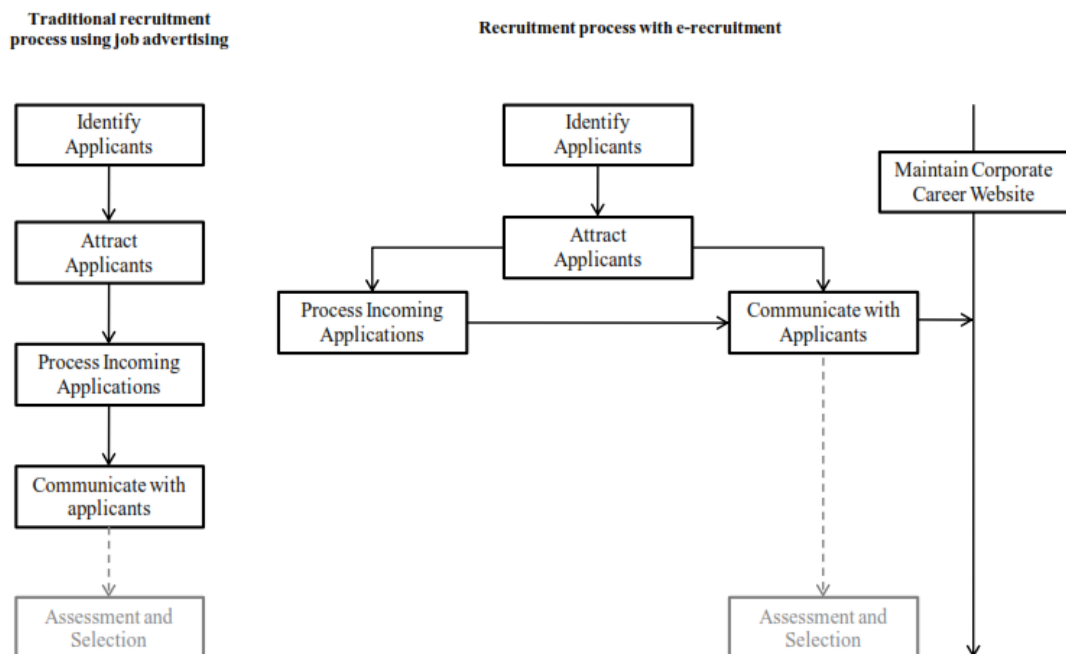


Figure 11 Current recruitment system in comparison with e-recruitment

The proposed system consists of several interfaces, the first of which is the system administrator interface, followed by the employee interface and job seeker interface. Figure 12 shows the main three interfaces of the proposed system. Figure 13 shows the type of user suggested for the system.

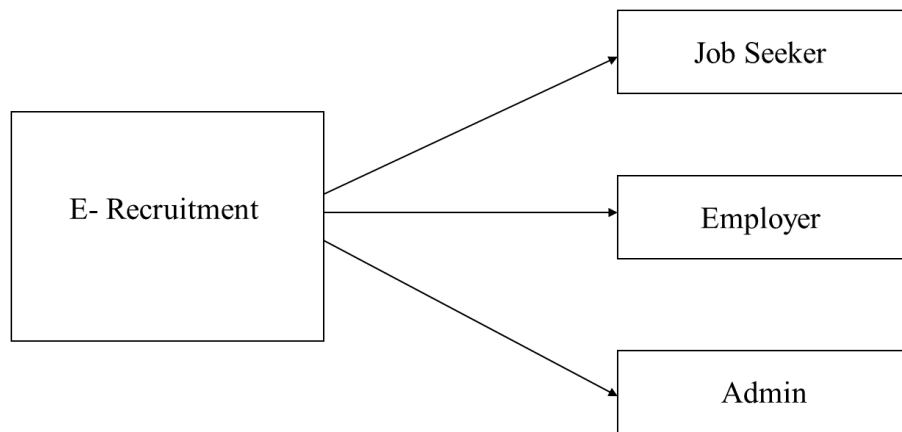


Figure 12 The main three interfaces of the proposed system

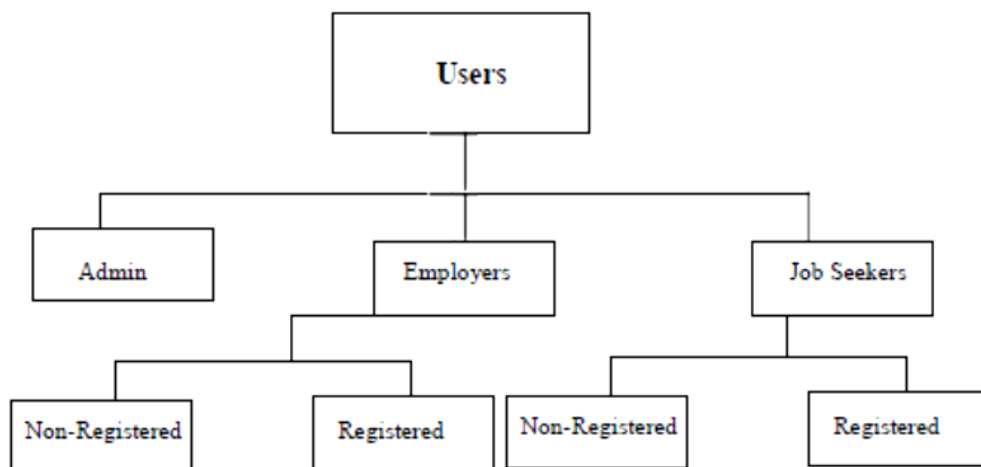


Figure 13 Types of user suggested for the system

Figure 13 above shows how we suggested two types of user as employers and job seekers. This is because we need to provide flexibility to non-registered employers and job seekers. In addition, the ability of view the job posted without the ability of new post or applying to job position. This will ensure the process transparency, while only system admin and authorized employers can accepted new register Job seekers or post a new job positions.

The admin of the system has a broad scope of the system, including system administration, reporting, user management, approval and disapproval with the ability to edit and delete job postings, to upload, view and delete applicant's resumes in addition to configuring the site and site forms, managing web site language, managing email notification and many other options. Figure 14 shows admin interfaces.

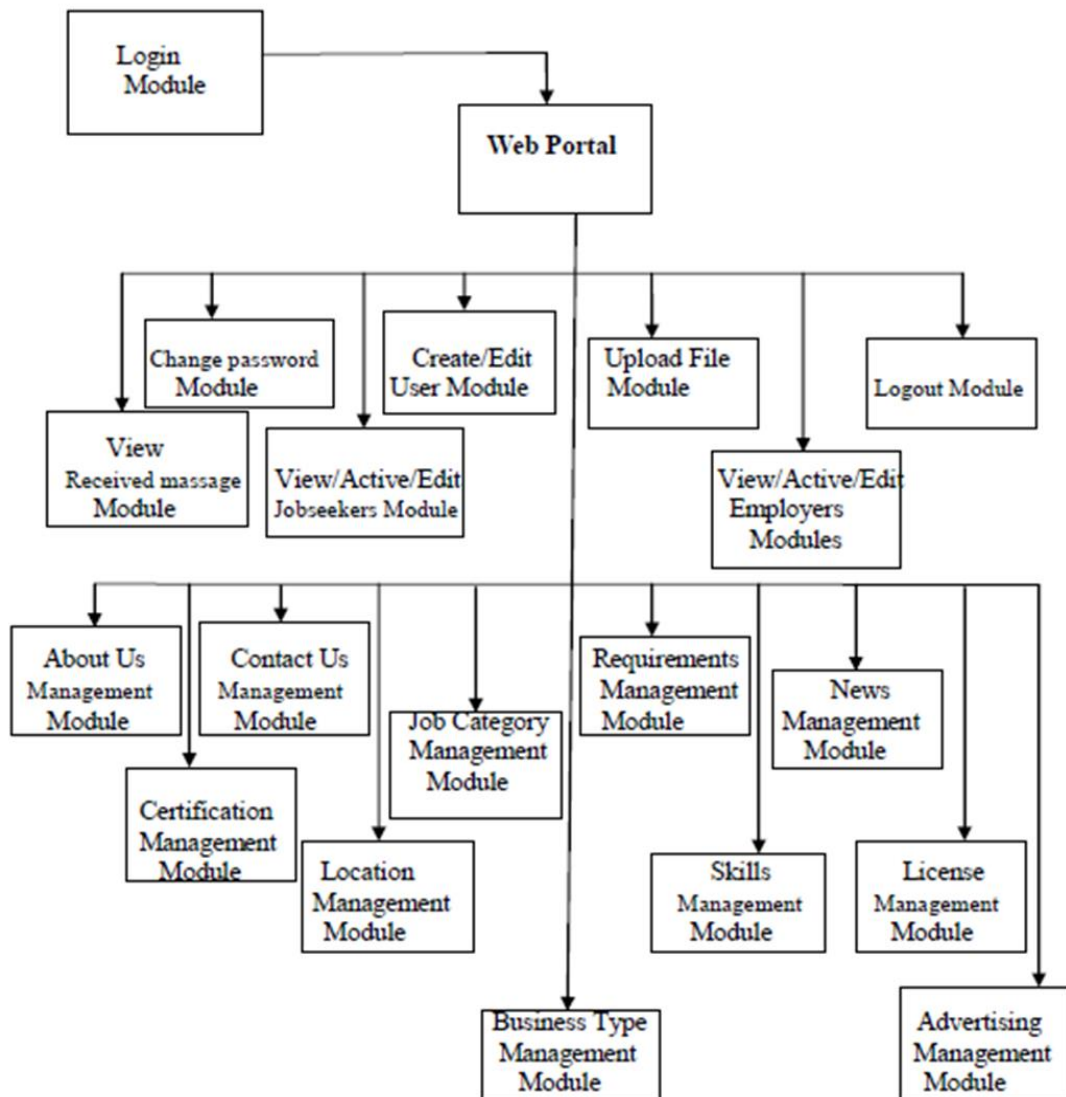


Figure 14 Admin interfaces

As the employee should have less power, a separate interface is proposed for this purpose so as to determine accurately the appropriate powers and to prevent interference with admin rights. Nevertheless, the employee has many abilities, including posting jobs, managing posts, browsing resumes, configuring resumeemail

alerts, viewing post statistics, changing account settings, editing of profiles, sending email to candidates via the website. Figure 15 shows employee interfaces.

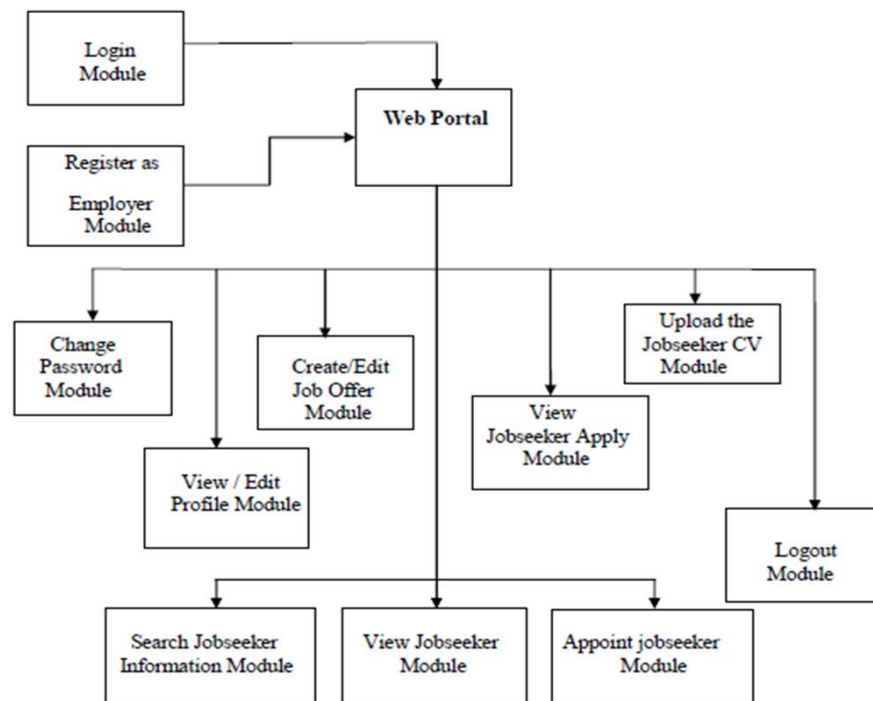


Figure 15 Employee interfaces

The powers given to job seekers are limited to setting up an account and editing personal information, uploading documents and applying for jobs through the website. Figure 16 shows job seekers interfaces.

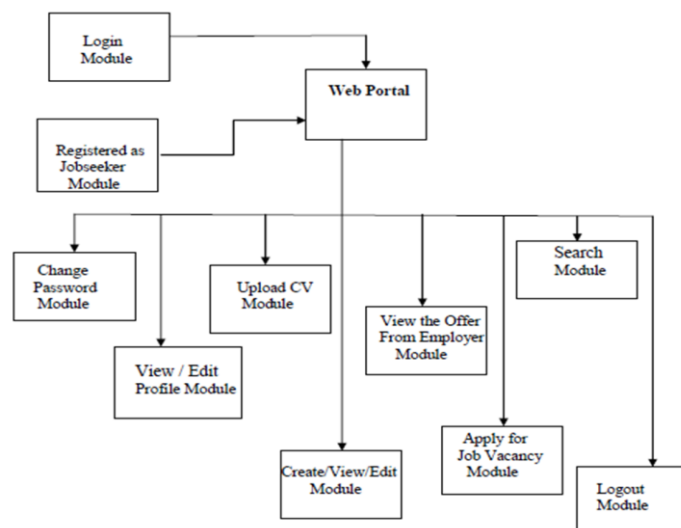


Figure 16 Demonstrated job seekers interfaces

4.4 System Implementation

After reviewing many previous relevant studies, a process requirement analysis and a comparison conducted among a group of open-source software was done in this study. In addition to many visits to the Kirkuk University Human Resources Department to identify the current recruitment system work requirements, the researcher suggests the implementation of the e-recruitment system through the Jamit Job Board platform. As it is open-source software, it meets the e-recruitment requirement, it can be extendable to be a powerful tool in the Kirkuk University e-recruitment process, and it can be an implementation and customization process at the lowest possible cost. We have been working on a virtual environment through the use of a host operating system as virtual servers with full installation of Apache Web Server, MySQL database and PHP, in addition to the customization of the Jamit Job Board platform so as to fit the University of Kirkuk e-recruitment system. Figure 17 shows our lab environment.

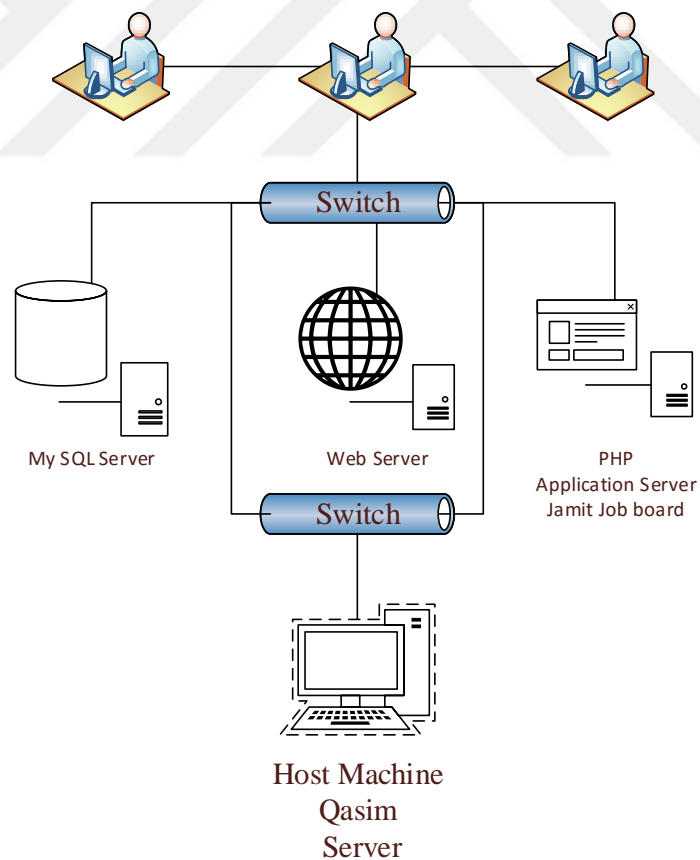


Figure 17 Lab environment

Figure 18 shows the main page of the University of Kirkuk e-recruitment system.



Figure 18 University of Kirkuk e-recruitment system

Figure 19 shows the new user registration page. Figure 20 shows add new post job pages.



Figure 19 New user registration page



أعلن عن وظيفة جديدة همار الطول المميزه ب* اجباريه
تستطيع ان تحصل على عدد غير محدود من الوظائف المجانية

خيارات الطلب	<input checked="" type="radio"/> Kassem (يفصل) Kassem <input type="radio"/> التحويل الى رابط خارج <input type="radio"/> تعطيل / حدد التعليمات في الوصف
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* عنوان الوظيفة	استاذ مساعد (enter a descriptive title for your ad)
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* رفعت من قبل	المهندس قاسم الصابوني (Your business or company name)
المهارات المطلوبة	اجاده تامه لطرق التدريس eg. teacher, nurse, sales manager etc.
Start Date	25-6-2016
Salary	500
Cell Phone	07896534344
* Email	Qasem@yahoo.com
* Location	كركوك
Deadline	2016 (enter full year: yyyy)

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3.9 ★★★★★ 13 reviews
University

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Opens at 08:00
Claim this business

* موقع العمل	[اختار]
* Job Type	Full-time
* Classification	Accounting (Posts in the wrong category will be removed)
* Description	<p>التدريس المساعد هو شخص الذي يساعد الأستاذ أو المعلم مع المسؤوليات التعليمية. وتشمل مساعدي التدريس الجامعي (عطاس)، الذين هم طلاب الدراسات العليا ؛ الدراسات الجامعية تدريس المساعدين (علوية)، الذين هم طلاب المرحلة الجامعية ؛ المدارس الثانوية ، الذين هم أما من طلاب المدارس الثانوية أو البالغين، ومدرسة ابتدائية ، الذين هم الكبار (المعروف أيضا المرابي للمستضعفين S أو مساعدي المعلم). بحكم التعريف، مساعدة أخصائيي مع الطبقات، ولكن العديد من طلاب الدراسات العليا كالمدرّب الوحيد لواحدة أو أكثر من فئات كل فصل دراسي زميل التدريس أو مدرب لطلاب الدراسات العليا. خريج وأخصائيي الكبار. غالباً ما يكون مرتب ثابت تحده كل فترة العقد (عادة في الفصل دراسي أو سنة أكاديمية)؛ ومع ذلك، الجامعيين وطلاب المدارس الثانوية تكون أحياناً غير المسددة و. في الولايات المتحدة وغيرها من البلدان ذات النظام الائتماني، يتلقى انتمانات دورة في مقابل الحصول على المساعدة التي قدموها.</p>

Figure 20 Add new post job page

Figure 21 shows the employee page in the e-recruitment system;

Figure 21 Employee page in the e-recruitment system

Figure 22 shows the online application form page.

Figure 22 Online application form page

CHAPTER 5

CONCLUSION AND FUTURE WORK

5.1. Conclusion

In this research, we discuss the importance of e-recruitment systems for an organization and we identify the benefits of e-recruitment for candidates. We discuss the advantages and disadvantages of using e-recruitment systems in an organization. In addition to the open source platform used in e-recruitment systems, a virtual lab has been prepared and configured with every system requirement. Evaluation and testing of the system has been conducted according to these comparisons and the best platform has been selected, which meets the requirements of our case study. Three types of interface have been proposed to determine the means to avoid interference, reduce costs and save an organization's time. Through this research, we concluded that the reliance on advanced systems for the recruitment process has a significant impact on an organization. As a result, we managed recruitment process by using e-recruitment system however we were not able to manage this system as online in the past.

On the other hand, an e-recruitment system contributes effectively to reducing the time needed for both job seekers and employers through rapid and easy ways offered for job advertising and the ability to administer all functions electronically in addition to an increase in the number of opportunities of finding a job and progress online application with system.

The proposed system for the University of Kirkuk reduces the costs of job announcements and ensures the transparency of the recruitment process by conducting the evaluation process in electronic form and making them available and accessible in a broad based public spectrum.

In addition to the reduction of human error, there is the reduction of the time required to manage the recruitment process and facilitate the tasks of the many employees within these sections. The reliance on e-recruitment systems is a step toward activating e-government services. It helps to bring in many skilled workers to work by increasing the probability of acceptance. Moreover, it contributes to the creation of a green environment by relying on electronic documents and by providing an effective reporting system that easily tracks every applicant.

5.2 Future Works

Through our research, we found many of the technical and administrative obstacles facing the process of activating an e-recruitment system; therefore, it is necessary to provide a number of recommendations that will serve researchers in this field in the future. These recommendations include the following:

1. Medium-sized and large enterprises should move entirely to regular online recruitment.
2. Administrations should occasionally accept changes in the recruitment process because of the use of any new method in the online recruitment process. Employees and staff should be adaptive and accept these changes.
3. A transitional phase to use an electronic system for recruitment needs wise decisions made by ICT professionals regarding the system and the development platforms of e-recruitment systems.
4. Study the environmental and social impacts before moving on to online recruitment systems.

5. Start a test pilot system for a certain period with open-source software and then move to buy or develop an integrated recruitment system.
6. The distribution of the appropriate powers within the system and providing an effective reporting system to follow up staff and potential applicants both simultaneously and in the same environment.
7. Increase reliability on social networking sites as a successful alternative and effective advertisement means to reach largest segment of job seekers.
8. Develop new ways to communicate with applicants through more effective e-mail alert systems and provide free lines of communication to acquire further feedback from applicants.
9. Raise the awareness of both employees and job seekers regarding the importance of online recruitment systems through the establishment of seminars, workshops and specialized training courses.

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English	V. Good	V. Good	V. Good