

Effectiveness of Online Job Recruitment System: Evidence from the University of the East

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Abstract

The purpose of the study was to develop an online recruitment software that would facilitate the fast and accurate selection of qualified applicants. The Modified Waterfall Model was utilized in the development of the software. The developed software was then evaluated by six groups of respondents to determine the effectiveness of the system in terms of performance, reliability, security, and cost-effectiveness. Descriptive statistics revealed that the software was effective. Analysis of variance showed that there was no significant difference in the evaluation of the six groups on the effectiveness of the developed online recruitment system. This indicated that the six groups of respondents had the same rating on the effectiveness of the software. It implies that the software would perform its function effectively by selecting qualified applicants within a shorter period of time. Thus, it was recommended that the system be adopted by the University. Recommendations to improve the software were also offered.

Keywords: *Cost-effectiveness, Online Recruitment, Performance, Recruitment, Reliability, Security.*

1. Background of the Study

Normally, the quality of people hired is the key metric for measuring the effectiveness of the employment function, but in certain circumstances, the speed of hiring may actually be a more significant contributor to quality hiring [1]. A good productive hiring is not a matter of putting an advertisement in the newspaper, setting up some chairs and tables on the appointed day, and then taking in some resumes to be followed up later. The purpose of a hiring event is to reach out to prospective employees and bring the specific kind of skills and experiences in the organization especially those which cannot be built from within [2]. The question is how this could be made possible.

Basic traditional recruiting begins with processing an application form. In addition, detailed employment standards are set and a job description for each position is offered. Application forms and resumes should be verified with the scope of verification increasing according to the

importance of the position to be filled. Finally, performance tests and other evaluation aids can help in finding the best person for the job [3]. However, this method may take much time and effort.

The traditional hiring process (i.e., from advertisement of job positions to hiring of successful applicants) has its own inherent weaknesses. The advertisement of job positions alone may pose a problem. It is costly to advertise through print media (e.g., newspapers or magazines). Thus, the publication of job positions can only be advertised for a short period of time. Also, the system of submission requires the physical presence of the applicant to hand over the resume. This hampers the application of competent yet geographically secluded job seekers. It is worth noting that the Philippines is a country composed of 7,100 islands. Thus, old recruitment practices might not be suitable in today's competitive environment [2].

This problem can be addressed by an online recruitment system. Online recruitment is set to change the way in which companies recruit their workers. Online recruitment, as a fundamental business process, is the removal of complex and unnecessary paper works, and the introduction of streamlined workflow systems, reliable database applications, and efficient communication channels between job seekers and managers. "At a relatively low cost, the Internet offers employers and job searchers access to detailed and up-to-date information about job searchers and job vacancies in different locations around the world" [4, p. 94]. In this manner, companies can commit themselves to equal opportunities as job providers and can attract new and qualified candidates [2].

The University of the East (UE) is committed to this advocacy. UE over the last half-century evolved into one of the largest private institutions for higher learning in the country. It has three campuses which are situated in Manila, Caloocan, and Quezon City. One of the institutional objectives of the University is to program its

educational offerings to meet the needs of modernizing society as well as the demands of the emerging world of the 21st century (Faculty Manual of UE, 2002). To achieve this goal, much will depend on the discovery, creation, integration, transmission, and application of knowledge, as faculty members teach, conduct research, and perform academic, clinical and public services, as well as get involved in outreach and extension activities. The management and its staff also play a vital role in maintaining, managing, and organizing the list of responsibilities and tasks that this organization should accomplish. Hand-in-hand, they work hard to put into action their shared vision and mission.

To realize the desired outcomes, the University hires only competent and dedicated faculty members and non-teaching staff. Challenged by the present problems in recruiting qualified applicants, this study was conceived. It aimed to develop an online job recruitment system that would be utilized in the University of the East. The effectiveness of the software was evaluated in terms of performance, reliability, security, and cost-effectiveness. Furthermore, it determined whether the evaluation of the effectiveness of the software significantly differed as perceived by the six groups of respondents.

It was hypothesized that there is no significant difference in the respondents' evaluation on the effectiveness of the developed Online Job Recruitment System for the University of the East in terms of performance, reliability, security, and cost-effectiveness.

2. Literature Review

Parry and Tyson [5] conducted a study on the recruitment activities of corporations for a period of six years with the use of survey and interview methods, questions were asked as to why the respondents utilized or did not employ online recruitment, whether they predicted their use of the Internet for recruitment to change, and what impact they expected Internet recruitment to have on the use of other recruitment methods. Human Resource directors and managers, finance directors, managing directors and recruitment specialists from a sample of UK organizations with over 25 employees were the respondents of the study. There were 25,524 responses in the survey and twenty (20) HR or resourcing managers were interviewed.

The results of the survey showed that the most common reasons of using corporate or commercial websites in their recruitment were cost-effectiveness (75%), ease of use for

candidates (64%), a larger candidate pool (53%), ease of use for the organization (52%), speed to hire (52%), and company policy (50%). On the other hand, the less common reasons were success in finding candidates (44%) and keeping ahead of competitors (32%).

The interview results supported these findings. The interviewees disclosed that the company used online recruitment in order to reduce recruitment costs and to improve the efficiency of the recruitment process. These were the significant drivers for the adoption of both corporate and commercial websites. In the same study, about half of the interviewees suggested that the need to "move with the times" or to "keep up with other organizations" be the primary motivation to adopt online recruitment.

It was also found out that interviewees who had positive experiences of online recruitment believed that this form of recruitment could minimize the time taken to hire employees because posting advertisements on the Internet was faster. Interviewees also described the online recruitment as cost-effective since it reduced the use of paper. As regards the success of the online recruitment, mixed results were reported. Interviewees described the success of online recruitment in terms of sufficient generation of shortlist candidates or the ability to attract good-quality applicants. However, this was not true for all who were interviewed.

Kar and Bhattacharya [6] conducted a similar study. They determined the factors that could contribute to the effectiveness of the job portals and the elements of the job portal that could help increase the users' satisfaction on the use of the portal. Survey method and personal interviews were conducted to meet these objectives. Two hundred fifty (250) purposively selected respondents participated in the study.

The study established that the age group 18-22 years old and 33 years old and above had more likely to search jobs through job portals. The curriculum vitae distribution and the face-to-face interaction were the key factors contributing to the popularity of job portals. Respondents believed that they would be more satisfied with the job portals if chat facility, online test, and help desk/call center facilities were available at the job portals.

Sylvia and Mol [7] examined the perceptions of applicants towards web-based procedures. There were 1,360 respondents who were applicants for jobs in multinational financial services organizations in the United Kingdom, the Netherlands, and Belgium. With respect to the

demographics, it was disclosed that external applicants (as opposed to the internal applicants), Belgian (as opposed to Dutch), and Internet savvy (as opposed to less savvy) candidates were more satisfied with the online application procedure. It was also revealed that the features of the website, perceived efficiency, and user-friendliness were the most important determinants of applicant satisfaction.

Haroon and Zia-ur-Rehman [8] also investigated online recruitment in Pakistan. A total of sixty-five (65) respondents from small and large firms of the different sectors of the industries in Pakistan participated in the study. Data were collected through telephone interviews. Haroon and Zia-ur-Rehman [8] showed that preference was given to small firms as compared to large firms in terms of using internet recruitment. They also showed that large firms had their own websites and use them for recruitment as compared to small firms. They also revealed that online recruitment became a new medium that was going to replace the other traditional sources of recruitment because online recruitment offered reduced recruitment costs, time-saving capability, quick response features in checking application status, and online resume development.

Lastly, the effect of e-recruitment on the design of the recruitment process was also examined. Holm [9] made three explorative case studies in three large organizations in Denmark from 2008 to 2010. The companies selected were all multinational corporations originating from, and with headquarters in, Denmark. The study investigated the possible changes in the tasks, subtasks, and activities of the business process of recruiting which was attributed to the use of e-recruitment. Using in-depth, face-to-face, semi-structured interviews with a number key informants (e.g., Human Resource partners and employer-brand managers, recruitment planners, and other people who were involved in the recruitment process), it was shown that e-recruitment transformed the traditional recruitment process into a time- and space-independent, collaborative hiring process. These findings were consistent with those in the studies previously presented. It was also shown that the most significant changes in the process were in the sequence and increased divisibility of the main recruitment tasks and subtasks.

3. Methodology

3.1 Research Design, Subjects, Sample, and Sampling

Design

Descriptive approach was used to collect data to determine if the objectives of the study were met. The respondents of the study came from the following groups.

- Human Resource Department (HRD) staff were responsible in operating the system. In the said department, only four (4) among the staff performed the screening of job application forms.
- The head of the different departments with teaching and non-teaching staff knew the manpower needs of the department and they issued requests for vacant positions to be filled up. Of the different departments in the university, fifty-two (52) were appointed as department heads. Only twenty percent (20%) or ten (10) were chosen as respondents of the study.
- Newly hired teaching and non-teaching staff used the developed system in their job application in the University of the East. A total of one hundred fifty-five (155) was newly hired in 2010. Only twenty percent (20%) or thirty-one (31) were chosen as respondents of the study.
- Regular/full-time teaching and non-teaching staff evaluated the online recruitment system in terms of speed, ease, and cost-effectiveness. There was a total of six hundred fifty-four (654) regular teachers and staff. Ten percent (10%) or sixty-five (65) regular/full-time teaching and non-teaching staff were chosen as respondents of this study.

Purposive sampling method was utilized in choosing the respondents. The following criteria were set in choosing the respondents.

- For the Human Resource Department (HRD) staff, their job description includes processing of job application form.
- For the Department Heads, they were authorized to issue requests for manpower needs.
- For the newly hired teaching and non-teaching staff, whose bachelor's degrees were somewhat related to I.T. and who had a background on how online recruitment worked, they would attest to the significance of the developed online recruitment system.
- For the regular/full-time teaching and non-teaching staff who applied and who were hired through the use of the previous system, they could compare the previous

method of job application system with the present developed online job recruitment system.

3.2 Research Instrument

A survey questionnaire was utilized as the research instrument. It consisted of two parts. The first part gathered the demographics of the respondents, such as sex, age, gender, length of service in the University, educational attainment, designation, level of computer literacy, and frequency of Internet usage. The second part gathered the perceptions of the respondents on the effectiveness of the online job recruitment system. A 5-point Likert-scale type was used to measure the effectiveness of the online job recruitment system. The scale, mean range, and the verbal interpretation are shown in Table 1.

Table 1. Rating Scale, Mean Range, and Verbal Interpretation

Scale	Mean Range	Verbal Interpretation
5	4.51-5.00	Very Effective
4	3.51-4.50	Effective
3	2.51-3.50	Moderately Effective
2	1.51-2.50	Slightly Effective
1	1.00-1.50	Not Effective

The content of the questionnaire was validated by Computer Science faculty members, Human Resource Department personnel, an Advertising expert, and a Psychology professor, all of whom were not involved in the study. Comments and suggestions were taken into consideration to improve the questionnaire.

3.3 Data-Gathering Procedure

An observation was conducted on how the University was practicing its traditional way of hiring. This observation prompted the researcher to strengthen the need to develop a new and an effective way of attracting the best applicants for the job positions.

An interview was done with the HRD staff who have worked with the University for at least five (5) years. First, a letter was sent to the Human Resource Department Head for approval to do the interview. Then, a face-to-face interview was conducted on the scheduled date. A questionnaire was prepared to make sure that essential data needed for the study were gathered. The interview was held at the Office of the Head of the Department.

3.4 Software Process Model, the Developed Software, and Software Evaluation

The development of the software followed the Modified Waterfall Model [10]. This model was adapted since it ensured that all flaws were addressed before proceeding to the next step of the software development life cycle. This was highly applicable to the context of the study since it would minimize the time needed to interview the respondents of the study. In this manner, their job would not be interrupted.

With the use of the developed software, the Human Resource Department could publish their job advertisements. All advertisements were supported by agreed job descriptions, person specification, and further information about the department or section in which the job was located. Department Heads of different colleges looking for candidates in the field of teaching were also capable of posting their job requirements and person specifications for the job vacancy. Both concerned parties could create job-ads using templates.

The system automatically shortlisted the application forms according to years of experience, skills, and educational attainment relevant to the job vacancy. The system was able to provide sending of automated responses to qualified applicants. On the other hand, applicants could view further particulars of the post, which included background information concerning the University, faculty, department, the job description, and person specifications. They could fill out the application form online, and easily update their profiles. Sample screen shot is shown in Figure 1.

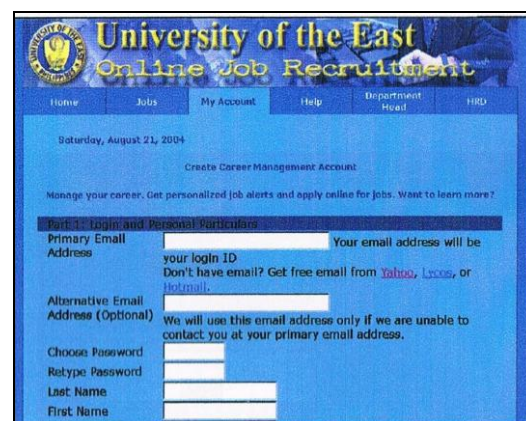


Fig. 1 A sample screen shot

However, the system was not capable of doing such task as detecting errors on entered data of applicants. The system could not determine whether the data provided by the applicants were correct. Typographical errors were not detected by the system. The system could not also verify if all skills, knowledge, experience, and education specified by the users were true.

Software evaluation was conducted to find out the acceptability of the software. Software evaluation was based on FURPS (Functionality, Usability, Reliability, Performance, and Security) Quality Factors [11]. Only three quality indicators (Performance, Reliability, and Security) were selected from FURPS because only these three criteria were deemed applicable in this study. Moreover, Performance and Functionality were treated as one criterion since both referred to the effective processes of the software. Lastly, Cost-effectiveness was included since it was asserted that the software could save costs to the University.

Performance refers to the capability of online recruitment system to generate a list of applicants suitable for the job vacancy in a quick manner. The software could facilitate efficient filtering of qualified candidates and could provide a well-matched shortlist of qualified applicants. Moreover, the system came up with recruitment policies which were free from errors and inconsistencies.

Reliability is the extent to which a program can be expected to perform its intended function [12]. The system could produce the required results with precision in terms of the quality of the applicant being hired for the job vacancy. It could filter out applicants' forms without anomalies and any form of discrimination. Moreover, it provided correct results with minimum expenditure of time and effort.

Security is the availability of mechanisms that control or protect programs and data. It had the mechanism to protect and control programs and data, and it provided its users passwords as security against unauthorized users [12]. It was capable of securing the confidentiality of data received from different types of applicants.

Cost-effectiveness refers to the justification on the amount spent for the investment which commensurate with effectiveness. Online recruitment was more inexpensive compared to the other means of recruitment such as print media advertising. It could provide sufficient space to outline enough information for the candidate to understand the position and the institution. Moreover, it

was capable of reaching potential employees at a longer period of time.

3.4 Statistical Treatment of Data

Frequency counts, percentage, and arithmetic mean were used to describe the data. Analysis of Variance (ANOVA) was utilized to find the significant differences on the evaluation of the six groups of respondents on the effectiveness of the system. A 5% level of probability and 95% reliability were employed to determine the significance of the findings.

4. Findings and Discussion

4.1 Demographic Profile of the Respondents

Table 2 presents the percentage distribution of the respondents' demographic profile. As can be gleaned from the table, there were four (4) or 4% HRD personnel, ten (10) or 9% department heads, thirty-five (35) or 32% regular faculty members, twenty-one (21) or 19% newly hired faculty members, thirty (30) or 27% regular non-teaching staff and ten (10) or 9% newly hired non-teaching staff chosen as respondents of the study. Majority of the respondents were regular faculty members. The number of respondents for each designation was not randomly selected. It was based on purposive sampling through inquiry before the respondents were allowed to evaluate the system. Those who fell under the criteria specified by the study were chosen.

As to gender, fifty-nine (59) or 54% of the respondents were female, while fifty-one (51) or 46% were male. In terms of age of the respondents, majority of the respondents were below thirty (30) years old ($f = 54$, 49%) and about 47% ($f = 52$) belonged to the age bracket of 31-40 years old. With regard to the length of service to the University, most of the respondents ($f = 58$, 53%) have just been newly hired or have just started working at the University. As per educational attainment, majority of the respondents, which was equal to forty-six (46) or 42%, were bachelor's degree holders and were enrolled in the graduate school. About thirty-three (33) or 30% were master's degree holders. Only one (1) or 1% of the respondent was a doctoral degree holder.

Table 2. Demographic Profile of the Respondents

DEMOGRAPHIC PROFILE		
	<i>f</i>	%
Designation		
HRD	4	4
DH	10	9
RFM	35	32
NHFM	21	19
RNTS	30	27
NHNTS	10	9
Gender		
Male	51	46
Female	59	54
Age		
Below 30 years old	54	49
31-40 years old	52	47
41-50 years old	3	3
51-60 years old	1	1
Length of Service		
0-5 years	58	53
6-10 years	40	36
11-15 years	12	11
16 years and above	0	0
Educational Attainment		
Bachelor's Degree	17	15
Bachelor's Degree with Masters	46	42
Master's Degree	33	30
Master's Degree with Doctoral Units	13	12
Doctoral Degree	1	1
Level of Computer Literacy		
Beginner	29	26
Average	65	59
Expert	16	15
Frequency of Internet Usage		
Always	29	26
Often	46	42
Seldom	35	32
Never	0	0
TOTAL		110
		100
Legend:		
HRD	= Human Resource Department Personnel	
DH	= Department Head	
RFM	= Regular Faculty Members	
NHFM	= Newly Hired Faculty Members	
RNTS	= Regular Non-Teaching Staff	
NHNTS	= Newly Hired Non-Teaching Staff	
<i>f</i>	= frequency	
%	= percentage	

Regarding computer literacy, majority of the respondents ($f = 65, 59\%$) were of average level. There was only a small percentage (15%) of respondents who were experts. They were professional end-users who had formal knowledge and education about computer. Nonetheless, most of the respondents ($f = 81, 74\%$) were computer literate and were able to use the proposed software. Lastly,

Table 2 also shows that all respondents accessed the Internet. Thus, the respondents of the study could easily adapt to the proposed software.

4.2 Effectiveness of the Developed Online Job Recruitment System

Table 3 presents the status of the online recruitment system in terms of Performance, Reliability, Security, and Cost-effectiveness of the software as perceived by the respondents. In terms of Performance, NHFM and NHNTS gave a “very effective” rating on this criterion. NHNTS gave the highest mean rating (mean = 4.77, Verbal Interpretation (V.I.) = “Very Effective”) while HRDP gave the lowest rating (mean = 3.93, V.I. = “Effective”). Nonetheless, the rating of HRDP was still “effective”. Thus, all respondents agreed that the software was acceptable in terms of the performance of the software. This implies that the software could generate a list of applicants for a job vacancy in a quick manner and could also facilitate efficient filtering of qualified candidates.

Table 3. Effectiveness of the Developed Online Recruitment System in terms of Performance, Reliability, Security, and Cost-Effectiveness

Software Criteria	Respondents	Mean	V.I.
Performance	HRDP	3.93	Effective
	DH	4.20	Effective
	RFM	4.50	Effective
	NHFM	4.65	Very Effective
	RNTS	4.49	Effective
	NHNTS	4.77	Very Effective
Reliability	HRDP	4.63	Very Effective
	DH	4.48	Effective
	RFM	4.30	Effective
	NHFM	4.46	Effective
	RNTS	4.23	Effective
	NHNTS	4.22	Effective
Security	HRDP	3.75	Effective
	DH	3.97	Effective
	RFM	4.11	Effective
	NHFM	4.19	Effective
	RNTS	4.04	Effective
	NHNTS	4.07	Effective
Cost-Effectiveness	HRDP	4.00	Effective
	DH	4.07	Effective
	RFM	4.08	Effective
	NHFM	3.78	Effective
	RNTS	4.16	Effective
	NHNTS	4.30	Effective

The reliability of the software was also “effective” based on the evaluation of DH (mean = 4.48), RFM (mean = 4.30), NHFM (mean = 4.46), RNTS (mean = 4.23), and NHNTS (mean = 4.22). It is important to note that HRDP rated the software as “very effective” (mean = 4.63). This is a good indication that the software met its intended function with precision without using too much time and

effort. The security features of the software were also evaluated as “effective” by all the respondents (HRDP, mean = 3.75; DH, mean = 3.97; RFM, mean = 4.11; NHFM, mean = 4.19; RNTS, mean = 4.04; and NHNTS, mean = 4.07). In other words, the mechanisms of the software to control or protect data from unauthorized access were effective. Thus, it can be assured that the applicants’ information could not be exploited and their privacy was maintained.

As regards the Cost-effectiveness of the developed online recruitment system, NHNTS gave the highest mean rating of 4.30 while NHFM gave the lowest mean rating of 3.78. Nonetheless, all of the evaluation had verbal rating of “effective”. This revealed that they perceived the software to be “effective” in reducing the cost of the recruitment process. This finding supported the studies of Brencic and Norris [4], Parry and Tyson [5], and Haroon and Zia-ur-Rehman [8].

Table 4 shows the summary of results on the effectiveness of the developed online recruitment system. The four (4) criteria were rated by the respondents as “effective” with the overall mean rating of 4.22. Though Security got the lowest mean rating, its verbal interpretation was still “effective”. On the other hand, Performance of the software got the highest mean rating of 4.42. This indicates that the developed Online Recruitment System was working effectively based on all criteria used in the study.

Table 4. Summary of Results on the Effectiveness of the Developed Online Recruitment System

Software Criteria	Composite Mean	Verbal Interpretation
Performance	4.42	Effective
Reliability	4.39	Effective
Security	4.02	Effective
Cost-Effectiveness	4.08	Effective
Overall Mean	4.22	Effective

4.3 Differences in the Evaluation of the Respondents as regards the Effectiveness of the Developed Online Job Recruitment System

Analysis of Variance (ANOVA) was used on the perception of the respondents on the different software criteria. As shown in Table 5, there was no significant difference in the perceptions of the respondents in the software criteria in terms of Performance (F -value = 2.28; $p < 0.05$), Reliability (F -value = 1.76; $p < 0.05$), Security (F -value = 0.37; $p < 0.05$), and Cost-effectiveness (F -value = 0.77; $p < 0.05$).

The findings of ANOVA disclosed that the perceptions of the six groups of respondents in terms of the different software criteria did not differ from one another. In other words, they all had the same evaluation of the software in terms of the four criteria. This implies that they all perceived that the system was effective in terms of performance, reliability, security, and cost-effectiveness.

Table 5. Differences in the Evaluation of the Respondents as regards the Effectiveness of the Developed Online Job Recruitment System

Software Criteria	Respondents	Mean	F -value	p -value	Significance
Performance	HRDP	3.93	2.28	0.062	Not Significant
	DH	4.20			
	RFM	4.50			
	NHFM	4.65			
	RNTS	4.49			
	NHNTS	4.77			
Reliability	HRDP	4.63	1.76	0.128	Not Significant
	DH	4.48			
	RFM	4.30			
	NHFM	4.46			
	RNTS	4.23			
	NHNTS	4.22			
Security	HRDP	3.75	0.37	0.866	Not Significant
	DH	3.97			
	RFM	4.11			
	NHFM	4.19			
	RNTS	4.04			
	NHNTS	4.07			
Cost-Effectiveness	HRDP	4.00	0.77	0.574	Not Significant
	DH	4.07			
	RFM	4.08			
	NHFM	3.78			
	RNTS	4.16			
	NHNTS	4.30			

It is also suggested that upon the implementation of the software, the users of the software (i.e., the respondents of the study) adopt the system. Since the users have the same level of user-experience in the system, fewer errors may be committed while using the software. It can also be argued that because of the respondents’ positive evaluation on the system, there will be less resistance in changing the recruitment process. Nonetheless, it is recommended that follow-up studies be conducted to shed more light on this matter.

5. Conclusions and Recommendations

In view of the foregoing findings, the null hypothesis stating that there is no significant difference in the respondents’ evaluation on the effectiveness of the developed Online Job Recruitment System for the University of the East in terms of performance, reliability, security, and cost-effectiveness was accepted. It is concluded that the developed software was effective in selecting qualified applicants within a shorter period of

time. Hence, it would become a significant contributor to quality hire. It is also concluded that Performance, Reliability, Security, and Cost-effectiveness could be utilized as criteria in evaluating online recruitment software.

Based on the conclusions drawn, it is recommended that the software be implemented in the company. After implementation, it is proposed that the impact of the system on the recruitment processes in the University be determined and that the changes in the recruitment processes with introduction of the online recruitment software be investigated. It is suggested that studies on the user-experience, adoption or non-adoption of the software, and errors committed in using the software be conducted and that Usability criterion of FURPS be assessed.

In terms of enhancement of the software, it is strongly recommended that an online exam be incorporated in the recruitment and that extra security features such as the level of access classified according to the position in the company also be incorporated in the software.

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