E-recruitment Tiered Architecture in Feasibility Study Role

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Abstract— One of the very important complement for feasibility study after log to connect to the recruitment management process is refers to study of feasibility in order to find out it's feasible or not! For example; Traditional recruitment (TR) is not as feasible as the one tier architecture (1TA) recruitment due to the unordinary problematic-output results of TR and hazard create to health and safety. 1TA recruiting is computerized but it is run over dump-client/server based connection and the output result is better than TR, but its again not optimized output results. Nevertheless the intelligent-client/server based connection over (2TA, 3TA and NTA) systems are more feasible then the 1TA as simplicity- output results with excellent time-consume, while the personal computers (PCs) become more popular and powerful as smart terminals. Hence, the today's users (especially youngster society) neither satisfied with the TR processes nor 1TA recruitment processing. After problem identifying and going toward to feasibility study to sort out of: What feasibility study type used from the TELOS (TELOS: five factors are collectively known as Technology, Economic, legal, operational, and Schedule) to achieve recruitment system over tiered architecture? But another important factor as a new contribution in this paper are used namely quality of output in the respect of time-consume by response time in mille-seconds measurement unit. Both Two tier architecture (2TA) and three tier architecture (3TA) are more feasible than the 1TA and TR due to implantation of feasibility study with those five factors been mentioned and some other factors. In this paper, the quality of output and Design architecture of the system are another factor for deciding the level of system feasible. There is a direct relation between (output result and Design architecture) with feasibility study. The five mentioned factors are working collectively for providing better output result time. This paper shows the role of feasibility study in Tiered architecture design by response time or load time recruitment system.

Keywords—   Feasibility study, Tier Architectures,   Recruit, Quality of Output, Performance

I. INTRODUCTION

Any system or application designed for human resource management without taking advantages of feasibly study factors are namely a faulty system or application because feasibility study possibly will be utilized to test a new working system and modified from primitive recruitment to modernize recruitment. Otherwise,

It is a test of the system according to its workability (feasibility), impact of the organization, ability to meet user needs and effective use of the resources. It can be test our proposed system by different type of the feasibilities. There are 5 types of the feasibilities as follows [1], namely the TELOS as mentioned in previews section (TELOS: five factors are collectively known as **T**echnical feasibility, **E**conomic feasibility, **L**egal feasibility, **O**perational feasibility, and **S**chedule feasibility) to:[2] Performed a feasibility study to decide whether a prospective group study modeled with Frequent for[3] E-recruitment. Also, the TELOS and quality of output are common factors that need for E-recruitment to consider in order for a certain endeavor to be faultless and higher level of feasibility.

The result of the feasibility study should be able to justify the necessity of three tier architecture by categorizing the role of a client, the middleware server, and the top-tier server; how

they could interact, and how much benefit can they gain from the implementation [4]. It is obvious, when the tiered architecture numbers [from 1 to N] are increasing the quality of output results are enhanced. Thus, the numbers of tier architecture design and quality of output outcomes are directly related to each others in the respect of feasibility study. Both employer and employee are complaining about inconvenience traditional recommendation (i.e. match-making and decision-making) in traditional recruitment for Human Resource management because of   undependable of time-consume, inaccurate Output result and unavailable of real time. Nevertheless E-recommendation by (semi restricted search engine and restricted search engine) solve the inconvenience of traditional recommendation because of E-recommendation is paperless, less time consume, accurate, reduce health and safety hazards and etc. regarding the TELOS categories E-recommender output outcome is much higher and it is feasible than the traditional recommender. A compromise between the simple restricted search engine and the restricted search engine is a search engine with less complication and fewer parameters namely "Semi restrict search engine". Semi restricted search engine is an appropriate search-base recommendation category for E-recruitment system because it allows the user to specify fewer search parameters. Both semis restricted and fully restricted search engine are very appropriate for E-recruitment system

for the reason selecting right person in right place [5]. The appropriate search engine for a job limitation applied up to ten jobseekers is semi restricted search engine in order to making decision to select the best person automatically. Although more than ten jobseekers applied for one job should use the fully restricted search engine because the fields in frontend form must be filled in by jobseeker are exactly equal to web database fields in backend. Hence, all fields in backend database table must be appearing in a form in frontend form and must fill in by jobseeker.

Inputs, Outputs, and Design Steps for Technique architecture and Design of any system help to be feasible, for example the inputs to the design of E-recruitment can help to formalize the requirements and limitations that system architecture must   accommodate. Common inputs are use cases and usage scenarios, functional requirements, non-functional requirements (including quality attributes such as performance, security, reliability, and others), technological requirements, the target deployment environment, and other limitations [6]. An output is very important factor for both architecture design and system results have a great role; the better output result by the system is helps to be more feasible (feasibility study) and helps to enhance the output result by architecture design (i.e. 1TA, 2TA, 3TA, and NTA). This paper is focus on the quality of output and architecture design of the system that is another factor for deciding the level of system feasibility. When the system design is perfect the output results are perfect too. The five major stages are shown in Figure 1 for input, Output, and Design steps:
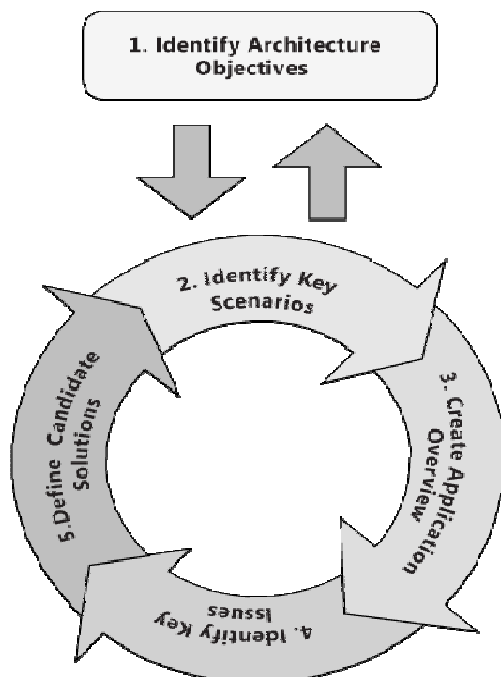

Fig. 1 iterative steps for core architecture design Activities [6]

The steps in Fig1, described in more detail in the following which are:
1. **Identify Architecture Objectives**. Clear objectives help to focus on system architecture and on solving the right problems in design.
    Rational: solve load balancing by three tier architecture and provide better output results.
2. **Key Scenarios**. Use key scenarios to focus design on what matters most, and to evaluate candidate architectures when they are ready.
    Rational: The candidate architecture design for reduces the problem matters is three tier architecture which provide better output results.

3. **Application Overview**. Identify application type, deployment architecture, architecture styles, and technologies in order to connect your design to the real world in which the application will operate.
    Rational: the E-recruitment for human resource management designed by open source namely PHP&MYDQL, WAMP(Window, Apache, Mysql,Php)
4. **Key Issues**. Identify key issues based on quality qualities and techniques concerns.
    Rational: These are the areas where mistakes are most often made when designing an application. For example, 2TA system crashed (mistakes) due to above the limit users replaced by 3TA and solve the mistake.
5. **Candidate Solutions**. Design an architecture prototype that modify and improves the solution and estimate it against key scenarios (step 2).
    Rational: the weak point in steps 2 enhanced in this step.

Every step mentioned above is help to provide very good output result and become feasible [feasibility study].

II. FEASBILITY STUDY

In this paper as mentioned in previews section, TELOS (TELOS: five factors are simultaneously working known as; Technology feasibility, Economic feasibility, legal feasibility, operational feasibility, and Schedule feasibility) to make system feasible with high quality output. In order to achieve recruitment system over tiered architectures and the tiers architecture types are 1TA, 2TA, 3TA and NTA. The types of feasibility study are collectively working until modifying traditional recruitment system (TRS) to electronic recruitment system (ERS). The modification occurred from past until

now in tiered architectures, recruitment system and feasible, are create new generation.
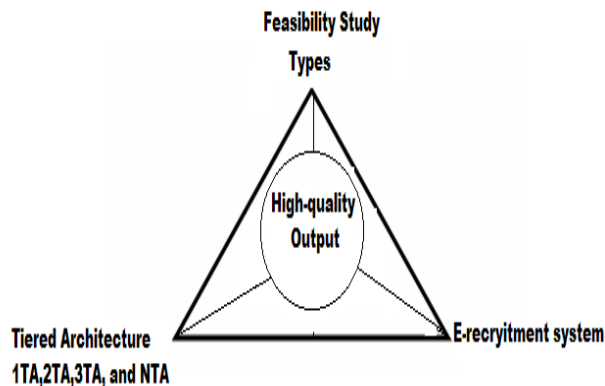

Fig. 2 shows the relation tier architecture and Feasibility study and recruitment system

E-recruitment system are working simultaneously for the Reason of enhanced an output results and provide a high-quality of output. The high-quality of output is another feasibility study Factor which is a new contribution in this paper for the respect of time-consume by response time with mille-seconds measurement unit.

There are five feasibility study factors are collectively namely TELOS:

A .   Technology and System Feasibility

The availability resources in order to design system may to have an effect on the capabilities to achieve a suitable E-recruitment system. This evaluation verifies whether the technology required for the proposed system is available or unavailable. Apparently, E-recruitment system can be design in any programming language but the concentrating on open source web technologies; for example EasyPhp14.3 that support an excellent user interface and handling an easy database. Esayphp14.3 contain AMP (apache, mysql, and php) over window operating system became WAMP.

Web technological requirements could include several areas of concern when first setting up E-recruitment system:
  i.   *Front-end Model.*
  ii.   *Back-end Model.*
  iii. *Front-End Model:*

Front-End means a language that is used for user interface designing and coding; for example HTML, XML, CSS, and JavaScript.
Front-End should have following qualities:
  ▪ It must have graphical user interfaces (GUI) that help out employees and employer that are not

In Figure2, all types of all feasibility and tiered architecture in
  familiar with computer or very weak in IT background.
  ▪ Robustness
  ▪ Platform independent.
  ▪ Easy to install and maintain
  ▪ Scalability and Extensibility
  ▪ Front-End must support most of popular Back-End like MYSQL, SQL Server and Oracle.
The popular According to the above stated features selected JavaScript as Front–End for developing our project client side.

  i i) Back-End Model:
    Back-End means a language that is used for database management. Back-End should have following qualities:

  ▪ Multiple user support.
  ▪ Provide inherent feature for security.
  ▪ Efficient data retrieval and maintenance.
  ▪ Stored procedures.
  ▪ Popularity.
  ▪ Operating System compatible.
  ▪ Easy to install.
  ▪ Various drivers must be available.
  ▪ Efficient data handling.
  ▪ Easy to connect or implement with Front-End.

Generally, the back-end is a backbone of any new technology systems especially for three-tier E-recruitment business. Mysql is an outstanding tool to implement the web database system. ConText has been used as an editor to create web job interfaces that the jobseekers/employers interact with. ConText editor is powerful and easy to use software, and it will be used to handle the link tasks between the interface by (HTML, XML, CSS, and JAVASCRIPT) and the database. As MySQL is used to implement the system database developers should be sure that the established back-end is secure and is working faultlessly. The step that has highest priority in the system establishment schedule is the design of back-end module, because most of the errors in the systems return to the inaccuracy of back-end module. The technology used in this project to link the database to front-end interface is Hypertext preprocessor (PHP) [as a middleware] over window server 2007 or the application tier is php.

B.   *Economical Feasibility*

In Economical feasibility the taking into consideration the following costs:
  1. The cost to perform a full system investigation.

2. The cost of hardware and software for class of application being considered as well.
3. The advantage of reduced the cost.

The TR is cost much higher than any type of E-recruitment system; for example the cost of hiring staffs for managing and renting a place for job center are more expensive than E-recruitment system. The cost of E-recruitment system is roughly about 1/3 of traditional cost and E-recruitment system has lots of features at a minimum cost. Hence it is feasible to implement and it will be very much beneficial to the employee and employer in the reduced cost. It's software and hardware cost is also low then the existing system.

C.   Schedule Feasibility

Time assessment is most important consideration in development of the project. Hence the project is concerned should be completed with fixed in scheduled time. New system is not so much big so it is easy to make in few days. But time achievement to find out job for jobseeker and Find right employer for employee, hence time achieving is much less than traditional way. Also time-consume in TR is impossible to calculate due to the changeability of human activity from a person to others.

D.   Operational Feasibility

In this feasibility study type:
  1. Whichever modification occurred with the system, it called new generation in the system.
  2. New generation of any system design new proficiencies will be required? The seminar evaluation must be providing for users.

In the new system made lodes of major modification for the admin, visitors and members of employee and employer, so that they have to be trained to use the newly added facilities. These major changes are possible and give a new era in the recruitment for example webcam, email and face book.

E.   Behavioral Feasibility

The old fashion employee and employer are essentially refused to accept to change and a computer means "change is the only certainty". An estimate should be made of how strong a reaction the user staff in going to have towards development of new E-recruitment system. Thus special efforts can be made to educate and train the staffs. But the best way to solve behavioral feasibility is blended (mixed). It means both traditional systems beside to electronic system should work. This is only for reducing reaction those users is unfamiliar

Fig.3 shown five major stages to enhanced Quality of Output and Health& Safety

F.   Output results

The output result has a direct relation to each one of the categories of feasibility study that mentioned before. All categories are works collectively in order to provide better output result. The measurement of quality output result is by response time in milliseconds. The less time consume is better of quality output results. The five major stages are shown in Fig 3 for Quality of output. The quality of output is enhanced by working of all factors simultaneously. When technology is involved the expenses become cheaper and designed shorter time with less efforts. The system is very friendly and easy to use and certainly there is unstressed on users during using the system, finally a user of the system behavior is better.

All feasibility study factors help to create another step namely output quality. The quality output is another stage of our feasibility study and in our proposed system can be measured by millisecond. The less time response meaning feasible, or the level of feasibility is higher. The interactive output of any E-systems will provide better results with less response time to user and became more feasible and work out some hazards of health &safety. Without doubt, when the jobseeker looking for job they don't need to go to job - center or became a job head-hunter and they can apply for jobs through any computer that connected to the internet. Furthermore, the employees don't need to ask job-centers for employee. Both sides can communicate through web-job or E-recruitment system. The traditional communication between both jobseeker and employers create hazards of health & safety; for example using of transportation create air pollution. Our proposed system avoiding pollution and also it is much more economic than the traditional method. The new idea in our proposed system is another factor namely Quality of Output, all previous factors of feasibility study are working together to provide better quality of

output and it becomes another factor. When the quality of output is premium, the jobseekers and employers communicating are much faster and they don't needs to do big efforts (physical) in order to find each others. A single click by jobseekers on E-recruitment URL let jobseekers to get all information about jobs or vice versa for employer. Fig3 shows that the TR is very far from feasibility study or unfeasible at all. None of any feasibility factors are used in TR, thus the quality of output results is very inaccurate and slow.

The result of output is undependable due to the changeability of human activity from person to other. Furthermore the TR output is inappropriate and still paper works and unavailability of real time with very costly. TR is unfeasible at all and quality of output results is undependable. Finally our proposed system is a dynamic platform communication between jobseeker and employee. Whenever the registered jobseekers fill out the application form and ask for job a single click on submit button transfer all information in form regarding to jobseekers is transferred to 1) to the backend database and 2) its transferred to frontend parts of employee by active hyperlink button namely view available jobseekers in the employee part GUI and list all available jobseekers. Nevertheless, whenever any registered employee fill out the application form and ask for employee a single click on submit button transfer all information in form regarding to employee is transferred to 1) to the backend database and 2) its transferred to frontend parts of jobseeker by active hyperlink button namely *view available vacancies* in the jobseeker part GUI and list *all available vacancies.* The new idea in this paper is cross availability, all job information from employee sent to the jobseeker GUI and all people looking for jobs sent to the employee side GUI. This is a very helpful results output or the quality of output is very accurate to recommend jobseekers and employee. The feasibility study for E-recommender system is by cross platform namely views available vacancies for jobseekers and views available jobseekers for employee.

III. Tier architecture

There are several basic pictorial representation of tier Architectures; for example 1TA, 2TA and 3TA [7] with role of feasibilty study in mentioned tiers architecture . Designed of proposed system and run it on each tier architecture by their own and testing the essential system process(quality of output). The tier architecture is a physically seperatrion of hardware and run the E-recruitment application software for each tiers.

A. 1 T A
In tier one architecture web browser, Apache&php, and database run over operating system (OS) in one mainframe

(hardware) and the mainfram is connected to several dump terminal usually it is used for announcement in the jobcenter or public area. Fig 4 shows the 1TA
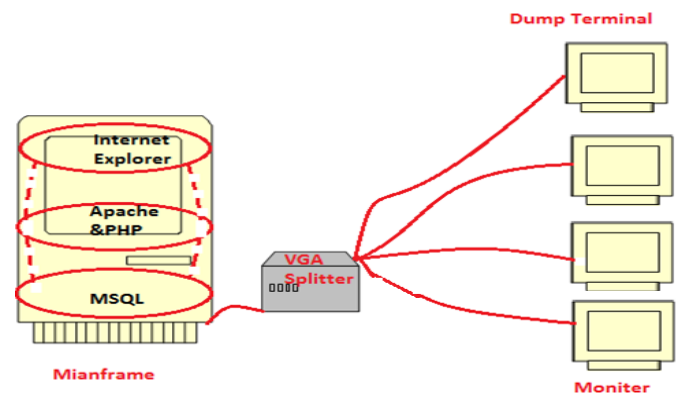

Fig. 4 shown one Tier Architecture by Hardware
VGA Splitter [7]

B. 2TA
In a Client/Server based architecture namely two tier architecture Web browser in the client side computer, but the Php and Apache web server at server side computer. The separted client (web browser), middleware (Apache and Php), backend (Mysql database). After testing and evaluation of all tiered architecture we found out all architectures tier are not very nesensery for the E-recruitment system; but still is better then the 1TA and TR but it is not as accurate as 3TA.

for example, As mentioned before one tier architecture used for Anaunsement, two tier is bettere than 1TA because it is intelligent and client/server based. Fig5 shown two tier architecture. Both application logic tier (Apache & Php) and Data tier (Mysql) are together in a server side and called 2TA-Thin. Nevertheless when application logic tier (Apache & Php) and web browser are together in client and data tier (Mysql) by itself in a server side is called 2TA-Fat. Both Two tier architecture (2TA) and three tier architecture (3TA) are more feasible than the 1TA and TR due to implantation of feasibility study with those five factors been mentioned and some other factors.
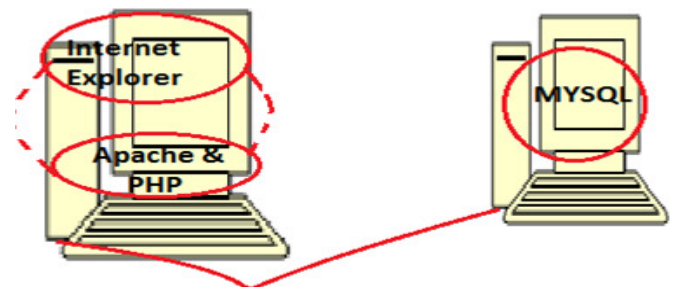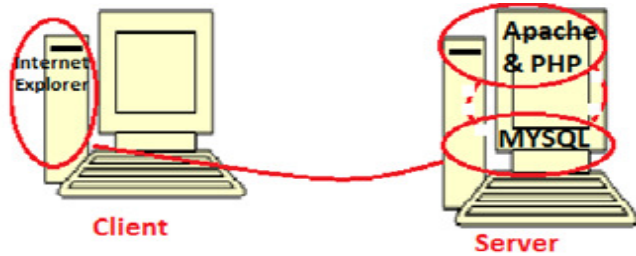

Fig.5 Shows Two Tier Architecture-Fat

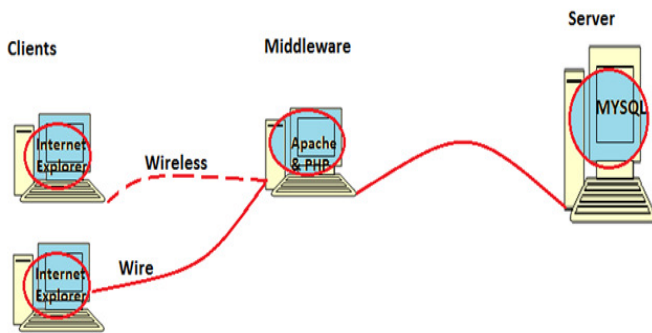Fig.6 Shows Two Tier Architecture-Thin

Fig.7 Shows Three Tier Architecture

C.   3TA

The separation of presentation, logic tier and data tier or in other word front end, middleware and backend in three computers or hardware are called 3TA. Fig 6 shows the 3TA. In this paper, the quality of output and Design architecture of the system are another factor for deciding the level of system feasible. There is a direct relation between (output result and Design architecture) with feasibility study. The five mentioned factors are working collectively for providing better output result. Table1 show the relation between quality of output, feasibility factors, and health & safety. The traditional recruitment quality of output and health & safety is very weak, recruitment system application over one tier architecture is better than TR. Two and three tier architecture output quality results are Excellent and the health & safety of 2TA and 3TA are perfect. Also table 1 show TR red color and this means hazard. 1TA is orange (middle) and 2TA and 3TA color is green (safe).

Feasibility Study Factors	TR	1TA	2TA	3TA
Technology	0	1	1	1
Economic	0	1	1	1
legal-behavior	0	0	1	1
Operational	0	1	1	1
Schedule	0	0	1	1
	0	3	5	5
Quality of Output	weak	middle	high	high
Health & Safety	Hazard	Non-hazard	safe	safe
Reliability	NO	not bad	very good	Excellent
Limitation	1 person	several	up to 500	unlimited
Real time	No	NO	yes	yes

The table shows feasibility study factors over internet architecture with install of recruitment system application. Also the traditionally recruitment create more hazard and not reliable. 3TA is more appropriate than the others due to the numbers of users are unlimited and very far from system crash. The traditional recruitment is a paper work and very untidy also waste of time and money with lack of real time. 1TA is computerized of TR and reduced paper work, tidy, more economic, and still lack of real time. 2TA became better than 1TA and TR because its client/server based with availability of real time, but the problem is limited of users and could be crash of the system. 3TA is unlimited up to 50000 users, with availability of real time and load balancing of the system. Three tiered architecture is appropriate architecture for E-recruitment system because of the availability of real time, and lack of system crash.

IV. RESULTS AND DISCUSSION

As mentioned in the previews section IIII, Both Two tier architecture (2TA) and three tier architecture (3TA) are more feasible than the 1TA and TR due to implantation of feasibility study with those five factors been mentioned and some other factors. The 1TA is a static not dynamic because all terminals are dump, its only used for annonusment. The experimental test only completed for 2TA and 3TA. The php codes below are for design a search results in milliseconds. Figs 8 show php script as a middleware. Output results tests for 2TA and 3TA show

```
<!-- put this at the top of the page -->
<?php
  $mtime = microtime();
  $mtime = explode(" ",$mtime);
  $mtime = $mtime[1] + $mtime[0];
  $starttime = $mtime;
?>
<!-- put E-healthcare code and html in here -->
<!-- put this code at the bottom of the page -->

<?php
  $mtime = microtime();
  $mtime = explode(" ",$mtime);
  $mtime = $mtime[1] + $mtime[0];
  $endtime = $mtime;
  $totaltime = ($endtime - $starttime);
  echo "This page was created in ".$totaltime."
seconds";
?>
```

Fig.8 Shows Php codes for output result

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A.   2TA Test

   i.   One computer with 2TA.

   Table2 show the result of one computer

Computer number	PHP code (sec)	Response (byte)
9	0.050	430

   ii.   Five computers with 2TA.
   Table3 show the result of five computer

Computer no	PHP code(sec)	Resp (byte)
9	0.010	441
6	0.010	383
7	0.015	421
8	0.017	447
10	0.018	415
Total	0.070	2109
Average	0.015	420.8

   iii.   Ten computers with 2TA

   Table8 show the result of ten computers with 3TA

Computer no	PHP code(sec)	Resp (byte)
9	0.030	440
3	0.049	592
4	0.041	576
5	0.030	431
6	0.030	352
7	0.035	423
8	0.019	442
10	0.024	415
12	0.020	246
2	0.033	607
Total	0.338	4525

   iv.   summry of results
table9 show the averages of all results in changeable of numbers of computers and 16 computers in total

No of computers	PHP code(sec)	Response (byte)
1	0.033	430
5	0.135	2094
10	0.317	4525
Total	**0.485**	**7049**

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