

# User Interface Design of Mobile Web Application for Job Vacancies Information: in Comparison with JobsDB™ Mobile

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**Abstract—** We live in a world where the job circulation vacancies information never stops and the demand on it is always high. Meanwhile, advances in mobile technology and the decrease in the price of mobile devices result in the rise of mobile web. Mobile web gives significant contribution to total number of access to internet. The three major mobile operating system Android, BlackBerry OS, and iOS- bring us even smoother experience while browsing the web through mobile devices. Many websites now offer mobile version of their website to gain direct access from mobile devices. This brings an opportunity for job vacancies websites to expand their service to broader audience. JobsDB™, one of the prominent job vacancies website, has taken the opportunity. But the resulting mobile site has not satisfied the design and usability principle in the domain of Human Computer Interaction. This paper tries to explain this and offer solution to it.

**Keywords :** job vacancies, mobile web, user interface

## I. INTRODUCTION

Indonesia is one of the most populated countries in the world. It affects the magnitude of demands for jobs. Thus, the need is a way to make it easier for people to get information about jobs. Many sites have taken this opportunity, for example JobLoker™, JobStreet™, and so forth. Meanwhile, the development of mobile web in Indonesia has become an interesting phenomenon. Several years ago, everyone must have a computer and pay expensive fees to the ISP, now even a cheap mobile phone can be used to browse the internet, on the top of that, for people who live in small towns.

From the explanation, we must notice that mobile web application for job vacancies is very promising. There is a website which applies it, namely JobsDB™ Mobile. However, the design interface is not enough to satisfy novice users. This paper will design the interface according to the Human-Computer Interaction principles and rules along with the needs of the user itself.

JobsDB™ is a job vacancies website which was founded in 1998, and quickly expanded its operations and the largest recruitment portal in Asia Pacific with the widest network

coverage today, spanning Australia, China, Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand and USA. JobsDB™ has already provided JobsDB™ Mobile as a product which fulfills the needs of mobile users. For smart phone users, JobsDB™ provides its mobile applications for BlackBerry®, Android, and Apple® products.

## II. LITERATURE REVIEW

### A. Human Computer Interaction

According to a lead HCI association, the curriculum developments group of the Association for Computing Machinery (ACM) special interest group on computer human interaction (SIGCHI), human computer interaction is a discipline concerned with design, evaluation and implementation of iterative computing system for human use and with the study of major phenomena surrounding them. There is one more definition from leading HCI textbook, HCI is defined as put simply the study of people, computer technology, and the ways these influence each other [1]. Briefly, we study HCI to determine how we can make this computer technology usable by people.

HCI as a discipline can not stand alone. Because it is related to computer system and human, the disciplines about these two points cannot be ignored. The core of HCI evaluation is grounded in four major disciplines, they are [2]:

- Computer science, delivers the devices that creates a need for an interface.
- Cognitive science, it plays a seminal sole in HCI because it analyzes how people figure out and communicate with computing system.
- Social psychology, with this focus it combines group issues such as organizational structures, power, and authority with HCI issues of how information flows among groups, shared technology, and social contexts.
- Human factor, deal with matching the physical characteristics of system with user's capabilities and capacities.

In HCI, we speak about how computer as system and human as the user can interact well. To do so, the system itself must be a user centered-system. In order to build user-centered

system, developers need to look at user needs values, and supportable task. To get information, developers stimulate real work situation and prototypes with intended users. HCI researches ask these five primary questions when building user centered system:

- How will design work get done during the development phase?
- How can system be designed that work better to support user's task?
- What design trade-offs exist and what are solutions that support user?
- What can we make that is new?
- Is the system usable?

To answer these questions, we can relate it to these "commandments" of user interface design by Wilbert Galitz, there are [3]:

- Understand user and their task  
This becomes increasingly difficult as we extend our information system to implement business to customer (B2C) and business to business (B2B) functionality using the internet.
- Involve the user in interface design  
Find out what the users like and dislike in their current application. Involve them in screen design and dialogue from the beginning.
- Test the system on actual users  
Observation and listening are the key skills here. After initial training, try to avoid excessive coaching and forcing user to learn the system.
- Practice iterative design  
The first user interface will probably be unsatisfactory. Expect any user interface design to go through multiple design iterations and testing.

### B. Mobile Web Design

A mobile website today is not simply a passing lifestyle. It is predicted that in the future mobile sites will be proven to be a primary need for any people around the world. Mobile Web browsing is also predicted to be the next predominant internet platform with millions of WAP mobile users browse the Internet.

To develop a good mobile website, first thing that must be considered is understand user habits. The habits between mobile and desktop user are clearly different. Unlike the desktop users who browse the internet in fixed condition and predictable environments, the mobile users browse the internet in "on-the-go" conditions and usually busy doing something else like waiting for someone or spending time out with friends. Their main focus is website services so they need to be quick and easy to access the information.

Therefore, most of web design generally used for computer browsers is not compatible with mobile devices. According to William Craig, a developer must know

principles about mobile web design before proceeding to build mobile site, those principles are [4]:

- The site must use CSS for the layout to ensure maximum compatibility.
- It is easiest if the site is coded using either XML or XHTML, with character encoding set at UTF-8.
- Consider that different mobile devices have different screen sizes. Design and build with a "fluid" layout in mind.
- Remember to put all the most important information that we want mobile users to see on the top of the page like site search and navigation. It can be time consuming to browse through a mobile site, not to mention tedious to read through. In one word, make mobile site design convenient for consumers.
- Design for fingers. Click targets should be a minimum of 30-40px in size and use white space in between elements to ease click ability.
- Keep downloading time in mind. Avoid background images; they can reduce readability in certain lighting conditions.
- Forms can be difficult to use on a mobile device. Since text is time consuming to enter, we may want to offer user the convenience of radio buttons and lists, which they can choose from depending on what they need. Also, reduce the number of screens a user passes through to complete a form. Form labels should be top aligned rather than left aligned to save space.
- Forms should require the minimum amount of data input and should remember the data for next time a user visits the site.
- Most browsers don't support plug-in or extensions.
- "Less is more" holds true to mobile design. Avoid using unnecessary graphics.

Beside those principles, designer must also concern about the principles of Human-Computer Interaction itself, including metaphor, clarity, consistency, alignment, proximity, contrast, and so on.

### III. JOBSDB™ MOBILE

JobsDB™ Mobile (mobile.jobsdb.com) is the mobile version of jobsdb.com which is the most popular job vacancies website in the world. It has changed the way in provision of information from enterprise's employers to jobseekers. Moreover, with the mobile version, it can be possible to approach jobseekers from various kinds of stratum to access this site. The same thing can applies to employers, whether it is large company or small one.

Despite of the usefulness, JobsDB™ Mobile laterally has some lacks. We only describe and try to perfect the site in terms of human-computer interaction and interface design, it will be the paper's main focus. Like any other sites, JobsDB™ Mobile also has some strengths and weaknesses in terms of user interface design. The user interface design from various pages in JobsDB™ Mobile can be seen in Figure 1, 2, 3, and 4. This paper will analyze it and henceforward will build new

interface design for similar site with improvement of those strengths and weaknesses.

#### A. JobsDB Mobile Interface Design: Strengths

User interface design of JobsDB™ Mobile refers to the standard of making a good user interface, including [1]:

- *Simple design*, for a mobile website the design must be simple and easy to use, because of small screen. JobsDB™ Mobile has already fulfilled this criterion. The illustration can be seen in Figure 1.
- *Consistency*, which is the layout, colors, images, typography, and the text of a single page with others as well as between applications on platform with other one, is similar and related.
- *Clarity*, elements of the site have compelling reasons why they are used in the interface.
- *Alignment*, the interface is neat so that users feel comfortable in use. We can see it in Figure 3 and Figure 4.
- *Font* used in JobsDB™ Mobile is easy to read so users more easily understand the information, as seen in Figure 3.
- *Typography* on this site already notice placements of capital word. So user interface design created more readable.



Figure 1. Home Page



Figure 2. Login Page

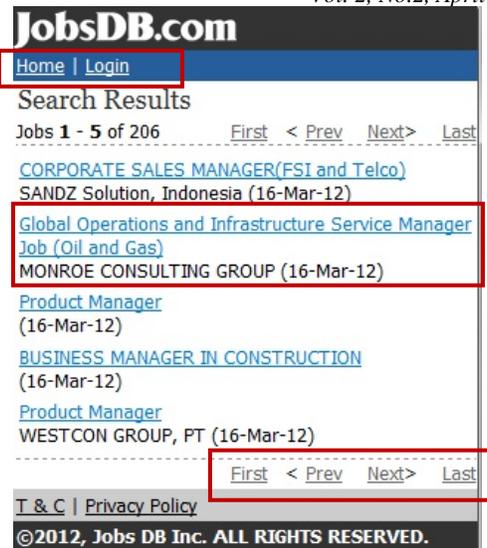


Figure 3. Search Result Page



Figure 4. Detail Information Page

#### B. JobsDB Mobile Interface Design: Weaknesses

Although in some aspects of JobsDB.com interface are in accordance with user interface design rule standard, some user feel not comfortable using this site. It is because in some interface designs are not accordance with user needs, such as:

- Only provided one field input keyword that is for position keyword or company keyword, as illustrated in Figure 1. It was difficult for users who want to input more than one keyword, especially for new user. Job vacancies site should be provide input keyword more detail they are for job position, company location, and company name so the search results obtained on target.
- Fonts that used in this site are easy to read, but *same font on menu and information* make user difficult to distinguish between them, as illustrated in Figure 3. Moreover, other deficiency is using underline for font

link menu. Good links menu should be different with information font, maybe in size, color, type, or style. Link menu can also be enhanced with “roll over” between menus and each other, such as when menu link mouse over then changing background color or font type.

- The combination of selection design color (white, black, and blue) is very simple and is not contrast. Color that used must describe character of this company. JobsDB.com design color combination should be made more contrast, so the important elements can be seen directly by user first sight.
- Using less metaphor aspect, so when browse this site user does not feel all site services. Metaphor also useful to visualize the related element with objects. For example, in shoes e-commerce site, interface should be make user like being in shoes store.

#### IV. WEB APPLICATION VS RICH CLIENT APPLICATION

The weaknesses of mobile web application discussed before are more to limitation of bandwidth. The main consideration for simplification of user interface design is load time and renders time on the browser.

The application itself becomes somewhat dependent because it uses the traditional web application architecture, where user interface component, business logic and data are processed in server. The server can get requests and give replies to client. Details of web application architecture are shown in Figure 5.

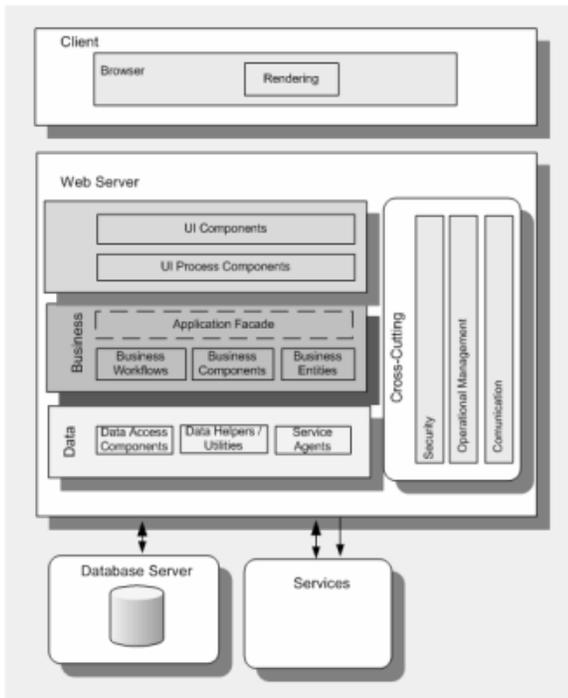


Figure 5. Traditional Web Application Architecture

With the arrival of smart phones, numerous line of mobile web application tends to shift from traditional web application to rich-client application architecture. Smart phones make it possible to accomplish heavy task on mobile device, such as processing user interface components, business logic and local data. All that left is external data and services needed to accomplish several tasks that could not be done by local data. Figure 6 shows the details of the rich-client application architecture.

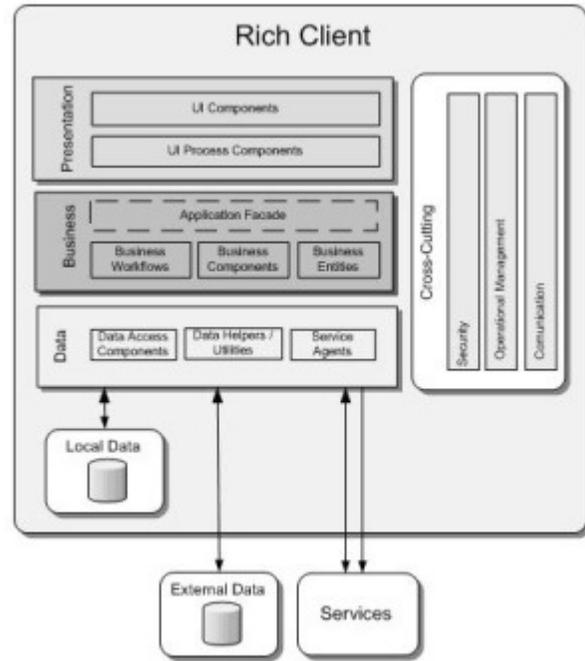


Figure 6. Rich-client Application Architecture

Using rich-client application architecture means that the application is installed on top of mobile device hardware. The benefit from it is that the application becomes more reliable and semi-independent to web server.

The utilization of rich-client application architecture brings more space to the improvement of job vacancies mobile application.

#### V. PROPOSED USER INTERFACE DESIGN

Figure 7 explains how user will use the mobile job vacancies application. First, the user will input his/ her log in data. This is to match the curriculum vitae of user with list of displayed job vacancies on further stage. After reading the log in data, user will input job search query based on keywords. The keywords here can be expanded into positions, company names, locations, due dates and type of job (full-time or part-time). Then, the application will display the list of job vacancies. User can expand any entry on the list and detailed information will be presented. From here on, the user can select apply for the job or save the current displayed job.

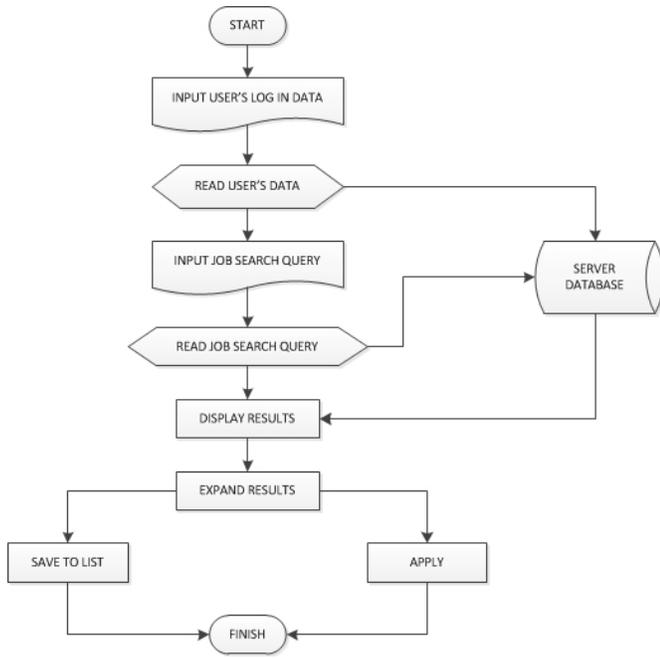


Figure 7. Flowchart Design

Assuming that new application has utilized rich-client application architecture, the improvement of the interface for each step on the stage are shown in figure 8, 9, 10 and 11 respectively.

Figure 8 shows the improvement on the log in interface. Now that the application does not need to wait for the user interface component processing on the web server, it can handle displaying more delicate images.



Figure 8. Log In Interface

Figure 9 shows the improvement on home screen. As the application now installed on a smart phone, some functionality is added for user. Also, privacy level for mobile client application makes it become more personal, so the new functionality is specific for every single unique user like managing saved job entries and managing applied jobs.



Figure 9. Home Screen Interface



Figure 10. Search Interface



Figure 11. Results Display Interface

Figure 10 shows the improvement on search interface. As discussed earlier, the search interface from JobsDB case study is somewhat simplified. Serious users will be using the application for a deeper and thorough search, so they will be approaching interface in a more detailed manner. Different input text field are given for more reliable search results.

Figure 11 shows the improvement on the results display interface. The problem with the display interface from JobsDB case study is the uniformity of fonts. In the improvement, list of results is displayed in a threaded view. Titles of job vacancies are displayed in bigger font size with highly contrasting color.

Main advantage of the proposed interface is that the application becomes more personal to user while maintaining the good features of common job vacancies websites.

## VI. CONCLUSION

Job vacancies information is becoming more and more important in this competitive world. JobsDB™ as the leading job vacancies information provider in Asia Pacific region has been analyzed and taken as comparison for its feature. But still the user interface design for the mobile application has several drawbacks according to the principles of human-computer interaction.

This paper proposed user interface design for new mobile web application for local job vacancies information in Indonesia. With the shift from the traditional web application architecture to the relatively new rich-client application, the new user interface design brought more visually effective gadgets and cleaner looks according to the graphic design principle in human-computer interaction domain. New features to view the saved jobs and applied jobs are also added to facilitate the user with historical activities. By doing so, the application becomes more personal to the user.

It is possible if the needs of user interface for the site in the future will be different from the needs nowadays. So, there is feasibility for the created design to be developed, or possibly amended depending on the conditions at that time.

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