Agile and UX Application in Design and Development of Job Portal Web Application

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Abstract: This article describes how User Experience (UX) process is applied in designing and developing a job platform at Universiti Utara Malaysia (UUM). The existing system requires applicants to search through print and visual media for job opportunities. Besides, applicants must apply for the job using forms and other traditional procedures and show for interviews on a specific date and location, which is time-consuming and inconvenient. Employers must post job openings, sort all application information, execute selection procedures, and complete the formalities. This method necessitates a significant amount of time and resources. In this case, recruitment should be timesaving, cost-effective, and, most importantly, identify the best candidate for the job. Job Portal Web Application is a web-based system designed for applicants to find jobs and help the employer find suitable candidates for the job which allows job seekers to identify openings and find qualified candidates for open positions quickly. This web-based system project is carried out using Agile methodology. JPWEBAPP comprises of six functional requirements which are register/login, add, edit, delete, save and display. It is intended to be used by admin and users. Users can register and login to the system with their username and password. The JPWEBAPP can benefit the users, it will be easier to upload and download the files. The web-based system will provide a simple, user-friendly, and manageable platform. It will be easier to upload and download the resume files.

Keywords: UX, Agile, Web-based System, Job Portal Web Application

1. Introduction

User Experience (UX) is a multidisciplinary study and is a special branch of the human-computer interaction field. The international standard on ergonomics of human-system interaction, ISO 9241-210 [1] defines UX as a person's perceptions and responses that result from the use or anticipated use of a product, system or service". UX stipulates an empirical evidence of successful interactions and good digital user interfaces through the process of User Experience Design (UXD).

In digital transformation, Malaysia is a country that largely focused on the software engineering field as a way to transform into digitization [2]. The study found that Agile Methodology is getting more attention in Malaysia [3]. Mishra et al., 2021 highlighted that the main constraints in Agile adoption are: (1) knowledge; (2) mindset; (3) commitment; (4) management involvement; (5) knowledge transfer; (6) organisational structure; and (7) communication [4]. It can be seen that social factors are more important rather than technical factors when adopting Agile methods. Social factors include human behaviour, values and attitudes towards Agile practices.

Today, the web has changed many factors in our lives, including how we look for work [5]. Post a resume, utilize word processing software such as Microsoft Office Word to submit the resume, open an Internet browser to get an email if you want to find a new job. For companies and job seekers to fulfill their objectives, online recruiting has become an outdated technology. The task service is added to the task portal by the employer. Online recruiting is no longer the most prevalent method for significant corporations but rather for small businesses.

A curriculum vitae (CV) or resume is a document that can use to apply for jobs. It contains a complete description of the person's professional and personal past. After all, it's usually two or three pages long. It will provide more information about professional ambitions and other achievements, allowing hiring managers to be aware of people interested in applying for jobs. A flawless employment portal website will be constructed and used for this project to assist users in preparing a CV for job hunting [6].

Companies provide records or job opportunities to post portals, and applicants are contacted through the Internet and email. Online recruitment, often known as e-recruiting, is defined as utilizing the Internet to identify positions to sell electronically. Employers offer them the potential of assignments, purchase their resumes and resumes (CVS), and reach out to eligible individuals online consequently [6].

2. Materials and Methods

The Agile methodology is a style of project management that divides a project into phases. It necessitates ongoing engagement with stakeholders and continual development at each stage. Teams cycle through planning, executing, and assessing once the job begins.
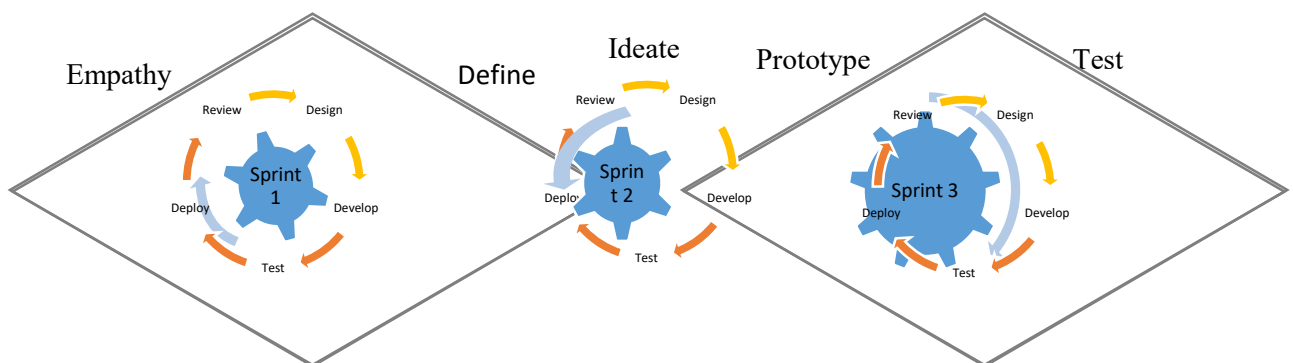

Figure 1: The process of Agile and UX

In **Figure 1**, Agile is the main methodology chosen for this project. However, UX Design process is applied each sprint. During the first sprint, Empathy is applied to understand the users' needs and frustrations. Data is collected by interview sessions.
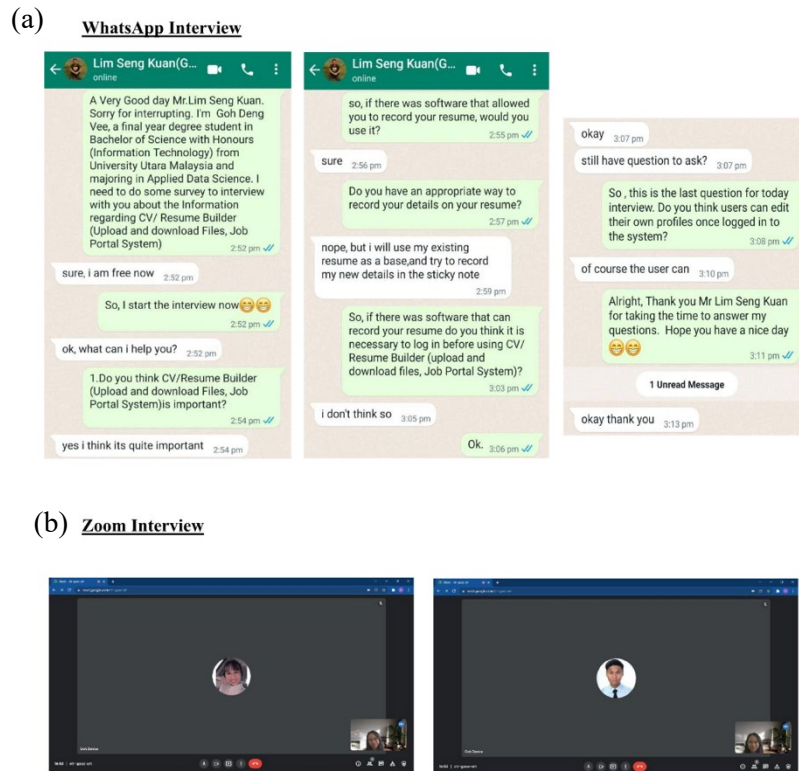
(a) **WhatsApp Interview**

(b) **Zoom Interview**

Figure 2: Interview sessions to understand users using (a) whatsapp and (b) zoom

In **Figure 2**, interview method is chosen due to pandemic Covid-19. The first procedure is using Whatsapp and the second is platform used in syhnchronous Zoom interview. The data is analysed and the outcome of the process is to define Persona, Scenario and create Storyboarding as can be seen in the next UX process phase.
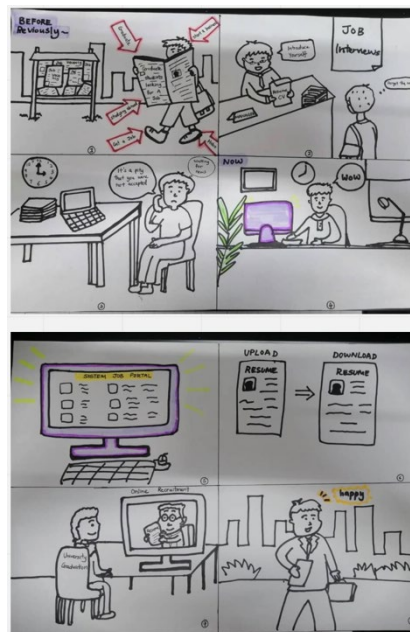

Figure 3: The outcome of UX process applied in Agile

In **Figure 3**, the user's real problem and needs are defined. Since clients are mostly concerned with the development process, clients adjust task methods through on-website online engagement,

requirements and reflect the abandoned users' current need. During this phase, Persona and scenarios are defined. After sketching the storyboarding, clients are asked for feedback and a wireframing is designed.

In Sprint 2, wireframing is sketched and the process of testing is conducted using expert evaluation which is Nielsen's Heuristics to detect any user flow issues. The functional requirement is developed after user flow is tested. In Sprint 3, the actual development is done. Continuous checking out input improves code progression in each iteration.

3. Results and Discussion

The primary framework utilized to develop JPWEBAPP is Sublime Text which is a cross-platform source code editor with a Python application programming interface that is available as a shareware download (API). It supports a wide range of programming and markup languages out of the box, and users can add functionalities via plugins, which are often community-built and maintained under free-software licences.
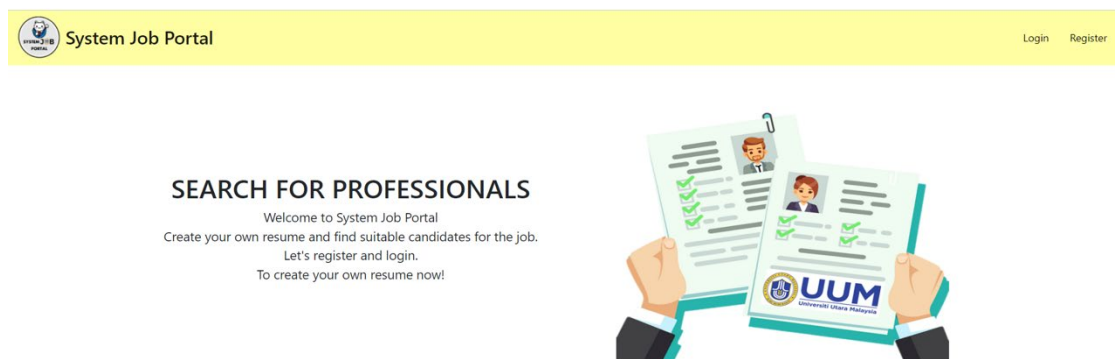
Figure 4: Welcoming page

In **Figure 4**, the job portal requires user to register and login due to security purposes. The resgistration process is very simple. Jobs are already being registered in the database by the admin. Since the scope of the project is only focusing on job uploading function, the following features are designed according to the task.
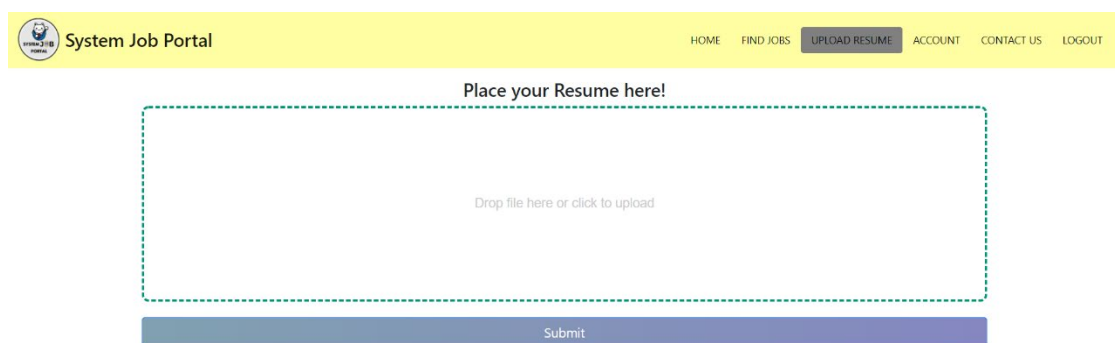
Figure 5: Uploading CV function

Figure 5 shows a minimalist design of uploading job CV function which is very simple and as needed by users. After UX prototyping, both front-end interface and back-end system is developed through Sublime Text. The programming language that used in the development of JPWEBAPP included HTML, CSS, JavaScript and PHP. JPWEBAPP has the general CRUD functions.

All users can register and login to the system with username and password. Admin can add the details of the JPWEBAPP included title, name of user, job details and so on. Admin and user can edit the details of JPWEBAPP if they want to update, however, only admin can delete the JPWEBAPP from the job details.

A usability evaluation was conducted on 30 respondents, consist of students in Universiti Utara Malaysia (UUM). This is because the Persona created for this context is a university student. Usability evaluation is having users of web-based systems perform certain tasks in order to assess the ease of use, perceived utility, and user satisfaction with the interaction. It also focuses on how users learn and use apps to accomplish their goals.

3.1 The Usability of JPWEBAPP

The term "usability" refers to the efficacy, efficiency, and overall user experience. Usability testing, in combination with references to background, environment, user needs, and other factors, helped us better grasp the system's shortcomings and features. However, the objective of evaluation on JPWEBAPP is to evaluate: (1) usefulness of JPWEBAPP, (2) ease of use of JPWEBAPP, (3) Satisfaction of JPWEBAPP, and (4) security of JPWEBAPP.

The main goal of the evaluation is to determine the web-based system's level of ability before releasing it to the public. The findings of the evaluation will be used to determine whether the web-based system is ready for public usage or whether it requires more modifications, problem fixes, or upgrades.

3.2 The Procedures

An online questionnaire is created that consists of a set of questions that related to JPWEBAPP. The link for the JPWEBAPP is sent to targeted respondents. The respondent could click the link provided in the Google Form description and test the JPWEBAPP. The respondent will be provided with a link with a set of questions in Google Form as the assessment tool for evaluating the JPWEBAPP. For the first phase, the respondents required to click the link provided in the Google Form description to access the JPWEBAPP and test all the functions which will be a guide for the participants to proceed with the evaluation process. After that, fill out the questionnaire at Google Form to evaluate the system.

Table 1: The Overall Experience of Respondent Responses on the Job Portal

The post-task questionnaire items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I could understand flow on how to register an account in the system.	0 (0.0%)	2 (6.7%)	3 (10.0%)	10 (33.3%)	15 (50.0%)
I can understand the flow of the login.	0 (0.0%)	0 (0.0%)	94(13.3%)	10 (33.3%)	16 (53.3%)
I agree the system is user friendly	0 (0.0%)	2 (6.7%)	9 (30.0%)	5 (16.7%)	14 (46.7%)
I agree that the functionality of the system match with my mental model	0 (0.0%)	2 (6.7%)	5 (16.7%)	11 (36.7%)	12 (40.0%)
I agree that the design of the system is following standard UI	2 (6.7%)	0 (0.0%)	4 (13.3%)	8 (26.7%)	16 (53.3%)

Table 1 shows there are 30 respondents participated in the usability test. The questionnaire is divided into four sections with a total of 17 questions. Section A sought personal information from respondents, while Section B sought the job portal system. Section C sought their opinions on the on a five-point Likert scale, representing strongly disagree and strongly agree. Besides, Section D sought the user comment. For the assessment, the respondents completed the following steps: (1) engaged with the Job Portal System according to the experiment procedure, and (2) completed the questionnaire.

3.3 The Respondent's Demographic Information

The following is the demographic data provided by the respondents: Females account for 53.3% of the respondents, while males account for 46.7%. 33.3% of the respondents were between the ages of 18 to 21 years old, 36.7% were between the ages of 22 to 26 years old, 20% were 27 to 30 years old and the remaining 10% were between the ages of 30 and above.

After that, employment status shows that 26.7% are working at full time, 30% are working at part time while unemployed are 43.3%. Besides, Job Portal System is unfamiliar to 20% of the respondents, whereas it is acquainted to 56.7 % and may be familiar to 23.3% of the respondents. In terms of the job portal system, 20% of the respondents have not used a job portal system, 13.3% may have used a job portal system, and 66.7% of the respondents have used a job portal system.

Among the respondents who have used the job portal system, 50% of the respondents said that they had no problems or troubles when using the job portal system, and 30% of the respondents said they had encountered problems or troubles when using the job portal system. The remaining 20% of respondents said that they may encounter problems or troubles when using a job portal system.

For the user experience of job portal system, the answers of the respondents in Section C of the questionnaire were analysed. This section assesses respondents' perceptions on Job Portal System utility and simplicity of use. It also assesses how satisfied respondents are with Job Portal System. The usefulness, ease of use, satisfaction, and the security of JPWEBAPP are having the good feedback from all the respondents.

4. Conclusion

In conclusion, this paper described the process of Agile and UX in the design and development of a Job Portal Application system. Though the scope is limited to downloading and uploading CV only, the application of both practices helped developer to understand the actual problems and translate them into coding and programming. Further improvement can be made is that to add more function to this system in order to complete the whole jobseeker and job provider ecosystem.

In the database design, developers should pay attention to protecting database integrity and eliminating data redundancy. The primary purpose of web apps is to allow more job providers or recruiters to post their jobs, so job seekers can see the jobs and then upload their resumes. The initiative aims to provide an online recruitment portal to help tackle youth unemployment.

In the process of applying both Agile and UX, lessons learned from the process is that there should be a limit to the iterations made for changes. This could be difficult for a large scale project. The selection of participants for testing should be made according to the Persona defined at the beginning of the project. This is to make sure that user testing results are meaningful and relevant to the development of the system. Based on the project, Agile and UX process saved at least 55% of the programming time for the overall development.

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