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Android “KarirKu” Software Development for Exploration of Career Trends based on Personality Types

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Abstract. The direction and career preparation of students has begun in early years. The process is influenced by multifactor, such as parenting, social environment, career insight, culture and other interconnected factors. However, based on various studies related to career planning and student decision making in higher education, there are still many students who have not been able to decide the direction of career choice appropriately and according to their personality, abilities, interests and talents. This phenomenon requires a step, a method and a concrete approach to assist students in establishing the direction of career choices according to their conditions. This approach was collaborated with the development of Android-based software using the Java-based Waterfall model. To support the development, a preliminary study was also conducted on the suitability of student career choices and the tendency to accept mental health services through the Android application. This research produced an Android software prototype called "KarirKu"

1. Introduction

The main program in developing the potential of students and related to determining the direction of career choice in Indonesia is the “specialization” program [1], [2]. This program involves various elements who are in school; especially those who play the most roles are school counselors. Among the important roles of guidance and counseling teachers is to make students understand themselves, accept themselves positively, direct themselves according to understanding, make decisions and be able to realize their decisions responsibly [3], [4].

However, based on various studies related to career planning and student decision-making in higher education, results were found that were not yet in line with the direction and objectives of the 2013 curriculum comprehensively [5]–[7]. This is evidenced by the still many students who have not been able to decide the direction of career choice correctly and according to their abilities, interests and talents [8], [9]. Another condition found was that students did not yet know complete and adequate information about the type of career and the ins and outs of how to achieve that career [10], [11]. The interesting thing about the phenomenon of related problems is the discovery of more than 30% of students who feel they are not in line with the current department [12], and after further analysis, the phenomenon comes from several interrelated things, namely the understanding of careers in secondary schools incomplete, less comprehensive information about the department, the role of teacher guidance and counseling that is still not optimal in guiding student career direction to peer influence [13]–[16].

In addition, students' understanding of self-condition also plays an important role in the phenomenon of incompatibility with the direction of career choices of students with the majors they occupy in college [17]. This phenomenon requires a concrete step, method and approach to help



students in establishing the direction of career choice and choosing steps in achieving these career goals [18], [19].

The challenge of efforts to solve these problems and phenomena also demands innovation in accordance with the demands of technological and scientific development [20]. This is done considering the various modules and models of student career development so far have not been clearly seen in development, moreover there is no research related to module effectiveness or an effective career guidance model for students in Indonesia [21]. Furthermore, the condition of technological developments has entered the industrial revolution 4.0 demanding innovation in career guidance procedures that are close to the development of "generation Z or alpha" (better known as millennial and digital native generation) [8], [9]. Therefore, there is a need for studies related to the development of direction, determination and selection of student careers. The study should follow a variety of scientific procedures on student career guidance so that there will eventually help students in preparing and strengthening the direction of their career choices, and can actually help in the process of specialization of students [22], [23].

The characteristic conditions of students who are in the era of information technology or millennial era allow for the development of programs or software that are close to the daily lives of students [24]–[26]. The technology that is currently close to the daily lives of these students is Smartphone technology. Thus, it is assumed that with the development of a career planning program based on Holland's theory through the intended technology it will increase the effectiveness and level of achievement of career planning that is successful in students [24].

2. Method

2.1. Participants

The sample in this pilot project study consisted of 174 people with diverse demographic distribution in Indonesia. This study involved respondents spread across various provinces in Indonesia, with a distribution of 25.85% men 74.14% are women.

2.2. Data Analysis

Analysis of research data using Rasch analysis was assisted by Winstep Version 3.72 software [27]. Data sets and raw data apply the Open Science principle, so that other researchers can open it, using the Open Science Framework [28].

3. Result and Discussion

The basis of Android-based software development for the determination and exploration of career direction is based on Holland's Theory. Holland type theory is the second part of the theory of trait and type [29]. This approach presents six occupational environments and six personality types. In 1966, Holland argued that occupational environments were Realistic, Intellectual, Artistic, Social, Entrepreneur, and Conventional, as were personality types given the same name [30], [31]. The level of orientation of the individual personality determines the environment chosen, the clearer the level, the more effective the search for the environment [30]. Individual knowledge about themselves and their environment is needed to make appropriate choices.

Based on the scientific basis, it is assumed that the development of Android platform-based applications can help students in setting career choice directions and assisting the student specialization process which will significantly impact students' career development processes and make the career guidance process of students successful. As a technology product that helps the career development process of students and specializations according to their abilities, interests and talents, the product looks more specific compared to similar Android-based application products. The process of developing the software through a series of processes:

3.1. Need Analysis Test

Before the software development process is carried out, first test the field needs for prospective application users. Target application users are students or adolescents who are in the determination and determination of career choices. This test was carried out using the AMMS (Acceptability of Mental-Health Mobile App Survey) measuring instrument [13] which the author had developed before. Respondents' acceptance of the application to be developed is presented in the findings in Table 1 and Table 2.

Table 1. Summary Statistic of Acceptability of Mental-Health Mobile-App Survey (AMMS)

Estimation	Logit Value	Rescaling Logit Value (0-100)
	AMMS	AMMS
Mean Person	.09	49.49
SD Person	1.61	12.34
Max Measure	5.36	90.03
Min Measure	-4.27	15.99
Separation Index Person	2.50	-
Person Reliability (Cronbach Alpha-KR20)		.89

Based on the findings presented in Table 1, it is known that the conditions of respondents' acceptance of applications that provide mental health services, including in terms of careers, are quite strong (with a logit scale of 0.90 and rescaling 49.49). In more detail, the conditions of respondents' acceptance of assistance and mental health services through the Android application are presented in Table 2.

Table 2. Acceptability of Internet-based Mobile-app Mental Health Intervention Analysis Using Rasch Measurements.

Items	Construct	Logit Value	Rescaling Logit Value (0-100)	Outfit MNSQ	Code
I want to access mental health services through the internet if I feel uncomfortable	Behavioral Intention	-0.94	41.63	1.2941	A1
If there is a smartphone app about mental health, I want to use it	Behavioral Intention	-0.01	48.76	1.0501	A2
I feel more comfortable to tell my problem through an app on a smartphone	Substitutive	1.06	56.97	1.155	A3
By using the app on my smartphone, I feel my secrets will be more assured	Substitutive	0.99	56.46	1.0286	A4
I want to consult via online first before meet my counselor	Complementary	0.18	50.19	0.876	A5
I want to find mental health information that I experience through the internet	Complementary	-0.51	44.91	0.7573	A7
Some of my problems can be consulted only through online with my counselor	Substitutive	0.48	52.51	0.8297	A8

Table 2 describes AMMS performance in general in accordance with the conditions of the software to be developed. In this case AMMS has 11 items that explain respondents' acceptance of the application of mental health services. But for KarirKu software development needs, the analysis

carried out is on items A1, A2, A3, A4, A5, A7 and A8. In this case the items represent the software development needs that are carried out. In general, respondents expressed agreement in receiving services with the Android application media. This is evidenced by the acquisition of high logit on several Substitutive statements that can replace the service role offline. On item A8 it is also confirmed that before the respondent met the counselor to consult, he would tend to obtain information about his condition first through a mobile application or Android.

3.2. Application Development Phase

In the application development phase consists of a software design process and limited trials. The design of the software is tailored to the needs and characteristics of the career theory that underlies the development, namely Holland's theory.



Figure 1. The display of Splash Screen on "KarirKu".

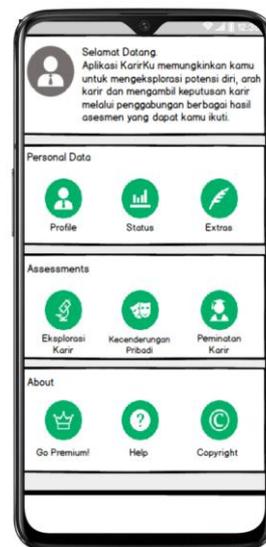


Figure 2. The display of Home Screen on "KarirKu".

Application design is based on the purpose and usage by the user. The opening display of the application consists of three main menus, namely Personal Data, Assessments and About. Trend measurement and career exploration can be found in the Assessments menu, where in version 1.0 development only measures active career exploration, while the rest are in the development stage and need assessment tests. Furthermore, the user can change the information and fill in the data themselves in the profile menu.

To get an overview of career exploration conditions and the career trends of the user, the user must work on a number of questions regarding his personal pleasures and tendencies. In the end, the algorithm that has been compiled will show the results of career trends as in Figure 4. In this phase it is still fully worked out using the Java platform and simple coding.

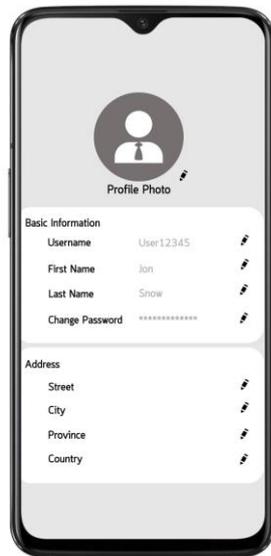


Figure 3. The display of User Profile on "KarirKu".

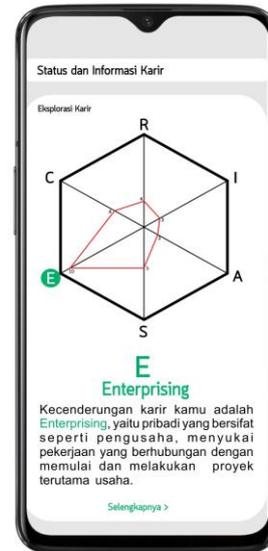


Figure 4. The display of Career Assessment Result on "KarirKu".

In the flow and schema of the application flowchart, the user is required to answer a number of questions indicating the direction and inclination of his career exploration. So that in Figure 4 it can be seen that in general the user score is in the Enterprising (E) with a score of 10, while the rest is the tendency of the secondary user who can still be considered in making decisions related to his career.

This development phase is an initial development phase, where the developer has carried out a limited test consisting of a suitability test by programming experts. Therefore, further testing is still needed by involving limited user testing.

4. Conclusion

The latest findings in the field of software development related to mental health show that the development of special software about career planning for students is still very rare in Indonesia (almost nothing works well) and has not varied according to the latest platforms, such as Android and iOS. This condition indicates the need for Android-based software development that specifically will be able to help students know the direction of their career based on Holland's approach and obtain an overview of the career suit with his personality; in this case the Android software will be named "KarirKu". In addition, this software development also answers the challenges of scientific adjustment to technological developments so that it can be used appropriately and has economic value in the future.

Based on the development stage carried out, in general respondents in need assessment test showed a positive attitude towards the presence of mental health applications to be developed. Other findings show that the application developed so far goes well according to the function and flow of thought. However, further development is still needed, especially in testing the use of applications from the user's side before dissemination is carried out.

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