

SPKP: A Web-based Application System for Managing Mental Health in Higher Institution

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Abstract—Client psychology profile is one of the methods used by UUM's Counselling Centre to analyze client psychological health conditions. This psychological profile is in a physical form which means the questions that need to be answered are on the paper. This psychology profile consists of three types of psychological modules whereby each module consists of questions related to psychology. The estimated time taken to answer this psychological profile is around 10 minutes. This physical form method may cause data to be lost and it will create issues when counselors want to retrieve the data back. This paper is aimed to develop Sistem Profil Kesejahteraan Psikologi (SPKP) for Counselling Centre of Universiti Utara Malaysia (UUM) in helping to know the client's psychological health before meeting up with the counselor. By focusing on analyzing Counselling Centre client's data, the basis of this web application system is to create a new space that will help Counselling Centre to improve the way they collect data, store data, and also improve their quality in time management whereby all those data can be collect, store, retrieve and analyze in a single click. By developing this system, Counselling Centre can monitor clients' psychological health before they meet up with the counselor.

Keywords—Psychology tests; psychology health; counselling; counselor

I. INTRODUCTION

Conducting a psychological test is not something that people like to do. Further, the task of getting mental health checkups is quite time-consuming and sometimes people with mental health problems would not like to seek help from others. Even though counselors are like to accept people with open hands, there is still some gap between the client and the counselor. To make things harder, people with low self-esteem and anxiety would think multiple times before asking for people help. This is because, they might feel scared, ashamed, or even afraid of what other people would think about them after getting the mental health checkup. Psychological testing and assessment are a tools use by psychologist or counselor to test and measure a client's behavior to come out with a specific diagnosis and guide treatment. This test and assessment are being conduct for a wide variety of reasons. For example, children who is experiencing difficulty in school. The children may undergo aptitude testing or test for learning disabilities. This test can help a psychologist to understand more about the children condition. The test involves the use of questionnaires or checklist [1].

As time goes by, nowadays everything is just under the fingertip. What do you want to do, what do you want to search

for, what do you want to buy is all over the internet? There is no need for people to travel from one place to another just to buy their food and etc. For example, person A wants to buy cloth. He or she just needs to access any website that sells cloth and just buy it from there; Simple and easy, and also time-saving.

It is not that different from psychology. Before this, counselors conduct psychological tests through pen and paper tests. This method is good in terms of meeting the client directly face to face. However, as Covid-19 has taken over the world, the higher institution needs to stop operating face-to-face and change the teaching and learning method online. This means that UUM Counselling Centre also needs to stop operating. It also means that students are no longer able to conduct psychological test at UUM Counselling Centre. Moreover, the way UUM Counselling Centre conducts psychological tests is quite time consuming as they have 3 modules and each module consist of 10 to 20 questions which resulting in a lot of time consuming. Not only that, but the clients of UUM Counselling Centre also need to manually calculate the test results, and later on the test result would be kept in file storage rooms which might have resulted in the test reports might be lost and hard to retrieve.

Due to this problem, there is an urgent need for solutions that can manage the psychological tests efficiently. The emergence of digital technology in human life may open an opportunity for providing an effective way of managing the psychological health of people. Moreover, findings reveal that computer-based models outperform humans in a critical social-cognitive task: personality judgment [2]. It can be stated that, computer is more accurate in judging personality of person. Therefore, this paper is going to investigate the potential of computer as a platform to managing psychological health. This paper is aimed to develop Sistem Profil Kesejahteraan Psikologi (SPKP) for Counselling Centre of Universiti Utara Malaysia (UUM) in helping to know the student's psychological health before meeting up with the counselor. As a result, SPKP prototype of a web-based application for managing psychological health was developed and evaluated. The study contributes towards an understanding the system requirements for such web-based application and could be a reference model for developers and researchers to improve and managing psychological health. The next section describes the background and related studies. Next, the section describes the design and development of SPKP. The subsequent section explains the usability evaluation of SPKP. The last section in this paper concludes the study and lists the future works.

II. BACKGROUND AND RELATED STUDIES

This section describes the background of psychological tests. Later, this section discusses the role of information technology in facilitating the creation and management of psychological tests. Although some students and staff found that doing psychological tests is easy and nothing to be worried about, in some cases, there are some students and staff who might have anxiety or depression or any related mental health problems that might find it is hard for them to conduct even one psychological test. Social stressors are amongst the most reliable forms of stress in humans and other species [3]. Accessing help, worries about confidentiality and trust, a preference for informal sources of help, and stigma are all barriers to obtaining help [4]. It is because of the stigma that, people who seek help from counselor or people who get medical treatment for mental health is crazy. Because of that, most people tend to just keep the problem to themselves and make their mental health worsen. The modern way of conducting psychological tests could make use of web-based applications where users use computers for managing their mental health. A detailed discussion of the concept and related studies are presented in the following paragraph of this section.

According to the World Health Organization, over 800,000 individuals commit suicide each year [5]. Latent components that are not observable in nature are evaluated using social and personality psychology exams. For instance, a self-report test could be created to assess belief in a just world, right-wing authoritarianism, or personality traits [6]. Sometimes, what we see is not the truth and we cannot differentiate between people with no mental illness and people with mental illness. Sometimes, people with health problems are more exposed on getting mental health problems too. Depression affects one out of every five individuals with coronary artery disease or heart failure, a rate that is at least three times higher than the overall population [7]. Because everyone is the same. The only way to differentiate is by conducting psychological tests. However, some people are not likely to conduct the tests because they feeling of ashamed and afraid would be called someone with mental health problems afterward. However, receiving psychological assistance is critical because it reduces the long-term detrimental impacts of mental illness [8]. Thus, seeking psychological help is very important in order to maintain a healthy mind.

The desire to be alone is a common behavior among people suffering from mental diseases. As a result of their seclusion, people with mental illnesses turn to social media sites like Twitter to freely discuss their illnesses [9]. However, sometimes the response received is not as expected. There are various reasons why online comments may be more detrimental than responses received in person [10]. When the discloser receives the desired response, requesting support in stigmatized situations is beneficial, but it comes with societal harms [11]. As a result, people feel scared and do not always reveal or seek help when they are in need.

Due to the Covid-19, the majority of the higher institution needs to stop operating as well as the UUM Counselling Centre. Currently, UUM Counselling Centre is conducting

psychological tests through pen and paper tests as shown in Fig. 1.

Nama : _____ Tarikh : _____

SARINGAN STATUS KESIHATAN MENTAL 20 (SSKM 20)

Untuk setiap soalnya yang berikut sila pilih satu jawapan yang mengambarkan pengalaman atau perasaan anda dengan paling tepat dan tandakan (%) di dalam kotak yang disediakan.

Di dalam tempoh satu bulan yang lepas pernahkah anda mempunyai pengalaman atau perasaan yang berikut:

Soalan	0 Tiada	1 Kadang- kadang	2 Kerap	3 Sentiasa
1. Sedih (atau susah hati)				
2. Mudah marah				
3. Tidak minat bercakap				
4. Kerap terjaga dari tidur				
5. Sakit-sakit badan/sendi				
6. Hilang minat pada perkara yang biasa diminati				
7. Menangis atau rasa hendak menangis				
8. Rasa sunyi				
9. Takut terhadap sesuatu objek atau keadaan				
10. Badan lemah, lesu atau tidak bertenaga				
11. Tidak suka bercampur dengan orang lain (menyendiri)				
12. Perasaan ingin mati				
13. Kurang daya ingatan atau mudah terlupe				
14. Otot tegang				
15. Keyakinan pada diri sendiri yang berlebihan				
16. Buah fikiran yang pantas, seolah berlumba-lumba				
17. Kurang yakin pada diri sendiri				
18. Rasa tiada jalan keluar				
19. Perasaan terlalu seronok				
20. Susah hendak menyesuaikan diri dengan keadaan				
JUMLAH				

Fig. 1. An Example of One of the Psychological Tests.

According to a senior psychology officer at UUM Counselling Centre, this method of conducting psychological tests is not efficient and a lot of times are needed just to conduct one test. This is because the client of UUM Counselling Centre needs to manually calculate the test result which required a lot of time to do so. Not only that, the test results would be kept manually in the files storage rooms which results in the test result might be lost and unretrieved. Moreover, this method is also not environmentally friendly as they need a lot of paper to print the psychological tests questions. It is because, to make one ton of paper, twelve trees, 540,000 gallons of water, and a variety of chemicals are required [12]. It means that this method is not environmentally friendly and it needs to be changed.

However, the method of conducting online psychological tests is not been widely discussed by the previous researchers. Therefore, only a few data can be collected to make a comparison between the two psychological tests method. Another method of conducting psychological tests is by using a mobile device as a platform for conducting psychological tests. Conducting psychological tests personally on mobile devices allows people to replay the tests as many times as needed. Not only that but they will also be received immediate feedback after conducting the tests [13]. Moreover, people with limitations such as handicapped and hard to moving from one place to another can easily use the system without worrying to

travel to the specific places just to conduct the psychological tests. SPKP is also good in terms of allowing users to conduct psychological tests multiple times. It is also can help students and staff in saving money and saving time where they no longer need to travel to UUM Counselling Centre just to conduct the psychological tests. Moreover, they can get the test results immediately after done answering the psychological tests questions. It shows that any method of psychological tests when being conducted online or computerized-based platform, will help in efficiency, flexibility, mobility, saving money, and saving time.

The future outcome of the mental health technology revolution depends on accelerating innovation and enhancing the path to adoption by challenging the normal ways of thinking [14]. The emergence of digital devices such as computer, tablets, and laptop has shed light on a more flexible and easier way of conducting psychological tests. A web-based psychological test is a new method that is going to be implemented by UUM Counselling Centre. This method is not only more efficient in a matter of time but also environmentally friendly. This means that by using this method people can also help to save the world from tree cutting and global warming. Therefore, there is a need for research and development of a web-based application for conducting psychological tests that could minimize the effort and time, especially for people who are afraid of seeking counselor help for their mental health. The study presented in this paper aims at designing and developing a web-based application that could help the users in conducting and managing psychological tests.

III. METHODOLOGY OF THE STUDY

The methodology of development for this paper is Waterfall Model. The rationale why creates this paper using the Waterfall Model is because to relies on paper documentation, like technical specifications to define the scope of work clearly before it is started. Furthermore, the use of Waterfall Model is for ensuring that Counselling Centre deliverable meets expectations. Besides that, the Waterfall Model methodology has been chosen as a methodology to complete the system because it contains planning, analyzing, designing, implementation, testing, and maintenance as illustrated in Fig. 2. This system uses waterfall model as the methodology because this model works well for smaller papers where requirements are very well understood and phases are processed and completed one at a time [15].

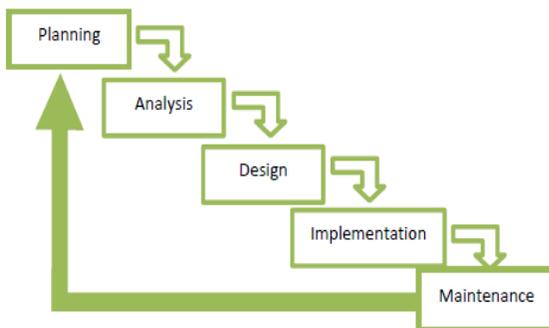


Fig. 2. The Phase of Waterfall Model [14].

- **Planning:** In the preliminary stage, planning begins with asking about problems that occur at the Counselling Centre. Student collects information about the new system that wanted to be developed by discussing with counselor and Counselling Centre's director. From the results of the discussion, student learn about what problems occur and face by Counselling Centre and to find solution to that problems. The goal of planning is to facilitate this system to be built smoothly. Therefore, the output in first phase is the problems faced by the Counselling Centre will be detected.
- **Analysis:** Students perform analysis by finding related work with the system to have more information about the current system by making a research at google scholar, to collect more info about similar system that related with SPKP more deeply to gather information and finalizing requirements with supervisor. It requires documentation time for paper technical proposals that need to be prepared. From there it must need to contact the client to ask what the client wants in the system. The output that will be gained from the analysis is student will be able to finalize system requirements and understand what the client wants in the system.
- **Design:** When requirements are known, a preliminary design or quick design for SPKP will be created. It is not a detailed design and includes only the important aspects of the system. Student will develop a prototype design which is low-fidelity prototype for a system to present for teachers and client. The output for design is to develop low-fidelity prototype for counselor to make sure they know how the system is going to function.
- **Implementation:** Student will implement it for the last time before officially present to the counselor and Counselling Centre's director. Lastly, all the related documents and final reports are then completed and submitted to the supervisor and the lecturer. The output that will be gained in implementation is the documents already completed and submitted to the supervisor and the lecturer.
- **Testing:** The paper development included software testing and user testing. A software testing is tested by the student intend to find syntax and logic error. The syntax and logic error on the system will be corrected and rebuild, this process ends until the system is robust. Then, the client can test the system in terms to evaluate usability, functionality, performance, and satisfaction. The evaluation result of the user testing recorded for future improvement and enhancement. The output that will get is the system must be tested until success in terms of usability, functionality, performance, and satisfaction.
- **Maintenance:** For the purpose of this paper, this maintenance phase will not be implemented. The software is operated to stay effective and relevant. It will be made to the initial software in order that will remains a workable solution that is free from bugs. The

output is the system must always be in a good condition without any failure, security system must be updated from time to time, ensuring high system quality and ease clients to key-in data and get their psychological report.

IV. DESIGN AND DEVELOPMENT OF SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI

This section describes the design and development of a web-based application for conducting and managing psychological tests. This section is divided into two sub-sections; (1) the requirements of the web-based application for conducting and managing psychological tests and (2) the prototype development of SPKP.

The Requirements of Sistem Profil Kesejahteraan Psikologi as followed:

A requirement gathering process was carried out using two methods that are interviewing UUM Counselling Centre's counselor and analyzing documents and web-based applications from the Internet that are related to psychological tests. The counselor was asked fewer questions primarily on the feature of the future developed web-based application of psychological tests. The example of the questions is, what are the characteristics of a web-based application of psychological tests that you would like to have, how would the interface design look like, and what are the things that you would like to put in the web-based application. The opinion was recorded, and the requirements were elicited.

For the secondary requirements gathering process, the documents were searched using Google Scholar by providing keywords primarily "psychological test", "mental health", "depression and anxiety", "digital world" and "global warming". The documents were analyzed to elicit the requirements for a web-based application that can conduct and manage psychological tests. Table I lists the requirements and their priority produced from the requirements gathering process. The requirements include new user registration, login to the system, answer submission, report viewing, and report managing.

The requirements presented in Table I were translated into the computer system functionality. The next process is visualizing and modelling the requirements of the web-based application using the appropriate modelling method and tools. In this work, the Unified Modelling Language (UML) was used to visualize and model the requirements. The models used in this work are two behavioral diagrams namely use case and activity diagrams, and a class diagram that represents the structural components of the app. Fig. 3 illustrates the use case diagram and the communications between the use cases and the actor for a web-based application that can be used conduct and manage psychological tests.

TABLE I. LIST OF REQUIREMENTS FOR CONDUCTING AND MANAGING PSYCHOLOGICAL TESTS

ID	Requirements Description	Priority
1	Register	
1.1	A new user must register before login to the system	Mandatory
1.2	System must display a page that allow user to key in their details: a) Name b) Role c) Email d) Password e) Confirm Password	Mandatory
1.3	The system must save all the information submitted by the user	Mandatory
1.4	User can cancel their registration by clicking the "Return to login" button if they want to	Optional
2	Login	
2.1	User must login into SPKP system by key in their email and password	Mandatory
2.2	If user entered incorrect email or password, the system will alert user with error message	Mandatory
2.3	If user forget his/her email or password, the user can click "forget password" button to reset it	Desirable
2.4	User can cancel their log in if they want to	Optional
3	Submit answer	
3.1	System must display a page that allow user to answer three psychological test questions	Mandatory
3.2	The system must save all the submitted answers	Mandatory
3.3	User can edit the answers before submit the answers if they want to	Optional
3.4	Once answers submitted, user can no longer edit the answers	Mandatory
4	View report	
4.1	The system should allow user to view their report result	Mandatory
4.2	User able to print the report result	Mandatory
5	Manage report	
5.1	The system must allow counsellor to view the report result	Mandatory
5.2	The system provide function for the counsellor to search for the specific client's report	Desirable
5.3	The system must allow counsellor to print the report results	Mandatory
5.4	The system should process all submitted answers and come out with the psychological test report results	Mandatory

The structural components of a web-based application for conducting and managing psychological tests are represented in a class diagram as illustrated in Fig. 4. The class diagram in Fig. 4 shows the attributes and operations of the web-based application.

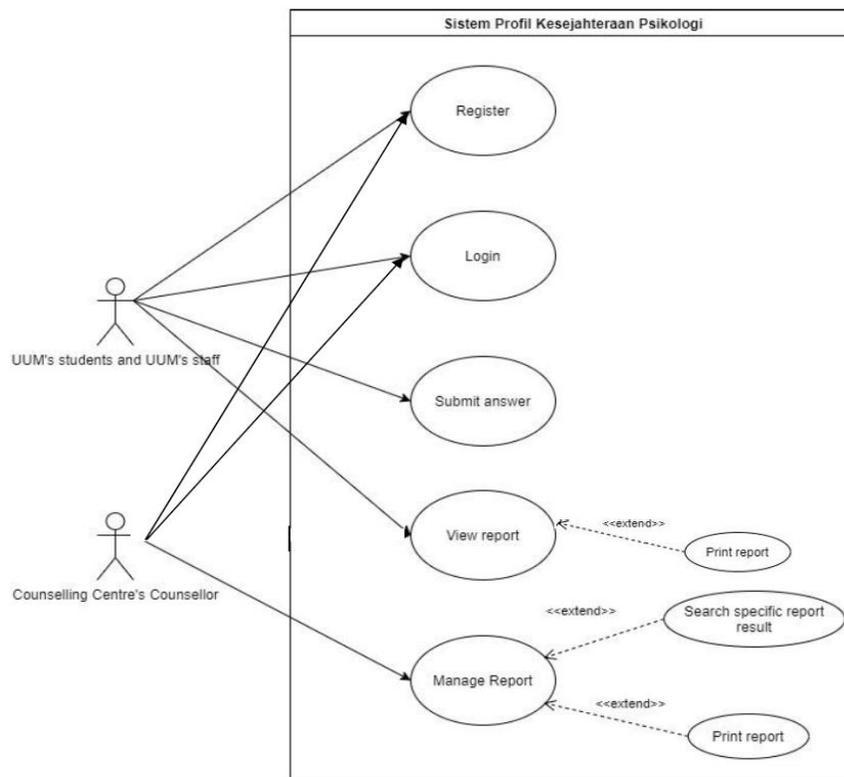


Fig. 3. The use Case Diagram of a Web-based Application for Conducting and Managing Psychological Tests.

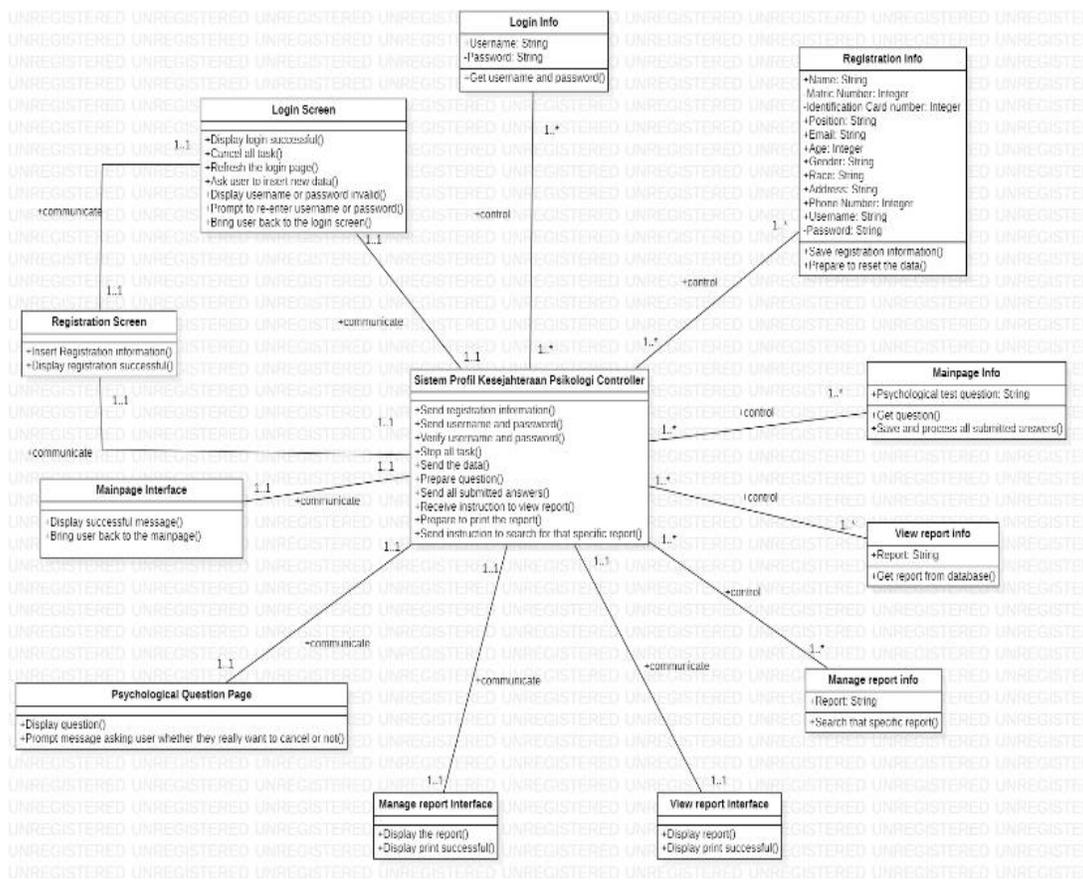


Fig. 4. The Class Diagram of a Web-based Application for Conducting and Managing Psychological Tests.

V. THE SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI PROTOTYPE DEVELOPMENT

A prototype of a web-based application for managing mental health named SPKP was developed. It represents the requirements explained in the previous subsection. Software prototyping is a standard way of demonstrating the software requirements so that further comments and suggestions could be obtained from the users based on their experience in interacting with the prototype. The Visual Studio Code was used as the main platform to write the code for this system. Further, XAMPP was used to create the web server and phpMyAdmin as the database for the system. Print screen in Fig. 5 to 13 shows the selected interface of SPKP.

Fig. 5 interface shows the landing page of the system. This is the first interface user will see once they get into the system. This interface consists of four buttons on the left side which is the homepage or the landing page, about us, our counselor, and the login button. The about us button will bring the user to a new section where it will show information about what the counseling center does and its vision and mission. Our counselor button will list all counseling center's staff names, phone numbers, positions, and pictures. The last button is the login button for the user to log in to the system. The interface design is simple and easy for users to understand how to use it. There is no random button on the interface which might cause users to feel uncomfortable using the system.

Fig. 6 shows the login page of the system where users need to key in their email and password. Before login, the user needs to register first by clicking the register now hyperlink. If user forgot their password, they can reset the password back by clicking the click here hyperlink. The hyperlink is in the blue color so that users can easily see it and to make sure that users do not accidentally click it while using the system. The login button is in a red color box with white text so that it will enhance the button's look while the background color is black. This design will help users to recognize the button and know that the button is for login even without reading the text on it.

Fig. 7 shows the registration page of the system. Users need to register into the system by keying in their details such as name, matric no/ staff no, phone no, email address, and password. The interface design of the registration page is similar to the login page to keep the consistent look of the design. Hence, the design will not confuse the user whether the system is the same system or a different system if the interface design keeps on changing. All user needs to register or else they are not allowed to access the system.

Fig. 8 shows the main page of the system by user view. This interface can only be viewed by the students and the staff. The background layout is in pastel color to keep a calm atmosphere for the user while using the system. The interface has three columns representing three psychological tests modules which are the SSOSH test in a blue column, the SSKM test in a green column, and the D.A.S.S test in a red column. The reason why each column is in a different color is to differentiate between the modules. It means that regular users can easily recognize which column is for what psychological tests. Users can choose to answer which modules

to get the psychological test results. On the left side of the interface, there are three options in white text in a grey color layout which are home, report, and profile. Once the user finished answering the psychological tests questions, the user can view the results and the history of the results of the previous tests by clicking the report button. User also can edit their details such as passwords by clicking the profile button. The reason why the grey layout is on the left side is to put a systematic look at the interface.



Fig. 5. The Landing Page of the System.

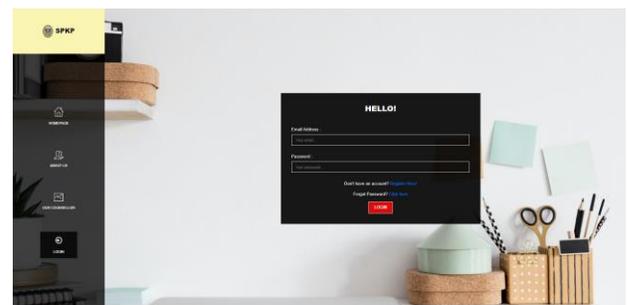


Fig. 6. The Login Page of the System.

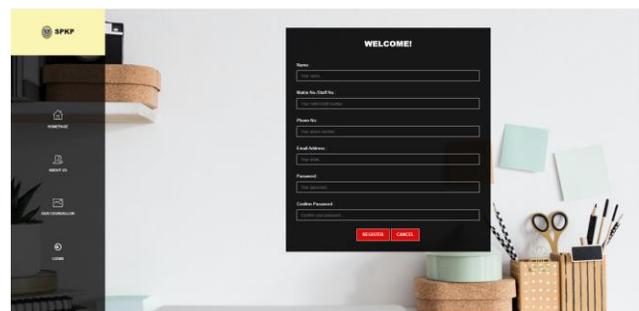


Fig. 7. The Registration Page of the System.

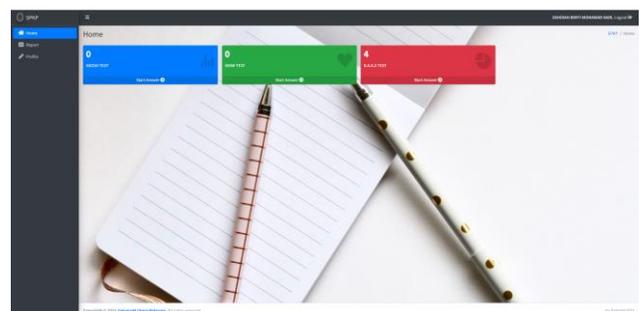


Fig. 8. The User Mainpage of the System.

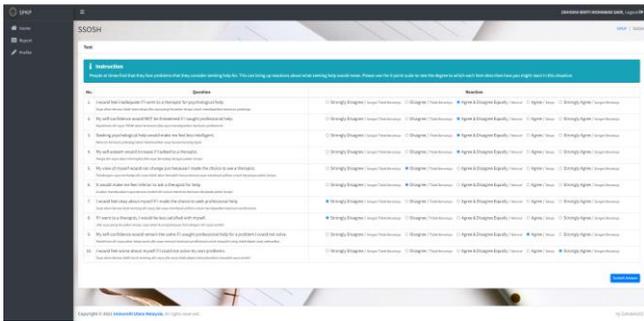


Fig. 9. The Interface for SSOSH Psychological Test Question.

Fig. 9 shows the interface of one of the psychological tests question which is the SSOSH test. This test consists of 10 questions. The questions are aligned in a box to create a systematic and nice look whereas the user can easily see all questions at once. The user does not need to click the next button just to see the next question. All question is compulsory to be answered or else the user cannot click the submit answer button. The reasons are to make sure the result that they will get is reliable and correct.

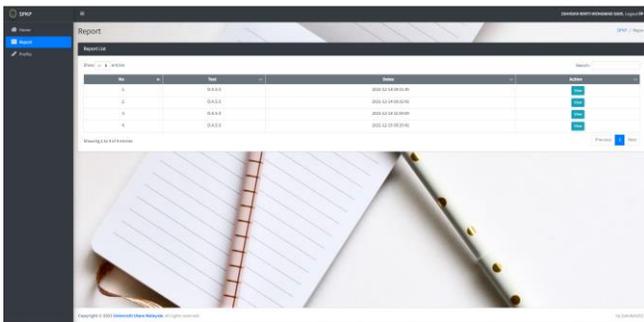


Fig. 10. The Interface for Psychological Test Report Result. (User).

Fig. 10 shows the interface of the test report result. The interface will list down all report results history. Not only that, but the user also can search for the specific report results by inserting particular report results keywords in the search box at the top right of the interface. The search box is at the top right so that users can easily see it.

Fig. 11 shows the main page of the system from the counselor's view. This interface consists of four columns which are the SSOSH test result in a blue column, the SSKM test result in a green column, the D.A.S.S test result in a red column, and user registration in a yellow column. Three columns are just the same as the user view side, only that there are no questions in it but instead there are report results of psychological tests of the users. The user registration column which is the yellow column, that column consists of a list of all registered user info such as their name and registration date. The interface design between the users and counselor view is not that different to keep the consistent looks and image of the system.

Fig. 12 and Fig. 13 show the interface for psychological test results from the counselor's view. The counselor can view all report results of all users by clicking the report button. The counselor also can search for the specific report results of the user by inserting the name or matric no/ staff no of the user in

the search box at the top right of the interface. The counselor can also print out the report result by clicking the view button which is in turquoise color and then clicking the print button which is in blue color.

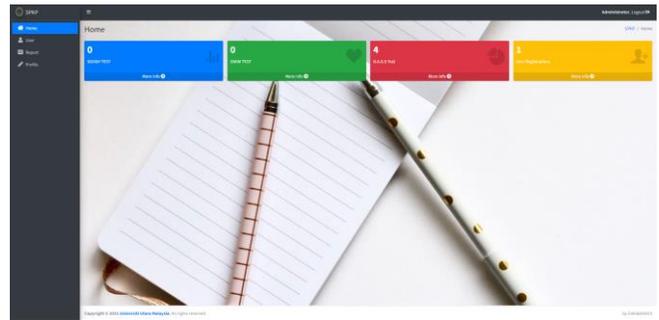


Fig. 11. The Mainpage of the System. (Counselor).

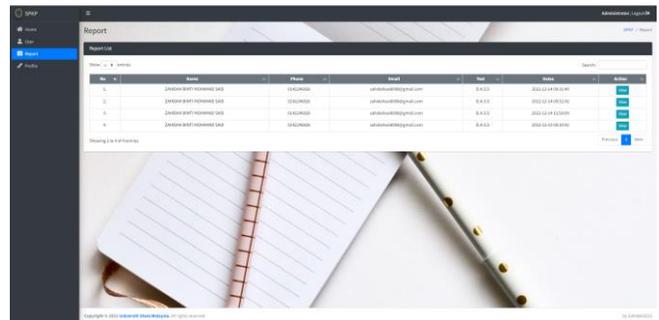


Fig. 12. The Interface for Psychological Test Report Result. (Counselor).

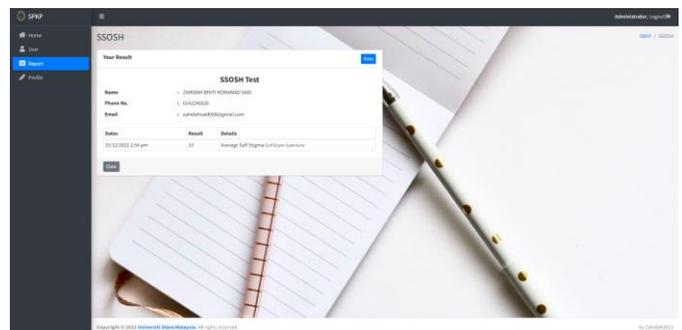


Fig. 13. The Interface for Psychological Test Report Results Print Section. (Counselor).

VI. EVALUATION OF SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI

A. The Evaluation Setting

A usability evaluation was conducted on 30 respondents, consisting of students from Universiti Utara Malaysia. The respondents were approached randomly by sending out the Google form consisting of the questionnaire through WhatsApp. However, the respondents can choose to answer or ignore the questionnaire as there is no coercion. The instruments used for the evaluation were the SPKP web-based application and post-task questionnaire. The post-task questionnaire was adapted from [16] which consists of 33 items in four sections. Section A asked the respondents' demographic information while Section B, C, and D asked the

respondent's opinions about SPKP web-based application on a five-point Likert scale where one represents strongly disagree, and five represents strongly agree. The respondents performed the following step-by-step procedure for the evaluation: (1) read and signed a consent form, (2) interacted with SPKP web-based application as stated in the experiment procedure, and (3) answered the post-task questionnaire.

B. The Respondents' Demographic Information

Analysis of the respondents' demographic information revealed that 70% of them were female and 30% of them were male. 86.7% of them were aged between 21 to 25 years old, 10% of them were 26 to 35 years old and 1% of them were 16 to 20 years old. It is also revealed that 83.3% of them once did

the psychological tests while the remaining 16.7% have never done it before.

C. The Usability of Sistem Profil Kesejahteraan Psikologi

An analysis was conducted on the respondents' responses in Sections B, C, and D of the post-task questionnaire. The section measures the respondents' perception of SPKP's usefulness and ease of use. It also measured the respondents' satisfaction with SPKP. Tables II, III, and IV reported the frequency and average of the responses. The respondents rated four or five of the post-task scales for the three aspects of usability. None of the respondents rated one or two. Only a few rated neutral.

TABLE II. THE RESPONDENTS' RESPONSE ON THE USEFULNESS OF SYSTEM PROFILE KESEJAHTERAAN PSIKOLOGI

The post-task questionnaire items:	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Average
SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI enhances my effectiveness on managing my mental health condition	0 (0%)	0 (0%)	0 (0%)	2 (6.7%)	28 (93.3%)	4.93
I can register an account in SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI without any error	0 (0%)	0 (0%)	0 (0%)	3 (10%)	27 (90%)	4.90
I can login the system with registered email and password	0 (0%)	0 (0%)	1 (3.3%)	11 (36.7%)	18 (60%)	4.57
The search button can function well	0 (0%)	0 (0%)	0 (0%)	10 (33.3%)	20 (66.7%)	4.67
I can answer all psychological test without any problem	0 (0%)	0 (0%)	2 (6.7%)	7 (23.3%)	21 (70%)	4.63
The report result that I got after answering all psychological test question are as expected	0 (0%)	0 (0%)	1 (3.3%)	8 (26.7%)	21 (70%)	4.67
It saves my time when I use this system to manage my mental health condition	0 (0%)	0 (0%)	1 (3.3%)	8 (26.7%)	21 (70%)	4.67
SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI meets my needs	0 (0%)	0 (0%)	1 (3.3%)	9 (30%)	20 (66.7%)	4.63
SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI is useful in overall	0 (0%)	0 (0%)	0 (0%)	6 (20%)	24 (80%)	4.80

TABLE III. THE RESPONDENTS' RESPONSE ON THE EASE OF USE OF SYSTEM PROFILE KESEJAHTERAAN PSIKOLOGI

The post-task questionnaire items:	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Average
SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI is easy to use	0 (0%)	0 (0%)	0 (0%)	5 (16.7%)	25 (83.3%)	4.83
SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI is user friendly	0 (0%)	0 (0%)	0 (0%)	8 (26.7%)	22 (73.3%)	4.73
SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI is flexible	0 (0%)	0 (0%)	0 (0%)	12 (40%)	18 (60%)	4.60
SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI is easy to learn how to use it	0 (0%)	0 (0%)	1 (3.3%)	3 (10%)	26 (86.7%)	4.83
I can use SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI without written instruction	0 (0%)	0 (0%)	0 (0%)	7 (23.3%)	23 (76.7%)	4.77
I can easily remember how to use SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI	0 (0%)	0 (0%)	1 (3.3%)	2 (6.7%)	27 (90%)	4.87
I didn't notice any inconsistencies as I use SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI	0 (0%)	0 (0%)	0 (0%)	10 (33.3%)	20 (66.7%)	4.67
My interaction with the system would be clear and understandable	0 (0%)	0 (0%)	0 (0%)	9 (30%)	21 (70%)	4.70
I can use SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI successfully every time	0 (0%)	0 (0%)	0 (0%)	7 (23.3%)	23 (76.7%)	4.77

TABLE IV. THE RESPONDENTS' RESPONSE ON THEIR SATISFACTION OF SYSTEM PROFILE KESEJAHTERAAN PSIKOLOGI

The post-task questionnaire items:	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Average
I am satisfied with SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI	0 (0%)	0 (0%)	1 (3.3%)	3 (10%)	26 (86.7%)	4.83
I would recommend SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI to my friends	0 (0%)	0 (0%)	0 (0%)	7 (23.3%)	23 (76.7%)	4.77
SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI works the way I want it to work	0 (0%)	0 (0%)	1 (3.3%)	8 (26.7%)	21 (70%)	4.67
I feel I need to have SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI account in my PC/ Laptop	0 (0%)	0 (0%)	3 (10%)	8 (26.7%)	19 (63.3%)	4.53
SISTEM PROFIL KESEJAHTERAAN PSIKOLOGI is wonderful and pleasant to use	0 (0%)	0 (0%)	0 (0%)	7 (23.3%)	23 (76.7%)	4.77

The outcomes of the evaluation suggested that SPKP is useful and easy to use. Further, 86.7% of the respondents responded that they satisfied with the SPKP. 10% of them agree while 1% choose neutral. Analysis of the respondents' feedback about the specific features offered by SPKP shows that most of the respondents agree that the registration, login, search, and buttons were straightforward and useful with 80% of the respondents strongly agree with the statement that SPKP is useful in overall. Meanwhile, 20% of the respondents choose to agree with the statement. They also perceived that SPKP could help them in save their time in managing their mental health with 70% of the respondents strongly agree while 26.7% agree with the statement. However, there is 3.3% of the respondents unsure about the question. In terms of the user interface, the respondents reported that SPKP was easy to use without the need for written instruction and they can easily remember the way of using the web-based application system with 76.7% and 90% of the respondents respectively choose to strongly agree with the statements. Further, the respondents satisfied with the appearance of the web-based application and intended to recommend the web-based application to other.

VII. DISCUSSION

It has been agreed that the advantages of SPKP are widely acknowledged by UUM students. According to the result that we get from the questionnaire conducted among UUM students, it shows that majority of the students agree that SPKP is useful and easy to use compared to the current method where the students need to go physically to the UUM Counselling Centre just to get their mental health tested. This current method is not efficient and consumes a lot of money and time. As we know, the majority of the students do not have any income and some of them were busy with study life. Hence, most of them tend to ignore any mental health problems like depression and stress. By the time they realize they need help, it was too late. According to a series of researches, suicidal people do not always identify that they have an issue or symptoms that could benefit from expert help. According to a poll of 165 college students at high risk of suicide who had not sought professional help, 66% of these students believed that counseling was unnecessary [17]. Therefore, there is a need for a new method that will benefit them in terms of managing their mental health condition.

Overall, among 30 respondents 80% of them agree that SPKP is useful overall in managing their mental health

conditions. This finding was conducted during the Covid-19 pandemic whereby the majority of the students and the staff were staying at home. Thus, conducting psychological tests physically at UUM Counselling Centre is impossible. By developing the system, they no longer need to worry about the Covid-19 pandemic whereby they can easily conduct their psychological tests tested anywhere and anytime they want. This system provides flexibility to them.

In order to attract user attention to using the system, the interface design of the system must need to be attractive, simple, and easy to use. A well-designed user interface can reduce training time, performance speed, error rates, user satisfaction, and the user's long-term retention of operations knowledge [18]. Based on the questionnaire conducted, 86% of the respondents stated that they feel satisfied with the system. However, there are some limitations to be considered while analyzing the study results. First, the sampling technique is only restricted to people with laptops or personal computers only as the system is a web-based application. Second, the research topic itself is not widely discussed and there are only a few related researches that can be used for this paper. Lastly, time is also one of the limitations faced while conducting this research.

Despite the limitations, this study provides the data of a web-based application system for managing mental health in higher institutions for future research. Questionnaires have been found as an effective way of assessing problems related to mental health and this becomes a method of conducting research during the Covid-19 pandemic. Results will make researchers be able to make decisions on what number of rating scale points to use for their survey and questionnaire [19]. Thus, the result of the questionnaire can be used for future research.

However, there is a need for improvements in certain areas such as the web-based application can be changed to a mobile application. Thus, there will be more people to receive the benefits of the system. It is because not every student is coming from a well-off family, so there are a few of them who cannot afford in buying a laptop or personal computer and only depends on a mobile phone. They couldn't afford a laptop, in part because they thought they'd used up all of their lending alternatives and, in part, because they didn't want to take out additional debt [20]. Hence, improving the web-based to the mobile applications can be a good idea.

VIII. CONCLUSION AND FUTURE WORK

This paper described the design and development of a web-based application for conducting and managing psychological tests. In the end, the SPKP system is able to be developed, and hope that the system can really perform the work that it is supposed to do such as collecting, storing, retrieving, and calculating the result of the psychological tests for the UUM Counselling Centre. There are many aspects of psychological tests that can be studied. However, there are a few limitations while conducting this research where there is limited access to the data and there are also only a few previous research studies on the topic. Time is also one of the limitations we faced while conducting this research. In the future, we plan to expand the functionality of SPKP by making it available as a mobile application. Past studies suggested that psychological tests are a method conducted to know someone's mental health condition. However, some issues mentioned in the paper show that there is a need for improvement in a specific area so that the psychological tests can be conducted with ease. We also plan on making the web-based application responsive on multiple interfaces so that it will enhance user satisfaction when using the web-based application. It could also be extended into a recommender system which could suggest the counselor that is available at the moment in case the clients need further intervention without the need on making the appointment first.

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