Android-Based Framework for Increasing Marriage Satisfaction based on Psychological Aspects

Widodo Budiharto[a], Pingkan C.B Rumondor[b], Meiliana[a], Ferdianto[a]
[a]School of Computer Science, Bina Nusantara University, Jakarta
[b]Psychology Department, Bina Nusantara University, Jakarta
Indonesia
wbudiharto@binus.edu

Abstract—**This paper presents the development of Android-based framework for improving marriage satisfaction without having to spend time and money for the marriage counselor. Classic research in psychology found that stability of marriage is based on the ability to create and maintain a positive interaction ratio 5 times more than negative interactions. Based on that, we propose a method to record information of daily positive behaviors (joking, showing affection) of couples that using our application. We propose a method where the apps can determine users' marital satisfaction level and also can help the users to increasing their marriage satisfaction based on the assessment of the results of questionnaire and the assessment of user's behaviors to their partners using fuzzy logic. The experimental results are presented and shown the application is running well on mobile devices based on Android platform.**

Keywords-component; fuzzy logic, marriage apps, android

I. INTRODUCTION

In this modern age, every person really needs actualization in his/her life, especially in work. This causes the young couple to spend much time to work hardly. Some couples can maintain harmony of their household and marriage, but some couples end with divorce. In order to prevent the emergence of marriage problem, each individual should do the self-introspection. But unfortunately, many couples couldn't do the self-introspection and evaluate their marriage condition.

Duval and Miller [1] define that marriage is a relationship between a man and a woman are socially acceptable and allow for a sexual relationship, parenting children with legal and division of labor between the pair. Unfortunately, many couples who cannot maintain the integrity of their household. The problem frequently encountered in the household is bad communication and misunderstandings (miss-communication). Finding a solution to fix the marriage relationship was sometimes requires third parties, such as parents, relatives, or marriage counselor.

Some factors that may predict marital satisfaction were summarized from Lauer & Lauer [2] such as age, time for dating, equity and readiness for marriage. Many couples who do not have the time to consult with experts, or sometimes their parents or friends tends to suggest divorce rather than fix the relation.

Classic research from Gottman and Levenson [3] found that stability of the marriage is based on the ability to create and maintain a positive interaction ratio 5 times more than negative interactions. Furthermore, Gottman and Driver [4] found that the couple could feel the satisfaction of their marriage in simple way, which is through some moments/things that generally considered as unimportant, such as joking and showing affection. These simple moments are very important for the healthy and stability of marital relationship. It can strengthen the intimacy of couple and become a strong foundation in marriage. By having a strong foundation, then the couple can be more prudent in dealing with problems.

Based on that, we interested to develop the system to increase marriage satisfactions based on positive interactions from couples.

II. ARCHITECTURE AND PROPOSED MODEL

A. Architecture of System

Android is an open source and Linux-based Operating System for mobile devices such as smart phones and tablet computers. Android was developed by the Open Handset Alliance, led by Google, and other companies. Android offers a unified approach to application development for mobile devices which means developers need only develop for Android, and their applications should be able to run on different devices powered by Android. Android operating system is a stack of software components which is roughly

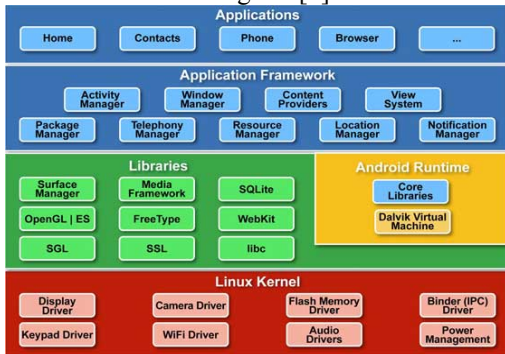divided into five sections and four main layers as shown below in the architecture diagram [5].

Figure 1. Android architecture diagram

At the bottom of the layers is Linux - Linux 2.6 with approximately 115 patches. This provides basic system functionality like process management, memory management, device management like camera, keypad, display etc. Also, the kernel handles all the things that Linux is really good at such as networking and a vast array of device drivers, which take the pain out of interfacing to peripheral hardware.

This system provides a survey for user to obtain their level of marriage satisfaction. Then the system explains the user about their marriage condition, also provides some advices and motivations to the user. If user agree to continue using this system, then the system gives them some tasks, articles in order to increasing their marriage satisfaction. In addition, the system ask user to fill their interaction with their partner everyday in order to recognize how well their marriage interaction. In few days, the system will provide a survey again to compare their first score and their new score in order to recognize that their level of marriage satisfaction is increasing, decreasing, or not changing. Data of user in securely save to web service using PHP and MySql. We develop an interactive application based on Java Platform[6][7]. Figure 2 below is a communication model based on web services that shows architecture of our application for marriage satisfaction.
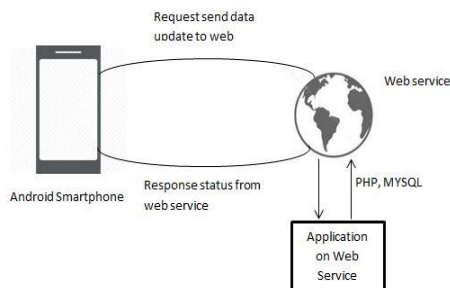

Figure 2. Architecture of the application for marital satisfaction

In the feature phone and smart phone era, we can obtain anything from our mobile phone [8]. We design a user interface where user can make activities in this system:

1. Take the Survey. User can take the survey to know their level of marriage satisfaction.
2. Fill Activity. User can fill their activity that they have done with their partner. When user is filling the activity, the system give some suggestion activities, which are already saved in database, so if the activity that user want to fill has been saved in the database, user can choose the suggestion activity. This activity means the interaction with their partner.
3. Add New Activity. If the activity that user want to fill hasn't saved in system's database, so user can add new activity to be saved in the database.
4. Complete the Task. The system provides some tasks for user in order to increasing their interaction/activity with their partner. After user does the task, use can change that task status to be completed.
5. Read the Article. User can read some article about increasing marital satisfaction that the system has been provided.
6. Turn on/off the Sound. User can turn on/off the sound in the system.

We design a use case diagram based on Whitten [9]. Figure below is a use case diagram from our application called Counselove that consists of Take the survey, Fill Activity, Add New Activity, Complete the Task, Read the Article and Turn on /off the Sound.
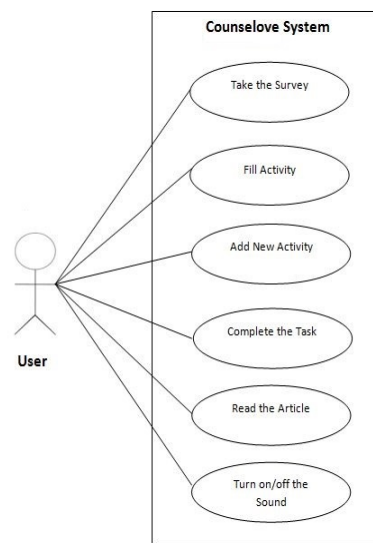

Figure 3. Usecase diagram of the Counselove systems

B. Design of Fuzzy Logic for the System

A fuzzy logic approach is used to construct the marriage satisfaction model. The membership functions are based on the theories in Psychology. For example, we can measure how satisfied a couple in communication, balance of roles, agreement, openness, intimacy, social intimacy in relationships, sexuality, financial, spirituals shown in figure 4 to 10, to make a measurement the quality of their marriage satisfaction:
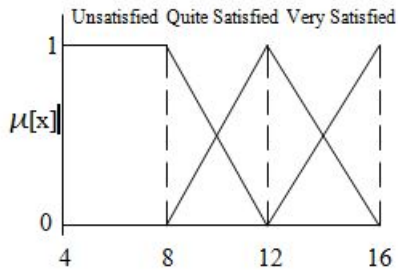

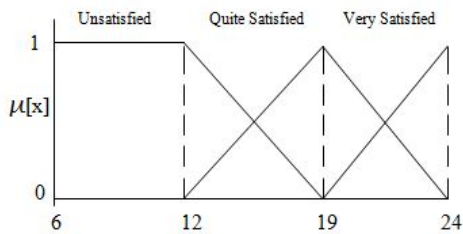Figure 4. Fuzzy Logic of Communication
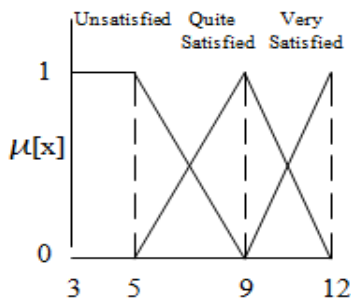

Figure 5. Fuzzy logic of Balance of Roles

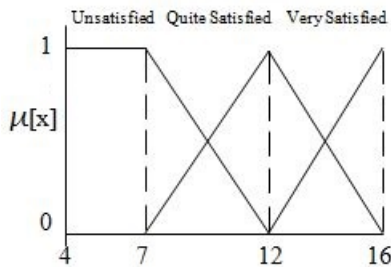Figure 6. Fuzzy logic of Openness

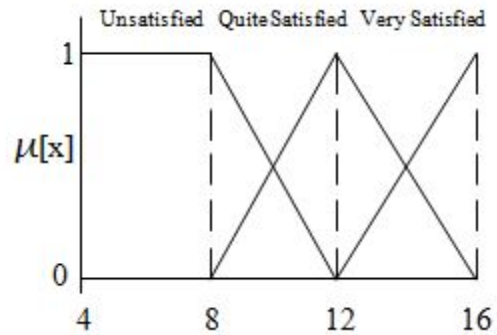Figure 7. Fuzzy logic of Intimacy

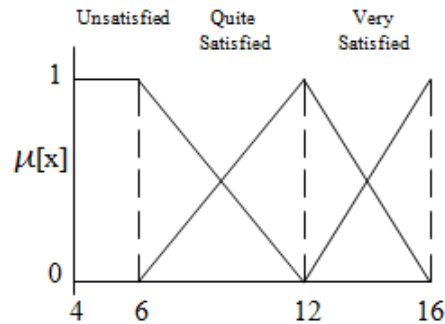Figure 8. Fuzzy logic of Social Intimacy in Relationships
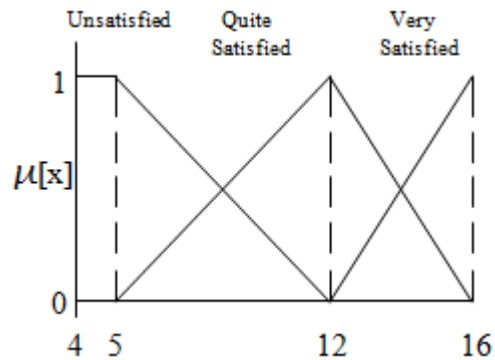

Figure 9. Fuzzy logic of Sexuality

Figure 10. Fuzzy logic of Financial

Based on the fuzzy logic, we create 10 rules to determine how satisfied a couple with their marriage. These are some examples of the rules:

*If **communication** "very satisfied" and **balance of roles** "very satisfied" and **agreement** "very satisfied" and **openness** "very satisfied" and **intimacy** "very satisfied" and **social intimacy in relationships** "very satisfied" and **sexuality** "very satisfied" and **financial** "very satisfied" and **spiritual** "very satisfied" then*
 ***marriage satisfaction** is "very satisfied"*

*If **communication** "quite satisfied" and **balance of roles** "quite satisfied" and **agreement** "quite satisfied" and **openness** "quite satisfied" and **intimacy** "quite satisfied" and **social intimacy in relationships** "quite satisfied" and **sexuality** "quite satisfied" and **financial** "quite satisfied" and **spiritual** "quite satisfied" then*
    ***marriage satisfaction** is "quite satisfied"*

*If **communication** "unsatisfied" and **balance of roles** "unsatisfied" and **agreement** "unsatisfied" and **openness** "unsatisfied" and **intimacy** "unsatisfied" and **social intimacy in relationships** "unsatisfied" and **sexuality** "unsatisfied" and **financial** "unsatisfied" and **spiritual** "unsatisfied" then*
    ***marriage satisfaction** is "unsatisfied"*

C. Getting the Level of Marriage Satisfaction

Based on Karney and Bradbury [10], marital satisfaction is an evaluation of the relationship depends on the good or bad of adaptive processes in the couple, which is influenced by the enduring vulnerabilities and stressful events as shown in figure 11:
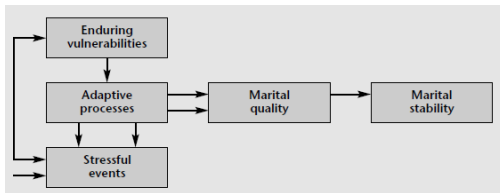

Figure 11. Vulnerability-Stress-Adaptation Model of Marriage [10]

Based on concept in figure 4, our system provides user a survey in order to get their level of marriage satisfaction. This survey is constructed for couples in Indonesia, especially urban area such as Jakarta. It is constructed based on the dimensions of the three marital satisfaction measurement, namely Dyadic Adjustment Scale [11], ENRICH marital satisfaction [12], and Marriage Satisfaction Questionnaire [13]. Researchers make some adjustments to the conditions of young adults aged couples that live in urban areas by interviewing four couples working in Jakarta. Interviews showed there were 9 dimensions in urban couples marital satisfaction. The questionnaire consists of 38 questions, which are divided to 9 dimensions [8][14].

1. Communication (4 items)
2. Balance of Roles (6 items)
3. Agreement (4 items)
4. Openness (3 items)
5. Intimacy (4 items)
6. Social Intimacy in Relationships (4 items)
7. Sexuality (4 items)
8. Financial (4 items)

9. Spiritual (5 items)

These dimensions are used to get where are the weaknesses and the strengths in the user's relationship with their partner. By knowing it, the system can give the appropriate advices and motivations to user.

There are 4 options to answer each question, which are "very satisfied" is 4 and "satisfied", its value is 3; "dissatisfied" is 2 and "very dissatisfied", its value is 1. Associated with given multiple choice answers for each question, so it can be summed the max and min score for each dimension:

TABLE 1. DIMENSIONS OF MARRIAGE SATISFACTION

Dimension	The Number of Questions	Min Score	Max Score
Communication	4	4	16
Balance of Roles	6	6	24
Agreement	4	4	16
Openness	3	3	12
Intimacy	4	4	16
Social Intimacy in Relationships	4	4	16
Sexuality	4	4	16
Financial	4	4	16
Spiritual	5	5	20

Then each value is summed, so the system will knowing is the user satisfied with his/her marriage or dissatisfied by total value from the survey. From the value, system will know, in which area the couple is satisfied the most and which they are less satisfied.

D. Increasing Marriage Satisfaction

Gottman and Driver [3] found that couples can feel the satisfaction of the marriage relationship through the simple expedient of the case / small moments that are generally not considered important, such as a joke or show affection. Simple moments like this are very important to the health and stability of marital relations. These moments can strengthen the intimacy couples, and became a strong foundation in a marriage relationship. By having a strong foundation, it can be a better partner in the face of conflict.

Therefore in this system is provided "Fill Activity" module, which is used to input user's activity (interaction) that they have done with their partner. Then the system recognizes whether the interaction is negative or positive. After that, the system calculates the ratio of the activities that user have filled. Is the ratio is 5 : 1 (positive : negative), or lower, or higher. If the ratio is lower than 5 : 1, then the system will give a warning to user, and give some tasks in order to increasing the ratio. The ratio **5 : 1** is equal to **5/6 * 100% = 83.3%**, so the *IF-THEN RULES* are:

IF {("positive activity" divided "total activity" times "100") is less than "83.3"} THEN give the warning

Aside from the warning, the apps also provide task that can increase positive behavior. Those tasks are simple task such as: smiling to your partner, tell a neutral joke to your partner, tell a happy experience to your partner, respond to your partner's story, say "thank you" and other simple daily activities.

III. EXPERIMENTAL RESULTS

Experiments of this system have been tested for getting level of marriage satisfaction of a person. Based on the experiment, the system runs very well with the capability to calculate the total value in the survey as shown in figure 12. This application can be download at Google Play [15]. We also have questioners to testing this application to young couples in Jakarta with about 100 responders between 20-40 years old.
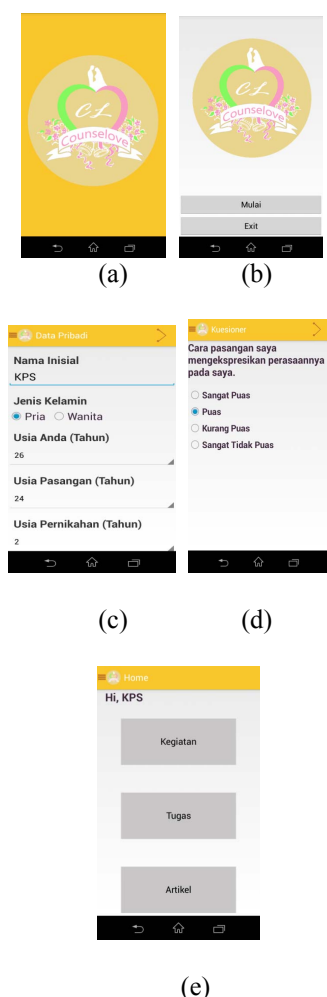

Figure 12. Result of simulation using Sony Xperia L (4.2.2 Jellybean), Splashscreen (a), welcome page for starting or exit from application (b), Personal Data form for the questionnaire (survey) (c), page of the questionnaire (d) main page for choosing fill activity, complete task, and read article (e).

IV. CONCLUSIONS

We learn how psychological aspects in marriage satisfaction. We successfully develop Android-Based application for increasing marriage satisfaction. This application can help users to determine the level of household harmony in their way that is easy, interactive, and interesting. This application can provide motivation and advice to the user in the life of the household. Based on the questioners, this application is really useful and interesting. For future work, we will store respondences activities in web server for advanced analysis.

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