Jurnal Keluarga Berencana
P-ISSN: 2527-3132 E-ISSN: 2503-3379
Vol. 10 No. 1 Tahun 2025
https://ejurnal.kemendukbangga.go.id/

SMART GENRE APPLICATION AND USER KNOWLEDGE ABOUT EARLY MARRIAGE

[1] Ira Fatmawati, [2] Anis Fuad
[1,2] Sultan Ageng Tirtayasa University, Sultan Ageng Tirtayasa University
University Email: 6670190102@untirta.ac.id

ABSTRACT
Smart GenRe (*Sistem Manajemen Aksi Remaja Terampil Generasi Berencana*) is a creativity development system for teenagers implemented by the GenRe Forum of Cilegon City. Early marriage in Cilegon City is the second highest in all cities in Banten Province, and adolescents' understanding of the maturity of marriage age is still limited. This study aims to determine the effectiveness of the Smart GenRe application in enhancing the knowledge of its users regarding early marriage in Cilegon City. This quantitative study was conducted from March to July 2024, involving 285 application users selected using the quota sampling technique. Data were collected through questionnaires and interviews. The results showed a significant effect of the Smart GenRe application on user knowledge about early marriage in Cilegon City, with a correlation coefficient of 0.986 and a significance value of 0.000 ($p < 0.05$). To further enhance adolescents' understanding and prevention of early marriage, it is recommended that DP3AP2KB Cilegon City routinely conduct counseling and educational outreach about the appropriate age of marriage. These efforts will help adolescents complete their education and achieve emotional and financial readiness before entering married life.

Keywords: Application Effectiveness; Cilegon City; Early Marriage; Smart GenRe.

INTRODUCTION

According to the Big Indonesian Dictionary (KBBI), marriage is a bond or contract based on legal and religious provisions. Meanwhile, marriage is a physical and spiritual union between a man and a woman, symbolizing their roles as husband and wife and serving as a foundation for building a harmonious family. (Ikhsanudin & Nurjanah, 2018). Another common name for this is "husband or wife." Since there are still many negative stigmas that arise in society regarding couples who marry before their age or even get pregnant outside of marriage, one way to appreciate the relationship between men and women is to consider the validity of a marriage. This underage coupling is often referred to as "early marriage." Early marriage is described as a union consummated before the legal marriage age, and it usually occurs among adolescent groups. Hurlock (2013) argues that adolescence is a particularly challenging phase compared to childhood and parenthood. (Rahmawati et al., 2019). Adolescents undergo a transitional phase in their development, characterized by changes in their physiology, emotional and psychological roles, and social interactions. According to the UNFPA, early marriage is carried out under 18 by both the bride and groom, or one of them. (Soleman & Elindawati, 2019).

Based on research conducted by the United Nations Children's Fund (UNICEF) in 2012, as many as 150 million children worldwide were married under 16 (Rahmawati et al., 2019). In 2015, as many as 142 million girls were married before their age (Muntamah et al., 2019). According to data obtained by UNICEF in 2018, around 4% of men and 21% of women were married under 18 (Soleman & Elindawati, 2019). Indonesia is one of the countries where early marriage is still rampant in various urban and rural areas. The reality in the field also shows that there are still many individuals who engage in underage marriage or early marriage.

Email Coresponding:
anis.fuad@untirta.ac.id
Article History
Received: 28-11-2024 Accepted: 30-06-2025
© 2024 The Author(s). This is an open-access article under Attribution-NonCommercial-ShareAlike 4.0 International License (https://creativecommons.org/licenses/by-nc-sa/4.0/)

Early marriage can occur due to various factors, including economic demands, low levels of education between the two partners, predetermined matchmaking, cultural value systems, and even free sex. (Widyastuti, 2022). In addition, a lack of knowledge or understanding of adolescents about reproductive health, a lack of knowledge about sex in married life, and a lack of supervision from parents can also trigger early marriage and teenage pregnancy.y (Ferusgel et al., 2022). Research conducted by Umairoh et al. (2019). The problem of early marriage was found to be quite high in Kubu Regency, West Kalimantan, with 535 cases reported. That is because many students still do not fully understand the maturity of the age of marriage. This phenomenon shares similarities with research conducted in the Ciayumajakuning area, West Java, which indicates a fairly high rate of early marriage (44.67%). The knowledge of adolescent girls about the age of marriage maturity at Cirebon 9th Junior High School is still minimal. The impact of early marriage on mental health, based on Walgito's book (2000), is anxiety and stress. Early marriage can also affect children's psychological health. (Mubasyaroh, 2016).

Cilegon City has the second-highest rate of early marriage among all cities in Banten Province, with a percentage of 27.26%. Marriage Law Number 16 of 2019 states that "the minimum age limit for marriage for men and women is 19 years."(Melati & Parwata, 2022). Meanwhile, the Population and Family Planning Agency (BKKBN) recommends that the ideal ages for marriage for women and men are 21 and 25 years, respectively. The reason is that the perfect age for marriage, psychologically and biologically, for women is 20-25 years and 25-30 years for men. (Widyastuti, 2022).

Seeing the phenomenon of early marriage in Cilegon City, the government and DP3AP2KB of Cilegon City created an innovation called Smart GenRe. The emergence of Smart GenRe Innovation is due to the large number of teenagers aged 10-24 years in Cilegon, totaling 110,054 people. This number is very large compared to the population of Cilegon, which is 437,205 people or around 25%. Second, there is a high rate of early marriage in Cilegon. Smart GenRe is a youth creativity development system that partners with the GenRe Forum of Cilegon City to create a creative space for youth to become more productive. Thus, the smart GenRe application is one of the new information alternatives for teenagers, so it is hoped that it can increase teenagers' knowledge and understanding of early marriage or the maturity of the age of marriage.

In this study, adolescent knowledge is conceptualized based on Notoatmodjo (1993) The framework encompasses six levels of knowledge: awareness, comprehension, application, analysis, synthesis, and evaluation. The study examines the impact of exposure to the Smart GenRe application on these domains, which reflect changes in adolescent knowledge and decision-making regarding marriage.

This study aims to determine the effectiveness of the smart GenRe application in enhancing the knowledge level of users regarding early marriage in Cilegon City. While numerous studies have investigated efforts to prevent early marriage in Indonesia, most focus on conventional counseling or school-based education. Research on digital interventions, especially mobile applications like Smart GenRe, remains scarce, particularly in Cilegon City, where early marriage prevalence is high. This research gap motivates the present study to evaluate the effectiveness of digital innovation in adolescent reproductive health education.

METHOD

The study was conducted from March to July 2024. Cilegon City was the site of the researcher's investigation. The VOSviewer visualization's findings, which indicated that few prior scholars had examined the issue of early marriage in Cilegon City, served as the basis for selecting this site. Thus, the researcher found a research gap regarding Cilegon City as a research locus for updates and new references related to studies on early marriage. In addition, Cilegon City has the second-highest early marriage rate among all cities in Banten Province, at 27.26%.

A bibliometric analysis was conducted in the initial stage to map research trends and identify gaps in the literature regarding digital health interventions for preventing early marriage. The VOSviewer software (version 1.6.19) was used to visualize bibliometric maps based on Scopus-indexed articles published between 2019 and 2024. Keywords such as "application effectiveness," "adolescent knowledge," "early marriage," and "Cilegon City" were used. Clustering results indicated that while "early marriage" and "adolescent knowledge" often appeared, digital application interventions, especially in Cilegon, were rarely studied. This supports the novelty of our research focus.

This study uses an explanatory quantitative research design with a cross-sectional approach, aiming to explain the relationship between the effectiveness of the Smart GenRe application and users' knowledge about early marriage in Cilegon City. Data collection and analysis were conducted between March and July 2024. This research employs a quantitative method, utilizing numerical data to answer research questions and test hypotheses. (Sugiyono, 2019a) The variables measured in this study were application effectiveness, as an independent variable, and application user knowledge, as a dependent variable. The population in this study was users of the Smart GenRe application in 2023, totaling 987 users. Meanwhile, the sample consisted of 285 respondents, calculated using the Slovin formula with a precision value of 5%. The sampling technique used is quota sampling. This non-probability sampling method selects a sample from a population based on specific criteria up to the required number (quota). (Sugiyono, 2019b) The samples taken by researchers were determined based on previously created criteria. The requirements are as follows: The sample consists of users of the smart GenRe application, including both males and females. The sample consists of students at the junior high and high school levels, as well as students actively involved in PIK-R in 7 schools and students residing in Cilegon City.

Then, data were collected through the distribution of questionnaires and interviews. This research questionnaire is in the form of closed statements. Meanwhile, interviews are conducted in a structured and unstructured manner, both directly and indirectly. The research questionnaire consisted of 36 statements distributed to 285 respondents. This research instrument employed a Likert scale consisting of four answer options: Strongly Disagree (1), Disagree (2), Agree (3), and Strongly Agree (4). Two theories were used to measure the research instrument: the Level of Knowledge Notoatmodjo (1993) and the Effectiveness of Information System Success Delone & McLean (2003). Six signs are included in both hypotheses. This study's data analysis strategy employs the Pearson Product-Moment approach with the correlation t-test.

All quantitative analyses (including normality testing with Kolmogorov–Smirnov and hypothesis testing using Pearson correlation and t-test) were conducted using SPSS version 26 (Enterprise, 2018). All parametric assumptions were checked and fulfilled. Potential bias was mitigated by (1) Clear inclusion and exclusion criteria, (2) Anonymity and confidentiality safeguards, (3) Standardized instructions, and (4) Data triangulation between questionnaire and interview results. (Sugiyono & Susanto, 2017). Although interviews were conducted, the primary intent was to provide a quantitative explanation; the interviews served only as qualitative support for interpretation. Mixed methods were not adopted due to the limited scope and resources; qualitative data were used descriptively and did not form a separate research strand.

RESULTS AND DISCUSSION

Research Result

a. Respondent Characteristics

Respondent characteristics analysis is categorized based on four variables: gender, age, the education being pursued, and whether or not they are members of PIK-R. This study has a sample size of 285 respondents, with the majority being female (67.7%) and 92 (32.3%) male. Based on their age, most respondents are aged 13-15 (60%), and respondents aged 16-18 years (40%). More complete results regarding respondent characteristics can be seen in the table below:

Table 1. Respondent Characteristics

Characteristics	n	%
Gender		
Man	92	32.3%
Woman	193	67.7%
Age		
13-15 Years	171	60%
16-18 Years	114	40%
Education Currently Undertaken		
Junior High School	171	60%
Senior High School	86	30.2%
Vocational School	28	9.8%
PIK-R Member/Not		
Yes	116	40.7%
No	169	59.3%

Source: Primary Data, 2024.

b. Accumulation of Respondent Responses

Table 2. Accumulation of Respondents' Responses

Likert Scale Weighting	Total
Strongly Disagree (1)	422
Disagree (2)	1.920
Agree (3)	4.633
Strongly Agree (4)	3.285

Source: Primary Data, 2024.

Based on the table above, it can be seen that the respondents' responses, who answered "Strongly Disagree," totaled 422 points. Respondents who answered "Disagree" were 1,920 x 2 = 3.840 points. Respondents who answered "Agree" were 4,633 x 3 = 13,899 points. Respondents who answered "Strongly Agree" were 3,285 x 4 = 13,140 points. So, the total score of the statement is 31,301 points.

c. Results of the Research Instrument Validity Test

Validity testing aims to determine whether a questionnaire can be considered valid by measuring each variable per the research and to what extent the measured variables align with the measurement results. This study employs the *Pearson Product-Moment correlation* method with a significance level of 5% to assess the validity of a questionnaire comprising 36 statements completed by 285 respondents. There are two provisions in testing the validity of the instrument; namely, if the r-count value is (>) from the r-table value, the instrument is considered valid;

conversely, if the r-count value is (<) from the r-table value, the questionnaire is considered invalid. The determination of the r-table value can be seen in the distribution of r-table values with a significance level of 0.05 and DF = n-2, because this study uses a precision value of 5%. The r-table obtained is 0.116, meaning the instrument is declared valid if the r-count value exceeds 0.116. The instrument's validity testing shows that all statement items have an r-count greater than the r-table, so the research instrument is valid.

d. Reliability Test Results

The reliability test is used to determine the consistency or inconsistency of the questionnaire in the research conducted by the author. However, the measurement was carried out twice using the same measuring instrument. This study uses the *Cronbach's Alpha test* to measure the reliability of the research instrument with the help of SPSS software version 24. If *the Cronbach's Alpha* value is > 0.60, then a research instrument is considered reliable; conversely, if *the Cronbach's Alpha* value is < 0.60, the research instrument is considered unreliable. The test results obtained from the reliability test are as follows:

Table 3. Reliability Test Results

Reliability Statistics	
Cronbach's Alpha	N of Items
.987	36

Source: SPSS Output Version 24.

The results of the reliability test above indicate that Cronbach's Alpha value is greater than 0.60. Thus, the research instrument can be said to be reliable or consistent. Then, the instrument's reliability in this study is at a very high level because the Cronbach's Alpha value obtained falls within the interval (0.80 - 1.00), indicating that the research instrument tested is highly reliable.

e. Normality Test Results

The data normality test aims to determine whether a research instrument is normally distributed. The normality test in this study uses *the One-Sample Kolmogorov-Smirnov test.* Where the test criteria are if the *Asymp Sig. (2-tailed) value* > 0.05, then the data is normally distributed. The results of the normality test using *the One-Sample Kolmogorov-Smirnov* test are as follows:

Table 4. Normality Test Results

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		285
Normal Parameters [a,b]	Mean	.0003540
	Std. Deviation	3.07056307
Most Extreme Differences	Absolute	.080
	Positive	.080
	Negative	-.054
Test Statistic		.080
Asymp. Sig. (2-tailed)		.062[c]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

Source: SPSS Output Version 24.

Based on the data processing results above, it can be seen that the Asymp Sig indicates the normality of the data*. (2-tailed)* value, which is 0.062 > 0.05, so it can be said that the data is normally distributed.

f. Hypothesis Test Results (Correlation t-test)

The t-test aims to determine whether the research hypothesis proposed by the researcher is accepted or rejected. Researchers employed the Pearson Product-Moment Correlation method, utilizing the t-test as a hypothesis test in this study. The provisions for hypothesis testing are:

a) H_o : There is no relationship between variables X and Y.
b) H_a : There is a relationship between variables X and Y.

Following the testing criteria:

a) If sig < α (0.05), H_o is rejected, and H_a is accepted. That means the effectiveness of the smart GenRe application influences users' knowledge about early marriage in Cilegon City.
b) If sig > α (0.05), H_o is accepted, and H_a is rejected. That means that the effectiveness of the smart GenRe application does not affect the level of knowledge of application users about early marriage in Cilegon City.

Table 5. t-Test Results (Correlation)

Correlations

		Effectiveness	Knowledge
Effectiveness	Pearson Correlation	1	.986**
	Sig. (2-tailed)		.000
	N	285	285
Knowledge	Pearson Correlation	.986**	1
	Sig. (2-tailed)	.000	
	N	285	285

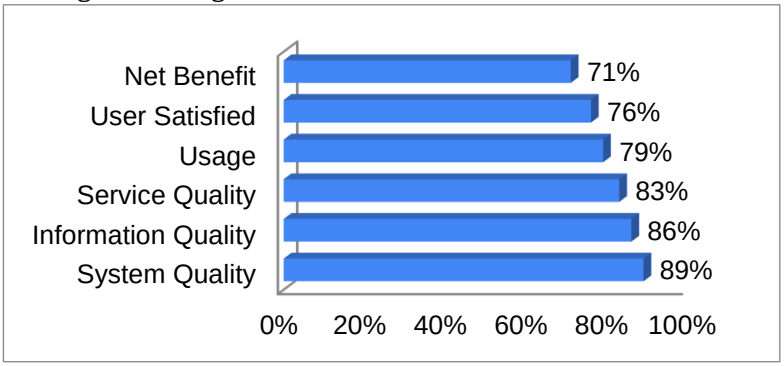
**. Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Output Version 24.

Based on the table above, it can be concluded that the correlation value between X and Y is 0.986, with a significance value of 0.000. The test was conducted using a two-tailed test with 285 cases or samples. It can also be seen that the significance value is 0.000 < 0.05, so H_o is rejected, and H_a is accepted. That means that the smart GenRe application's effectiveness affects the knowledge of its users about early marriage in Cilegon City. The level of correlation coefficient between X and Y is very strong because 0.986 is in the interval value of 0.80 – 1.000 with a positive direction. So, the conclusion is that effectiveness and knowledge have a real and significant influence or relationship.

g. Average Per-Indicator Effectiveness and Per-Indicator Knowledge

Figure 1. Diagram of Results Per-Effectiveness Indicator

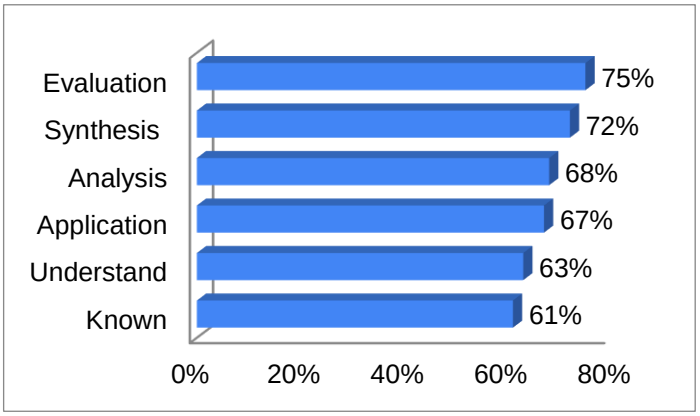


Source: Researcher, 2024.

Based on the graph above, we can see that Application Effectiveness, the indicator that obtained the highest average score, is the system quality indicator, with a percentage of 89%. The smart GenRe application that it shows has complete, diverse, and unique features, is easily accessible

anytime and anywhere, and responds quickly to user requests for the necessary information. On the other hand, the indicator that obtained the lowest average score was the net benefit indicator, with a percentage of 71%. Meanwhile, in the graph regarding knowledge, the indicator that obtained the highest average score was the evaluation indicator, with a rate of 75%. The smart GenRe application can show how to increase knowledge about preventing early marriage and help mindsets become more open. Meanwhile, the indicator that obtained the lowest average score was the known indicator, with a percentage of 61%.

Figure 2. Diagram of Results Per Knowledge Indicator



Source: Researcher, 2024.

DISCUSSION

a. Smart GenRe Application

Smart GenRe application is an innovation developed by the Cilegon City Women's Empowerment, Child Protection, Population Control, and Family Planning Service (DP3AP2KB) and the Cilegon City GenRe Forum. Smart GenRe (*Sistem Manajemen Aksi Remaja Terampil Generasi Berencana*) is a creativity development system for teenagers implemented by the GenRe Forum of Cilegon City. The primary purpose of creating Smart GenRe is to enhance the maturity of the marriage age in Cilegon City by improving skills, particularly those related to digital productivity among teenagers (digital reproduction). Smart GenRe innovation is slanted towards teenagers aged 10-24 who are not yet married. The target is expected to be teenagers who can get married at the ideal age. The appearance of the application is as follows:

Figure 3. Smart GenRe Application Display



Source: Smart GenRe Application, 2023.

Smart GenRe application has three basic features: Brave, Action, and Collaboration. The "brave" feature comprises several other features, including life skills, motivation, and PIK-R locations throughout Cilegon City. The "action" feature consists of “Genta” for BMI Tracker, “Rere” for Marriage Tracker, consultation for counseling on adolescent problems, and “*Siap Nikah*” for life readiness for adolescents. The "collaboration" feature includes the GenRe Forum for genre activities in Cilegon, MR G-TV, specifically the Cilegon genre YouTube channel; digital magazines, such as weekly magazines targeting adolescents; and genre libraries, which provide reading materials for adolescents. Teenagers must continue their education, work, and create, equipping themselves with life skills and saving.

b. Application Effectiveness

System Quality

Based on the research results, the system quality indicator shows an effectiveness of 89%, which is included in the very influential category. The system quality of the smart GenRe application is good. Respondents think that this application provides complete, diverse, and unique features. It means that the availability of features in the smart GenRe application is good and full, so users are interested in using the application. In addition, respondents also assume that they can easily access the application anytime and anywhere and can respond quickly to user requests for the information needed, such as information about the maturity of the age of marriage or digital magazines related to the prevention of early marriage. That means that this application is following its intended use, namely, to make it easier for users to use the application and to respond quickly to the needed information so that users feel comfortable using it. This study follows the theory by Delone & McLean (2003) That system quality can be of quality if an information system is easy to understand and use, has good system reliability, security, access speed, and a flexible system. The results of this study are in line with research conducted by Bahrudin et al. (2023), which states that “a user-friendly system,” “safe to use,” and “able to adapt to user needs can have a significant and beneficial effect on use so that users can be encouraged to use the application system comfortably and consistently.

Information Quality

Based on the research results, the information quality indicator shows an effectiveness of 86%, which is included in the very influential category. That indicates that the quality of information from the smart GenRe application is good. Respondents think this application provides information that follows the intent or purpose of the information sought and has a small possibility of error. That means that the information available on the smart GenRe application follows what users need. The information available in this application is also unambiguous and free from errors, so the information provided is quite accurate. Respondents also think that this application provides information that is easy to understand and always provides the latest information every week or month. This study follows the theory put forward by. Delone & McLean (2003) The quality of information can be good if an information system is designed to meet user needs and presented appropriately. The results of this study align with research conducted by Maghfiroh & Nuryana (2022), which states that providing information that is accurate and easy to understand for users will provide benefits and convenience in finding information for users.

Quality of Service

Based on the research results, the service quality indicator shows an effectiveness of 83%, which is included in the very influential category. That indicates that the service quality of the smart GenRe application is good. Respondents believe that this application offers fast access to

information services, can be trusted to provide accurate information about the age of marriage, and is backed by a knowledge-based guarantee. This means that the services provided by the smart GenRe application can be relied upon because they deliver fast and accurate information, and users are assured of a guarantee of knowledge. This study follows the theory put forward by Delone & McLean (2003), which posits that an information system can be considered effective if application users are satisfied with the services provided. The quality of the service can be measured in terms of guarantees or freedom from danger, speed of response, and reliability. The results of this study are in line with research conducted by Bahrudin et al. (2023), which states that an information system can be considered to have good service quality if there is speed and accuracy in responding when accessing the application used, and it is safe in providing the information needed by the user.

Usage

Based on the research results, the service quality indicator shows an effectiveness of 79%, which is included in the influential category. Respondents think that this application displays a variety of interesting information that encourages users to use the application. This application can also help users become more productive; it is used to search for information related to the maturity of marriage age or the prevention of early marriage. It is used monthly, with a range of 1-3 times each time it is accessed. That means that the diversity of information available on the smart GenRe application can arouse users' interest in accessing the application. In addition, regular use of applications, such as accessing them every month with a range of 1-3 times, can increase productivity for users. This study follows the theory put forward by DeLone & McLean (2003) that usage is how users utilize the information system capabilities available in an application, which can be assessed in terms of time, frequency of access or use, and intention to use. This study's results align with research conducted by Adib et al. (2022), Which states that the better the use of an application, the better the user satisfaction with the information system.

User Satisfaction

Based on the research results, the service quality indicator shows an effectiveness of 76%, which is included in the influential category. Respondents believed that this application was used repeatedly or continuously after the last use and was used repeatedly to search for information that the user needed. In addition, the information system services available on the smart GenRe application can meet user information needs and provide high satisfaction for users. That means that continuous application use can meet user needs, thereby providing high satisfaction to users. This study follows the theory by DeLone and McLean (2003) that if user satisfaction is high, interest in using an application will increase. User satisfaction can be measured from several indicators: repeated (continuous) use, repeated visits, and user surveys. This study's results align with research conducted by Adib et al. (2022), Which states that if user satisfaction with an information system is high, then the use of an application will also increase.

Net Benefits

Based on the research results, the service quality indicator shows an effectiveness of 71%, which is included in the influential category. Respondents believe this application can be used for free without any cost, and can increase knowledge about the maturity of marriage age. In addition, this application can also provide solutions to problems experienced by users and provide benefits in making the right decisions through the information system used. That means that the smart GenRe application can be used cost-effectively, becoming one of the solutions in decision-making, especially for teenagers, and providing a good impact for users. This study follows the theory by DeLone and McLean (2003) that net benefits function to find out what benefits are obtained when using an application. Net benefit indicators can be measured in terms of cost savings, time savings, reduced costs in searching, and decision-making. This study's results align with research conducted by Karya et al. (2020), Which states that the more features are updated, the more

benefits are obtained from an application, the more satisfied users will feel, and they will use the application more often.

c. Level of Knowledge

Known

Based on the study's results, the indicator Known showed an effectiveness of 61%, which was included in the category of no effect. Respondents believed they were aware of various reading materials or information about the maturity of the age of marriage in the smart GenRe application, and could recall information about the maturity of the age of marriage that had been read or obtained from the smart GenRe application. However, 108 people (38%) disagreed with statement number 25, and 107 people (38%) disagreed with statement number 26. Based on the responses to the questionnaire, it appears that some application users are still unsure or unclear about the readings regarding the maturity of the age of marriage in the Smart GenRe application. Some users are also having trouble remembering the details or readings about the maturity of the age of marriage that they have read from the application.

Considering the responses to the questionnaire, it is evident that some application users are still unable to accurately recall the details or readings about the maturity of the age of marriage that they have read from the smart GenRe application. Some users are still unaware of the readings about the maturity of the age of marriage in the application. That is similar to the author's research, where the lack of influence resulting from the "know" indicator can occur due to several factors, including the smart GenRe application is not used routinely or repeatedly, application users are not updated with the latest information released by the smart GenRe application, especially regarding the maturity of the age of marriage, so that it can reduce their memory of the information that has been read or obtained from the application.

Understand

Based on the study's findings, the comprehension indicator, which was classified as influential, had an effectiveness of 63%. The respondents argued that they could easily comprehend facts on the marriage age's maturity in the intelligent GenRe application, and that ignorance of this age's maturity can lead to early marriage. According to Notoatmodjo (1993), comprehension is the capacity to accurately interpret or describe objects and explain ones that one is familiar with. Users of the application can comprehend the data regarding the maturity of the age of marriage in this study, and they concur that ignorance of this age can result.

Application

The application indicators included in the influential group indicate an efficacy of 67% based on the research results. According to respondents, the Smart GenRe application can assist in preventing early marriage, and the knowledge it provides on preventing it can be used daily. According to Notoatmodjo (1993), application refers to the capacity to employ and apply knowledge and skills in a real-world setting. Users of the intelligent GenRe application have gained knowledge about the consequences of early marriage from this study, and they are now better prepared to use this knowledge to prevent early marriage in their daily lives by abstaining from promiscuity, protecting their reproductive health, and adopting other preventative measures. That is in line with research conducted by Nurmila et al. (2017) The communication and socialization strategies carried out by DP3AP2KB Bogor Regency related to the GenRe program can influence the knowledge and attitudes of teenagers, so that it can minimize the practice of early marriage.

Analysis

Based on the research results, the analysis indicators show an effectiveness of 68%, which is included in the influential category. Respondents believe that information about the maturity of

the age of marriage in the smart GenRe application can provide a clear picture or understanding for users, and they can explain information related to the impact of early marriage in detail to close friends or peers. The capacity to characterize material or items that have been analyzed into components that are still integrated into an organizational structure and connected is known as analysis, according to Notoatmodjo (1993). In this study, the knowledge analysis carried out by application users was good because they had obtained a picture of the impact of early marriage to explain the information to their friends. That is in line with research conducted by Siti Rofi'ah (2017), which stated that providing material with the peer group method will have a more positive impact because teenagers will be more open in communicating with their peers than with people who are older than them, such as parents, teachers, and others.

Synthesis

Based on the research results, the synthesis indicator shows an effectiveness of 72%, which is included in the influential category. Respondents think they get an overview of important points from information about the maturity of the age of marriage in the smart GenRe application. The information follows previously existing material or PIK-R provided in schools or the Cilegon GenRe Forum. Notoatmodjo (1993) states that synthesis combines components in a new overall form. In this study, the synthesis of knowledge carried out by application users was good because they got important points about the maturity of the age of marriage, and the information followed previously existing material provided by PIK-R in schools.

Evaluation

Based on the study's results, the evaluation indicator shows an effectiveness of 75%, which is included in the influential category. Respondents believe that information about the maturity of the age of marriage in the smart GenRe application can increase knowledge about preventing early marriage and help the mindset become more open. Notoatmodjo (1993) states that evaluation is a person's ability to assess an object or material. In this study, the evaluation of knowledge related to the maturity of the age of marriage is good because the information available in this application has a good impact on users, including increasing insight to prevent early marriage and helping the mindset to become more open.

CONCLUSION

The findings of this study indicate that the effectiveness of the Smart GenRe application is strongly and significantly associated with increased knowledge about early marriage among adolescents in Cilegon City ($r = 0.986$, $p < 0.05$). This highlights the important role of digital interventions in improving youth awareness and supporting efforts to prevent early marriage at the local level.

To maximize the benefits of Smart GenRe, it is essential for the community—especially adolescents—to actively seek information and deepen their understanding of marriage maturity, whether through the application or educational materials provided by school-based programs such as PIK-R. By applying this knowledge in their daily lives, adolescents can better avoid the risks associated with early marriage. Furthermore, it is recommended that the government, through the Cilegon City GenRe Forum, intensify regular counseling and socialization activities aimed at enhancing teenagers' understanding and skills across various fields. Such initiatives will support young people in completing their education, preparing for employment, and planning marriages responsibly, thereby helping to reduce the incidence of early marriage in Cilegon City. To further enhance the impact of Smart GenRe, it is recommended that app developers routinely update educational content, incorporate user feedback, and strengthen interactive features to increase user engagement.

REFERENCES

Adib, K., Putra, G. S., & Nur'aini, S. (2022). EFEKTIVITAS APLIKASI TRANSPORTASI GOJEK DENGAN MENGGUNAKAN METODE SYSTEMATIC LITERATURE REVIEW. *Jurnal Teknik Informatika Dan Teknologi Informasi*, *2*(3), 151–159. https://doi.org/10.55606/jutiti.v2i3.750

Bahrudin, R. R., Muzaki, M. N., & Wardani, A. S. (2023). PENGUKURAN TINGKAT EFEKTIFITAS SISTEM INFORMASI PERPUSTAKAAN MENGGUNAKAN TEORI DELONE & MCLEAN. *METHOMIKA Jurnal Manajemen Informatika Dan Komputerisasi Akuntansi*, *7*(1), 128–137. https://doi.org/10.46880/jmika.Vol7No1.pp128-137

Delone, W. H., & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Management Information Systems*, *19*(4), 9–30. https://doi.org/10.1080/07421222.2003.11045748

Enterprise, J. (2018). Lancar Menggunakan SPSS untuk Pemula. In *Jakarta: PT Elex Media Komputindo, 2010), h.2.* PT. Elex Media Komputindo.

Ferusgel, A., Farida, F., & Esti, E. D. (2022). EFEKTIVITAS PENYULUHAN TERHADAP PENINGKATAN PENGETAHUAN DALAM UPAYA PENCEGAHAN PERNIKAHAN DINI PADA REMAJA. *Jurnal Kesehatan Tambusai*, *3*(4), 659–664. https://doi.org/https://doi.org/10.31004/jkt.v3i4.10295

Ikhsanudin, M., & Nurjanah, S. (2018). Dampak Pernikahan Dini Terhadap Pendidikan Anak Dalam keluarga. *Al-I'tibar : Jurnal Pendidikan Islam*, *5*(1), 38–44. https://doi.org/10.30599/jpia.v5i1.312

Karya, D. F., Nur, A., & Saputri, I. (2020). PENGARUH MODEL DELON AND MCLEAN TERHADAP KEPUASAN PENGGUNA PADA PENGGUNA APLIKASI OVO DI SURABAYA. *PROCEEDINGS OF NATIONAL CONFERENCE FOR UMMAH*, 330–314. https://conferences.unusa.ac.id/index.php/NCU2020/article/view/611

Maghfiroh, S., & Nuryana, I. K. D. (2022). Penerapan Metode TAM dan DeLone And McLean IS Succes untuk Mengevaluasi Keberhasilan Aplikasi Lazada. *Journal of Emerging Information Systems and Business Intelligence (JEISBI)*, *3*(3). https://doi.org/10.26740/jeisbi.v3i3.46680

Melati, K. D. R., & Parwata, A. A. G. O. (2022). PERLINDUNGAN HUKUM ATAS PERKAWINAN ANAK DI BAWAH UMUR DALAM PERSPEKTIF UNDANG-UNDANG HAK ASASI MANUSIA. *Kertha Semaya : Journal Ilmu Hukum*, *10*(9), 1994. https://doi.org/10.24843/KS.2022.v10.i09.p03

Mubasyaroh, M. (2016). ANALISIS FAKTOR PENYEBAB PERNIKAHAN DINI DAN DAMPAKNYA BAGI PELAKUNYA. *YUDISIA : Jurnal Pemikiran Hukum Dan Hukum Islam*, *7*(2), 385–411. https://doi.org/http://dx.doi.org/10.21043/yudisia.v7i2.2161

Muntamah, A. L., Latifiani, D., & Arifin, R. (2019). PERNIKAHAN DINI DI INDONESIA: FAKTOR DAN PERAN PEMERINTAH (PERSPEKTIF PENEGAKAN DAN PERLINDUNGAN HUKUM BAGI ANAK). *Widya Yuridika*, *2*(1), 1. https://doi.org/10.31328/wy.v2i1.823

Notoatmodjo, S. (1993). *Pengantar pendidikan kesehatan dan ilmu perilaku kesehatan*. Andi Offset.

Nurmila, S., Rahmawati, R., & Agustini, A. (2017). PENGARUH STRATEGI KOMUNIKASI DAN EFEKTIVITAS PESAN PROGRAM GENRE TERHADAP PENGETAHUAN DAN SIKAP REMAJA

DI KECAMATAN CARINGIN. *JURNAL KOMUNIKATIO*, *3*(1). https://doi.org/10.30997/jk.v3i1.876

Rahmawati, M. N., Rohaedi, S., & Sumartini, S. (2019a). Tingkat Stres Dan Indikator Stres Pada Remaja Yang Melakukan Pernikahan Dini. *JURNAL PENDIDIKAN KEPERAWATAN INDONESIA*, *5*(1). https://doi.org/10.17509/jpki.v5i1.11180

Rahmawati, M. N., Rohaedi, S., & Sumartini, S. (2019b). Tingkat Stres Dan Indikator Stres Pada Remaja Yang Melakukan Pernikahan Dini. *Jurnal Pendidikan Keperawatan Indonesia*, *5*(1), 25–33. https://doi.org/10.17509/jpki.v5i1.11180

Siti Rofi'ah, S. W. D. V. (2017). EFEKTIVITAS PENDIDIKAN KESEHATAN METODE PEER GROUP TERHADAP TINGKAT PENGETAHUAN DAN SIKAP PERSONAL HYGIENE SAAT MENSTRUASI. *Jurnal Ilmiah Bidan*, *2*(2), 31–36.

Soleman, N., & Elindawati, R. (2019). PERNIKAHAN DINI DI INDONESIA. *AL-WARDAH*, *12*(2), 142. https://doi.org/10.46339/al-wardah.v12i2.142

Sugiyono, & Susanto, A. (2017). *Cara Mudah Belajar SPSS dan LISREL Teori dan Aplikasi untuk Analisis Data Penelitian* (Second). Alfabeta.

Sugiyono. (2019a). *Metode Penelitian Kuantitatif Kualitatif dan R&D* (S. Sutopo, Ed.; Second). Alfabeta.

Sugiyono. (2019b). *Statistik untuk Penelitian* (30th ed.). Alfabeta.

Umairoh, U., Suwarni, L., & Mardjan, M. (2019). PENGARUH PENGGUNAAN MODEL PEMBELAJARAN SNOWBALL THROWING TERHADAP TINGKAT PENGETAHUAN DAN SIKAP SISWA TENTANG PENDEWASAAN USIA PERKAWINAN DI MTS AN-NUR DESA SUNGAI ASAM. *Jurnal Kesmas (Kesehatan Masyarakat) Khatulistiwa*, *6*(4), 135. https://doi.org/10.29406/jkmk.v6i4.1980

Widyastuti, A. T. (2022). *Indikator Kesejahteraan Rakyat Kota Cilegon 2022*. https://cilegonkota.bps.go.id/id/publication/2022/12/29/6ff6d802980aa21e2adadaea/indikator-kesejahteraan-rakyat-kota-cilegon-2022.html