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The readiness analysis of smart school implementation using technology readiness index to support smart city implementation

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ABSTRACT

Smart Schools have been widely applied in several schools within the scope of education and services as they are being encouraged to support Smart City. Smart Schools is a school concept utilizing information technology used in the teaching and learning process in the class and school administration. One of the schools in Pekanbaru City that will implement intelligent schools in Junior High School 17 Pekanbaru. Building smart schools themselves is adequate infrastructure such as servers, labor, and integrated systems and the readiness of schools and students to implement Smart Schools in the future. Therefore, to determine the readiness level of prospective users of the Smart Schools concept, the technology readiness index (TRI) method with four personality variables; optimism, innovativeness, discomfort, and insecurity. The purpose of this research was to find out the readiness index of prospective users in the implementation of Smart Schools and see what factors need to be improved from the readiness of prospective users. This research was expected to help Junior High School 17 prepare schools to become Smart Schools to support smart city implementation in Pekanbaru.

1. Introduction

Smart City is defined as a city that can improve the quality of life of its citizens by managing all their lives and resources effectively and efficiently through innovative, integrated, and long-term solutions [1]. In its application, the use of ICT-based technology has a unique role as one of the buffers of a Smart City. Pekanbaru City itself already has a Pekanbaru Smart City Master Plan for 2018-2025, in which one of the pillars is Smart People. One of its supporting agendas is Smart Schools encouraged to accelerate Pekanbaru City into Smart City [2]. Some innovative city programs the Pekanbaru government has run include Community Empowerment Based on Community Harmony of Citizens, Plenary Mosque, Pekanbaru Command Center, and civil smart cards [3]. In contrast, in the Education Office, Children's Identity Cards or KIA will be applied in Smart Schools, which serve as attendance and payments such as school canteen [4].

The aspect discussed in this study itself was Smart Schools. Smart Schools are the concept of using technology in education to help the learning process and improve performance by creating, using, and managing adequate processes and sources of technology. The main objective of applying technology in learning is to solve learning problems, facilitate learning, and improve performance [5]. For example, this helps the interaction between the school community, students, and teachers more easily.

In the application of the Smart School concept, several factors affect it, requiring at least the readiness of students to use technology, a supportive learning environment, and learner participation are among the challenges in building this Smart School concept. Several junior high schools in Pekanbaru city have implemented the concept of Smart Schools, namely Children's Identity Cards (KIA). Smart Schools serve as a means of attendance and payment and are expected to facilitate administration and initiate the use of non-cash payment systems [6].

For Junior high school 17 Pekanbaru, which has not implemented Smart Schools, the results of this readiness analysis are expected to be used as a comparison to find out the readiness of all school members in utilizing technology in this Smart Schools concept whether it can run smoothly or will burden and get a rejection from the human resource aspect.

The readiness of human resource plays a vital role in the application of information and communication technology. The implementation of the concept of Smart Schools must also consider the readiness of teachers and students to adapt to technology. One of the reasons for the failure of IT implementation is that the lack of readiness causes the implementation process to take longer than planned and causes the implementation team to lose morale [7].

Evaluation can be done with several methods, such as research to conduct readiness analysis [8]. Measurement of E-Readiness uses Stope Framework in the Process of Applying for Academic Leave of Higher Education, and STOPE is used to measure the readiness of old and new IT services [9]. Another method is the Technology Readiness Index (TRI) [10], which measures user readiness for new technology. Because the STOPE framework was unsuitable for this study, researchers used the Technology Readiness Index (TRI) because Smart Schools (Smart Cards) is a new technology. TRI can also distinguish well between users and non-users of a technology. TRI is formed by four personality variables; optimism, innovativeness, discomfort, and insecurity [11]. Responses from potential users will be used, and it is expected to speed up the process of technology adoption [12].

Some previous studies with almost the same case studies were presented, such as Research, which evaluated user readiness, and in research [13], TR was used for the readiness of prospective users of the Student Entrepreneur and Internship Program (SEIP). The study [14] analyzed the readiness of children's encyclopedia users, resulting in readiness at the High Technology Readiness level with a value of 3.6, judging from the optimism variable that contributed the most significant value. Then [15] analyzed the readiness level of QR Code attendance users, which was 2,713, which means it is still low (Low Technology Readiness).

Research conducted Technology Readiness Index was used to measure the readiness of prospective users of the Smart School (Smart Card) concept that can later be used as attendance, administrative and financial recap, E-report card, and viewing student attendance details.

This research was expected to help in the analysis of human resources and the use of technology that has been running to find out the readiness of Junior high school 17 Pekanbaru in implementing Smart Schools, and also so that it could be used as a reference in preparing to move to the concept of Smart Schools in Junior high school 17 Pekanbaru and other junior high schools that are planned to implement this Smart Schools, both in terms of technology and human resources readiness such as teachers, students, as well as parents of students.

2. Method

Research Methodology is a technique that researchers compile to collect data and information in conducting research that suits the subject and object studied, with these data are expected to obtain quality results.

2.1. Type of Research

This research used a quantitative research approach. Quantitative data is obtained from data collection conducted through surveys and data analysis in the form of statistics. The survey was conducted using questionnaires distributed to respondents in the scope of Junior high school 17 Pekanbaru, while data analysis was done statistically using statistical data processing applications, namely SPSS. Sampling techniques are generally done randomly. Data was collected using research instruments, quantitative data analysis/statistics to test established hypotheses [16].

2.2. Research Object

The object of the research was the concept of Smart Schools, which is similar to that that the Pekanbaru government has applied in the form of Smart Cards and data obtained from respondents who were prospective Smart Card users. The Smart School concept that will be applied to Junior high school 17 Pekanbaru can later be used for attendance tools, administrative and financial recaps, checking e-report cards or student grades, and seeing student attendance details. Respondents were all members of Junior high school 17 Pekanbaru school.

2.3. Research Stages

The research stage is a sequence of research steps carried out by researchers. An overview of the research stages can be seen in the Fig. 1.

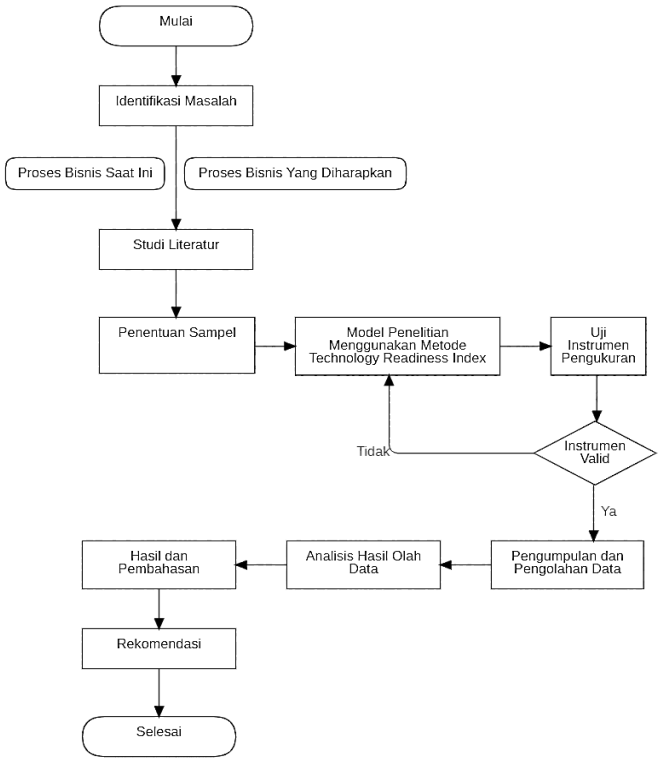

Fig. 1. Research Methodology Flow

2.3.1. Problem Identification

Identification of problems is carried out as a first step in the research process. Identifying problems in this study was to observe and find problems in the readiness of human resources in junior high school 17 Pekanbaru to adopt Smart School technology. It is started with how the condition of the technology infrastructure in the school, how the use of technology by school residents and what obstacles are experienced, and other things that affect the level of readiness of teachers, parents, and students in the implementation of the Smart School concept in the future.

A little overview of the concept of Smart School (Smart Card) that will be applied later can be used as an attendance tool, administrative and financial recap, E-report card, and see the details of student attendance. Previously in 2019, the Pekanbaru City government launched the Smart Schools (Smart Card) program. Besides, three Regional Device Organizations will carry out the functions of this smart card program. They are the Health Office, the Education Office, and the Transportation Office. The Health Office, in addition to this card service, stores data and develops patient health. At the Transportation Office, smart cards will be applied at Trans Metro Pekanbaru. Meanwhile, in the Education Office, smart cards will be applied by smart schools that serve as payments in the school canteen to encourage people to get used to digital transactions, and some schools also use it as an attendance tool [17].

Here is a comparison of the old information system flowcharts running in junior high school 17 Pekanbaru and the *Smart School* concept.

- Diagram of business processes currently running as show in Fig. 2.

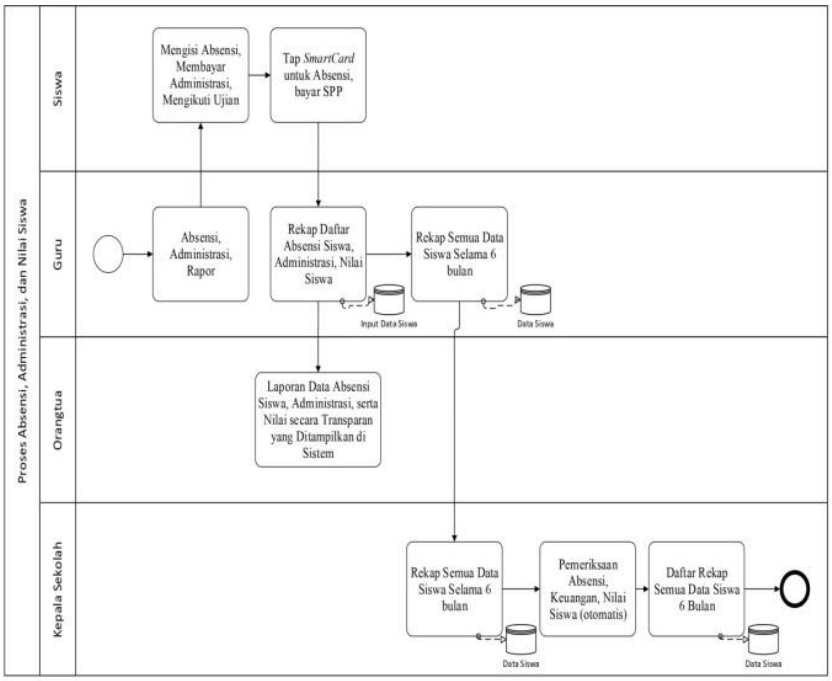

Fig. 2. Current Business Process Diagram

Deficiency; 1) Attendance data, administration, and scores can be damaged or lost because they are stored in manual form; 2) There can be fraud in taking absences manually; 3) There can be data redundancies for students.

- Diagram of expected business processes (*Smart Schools*) as show in Fig. 3.

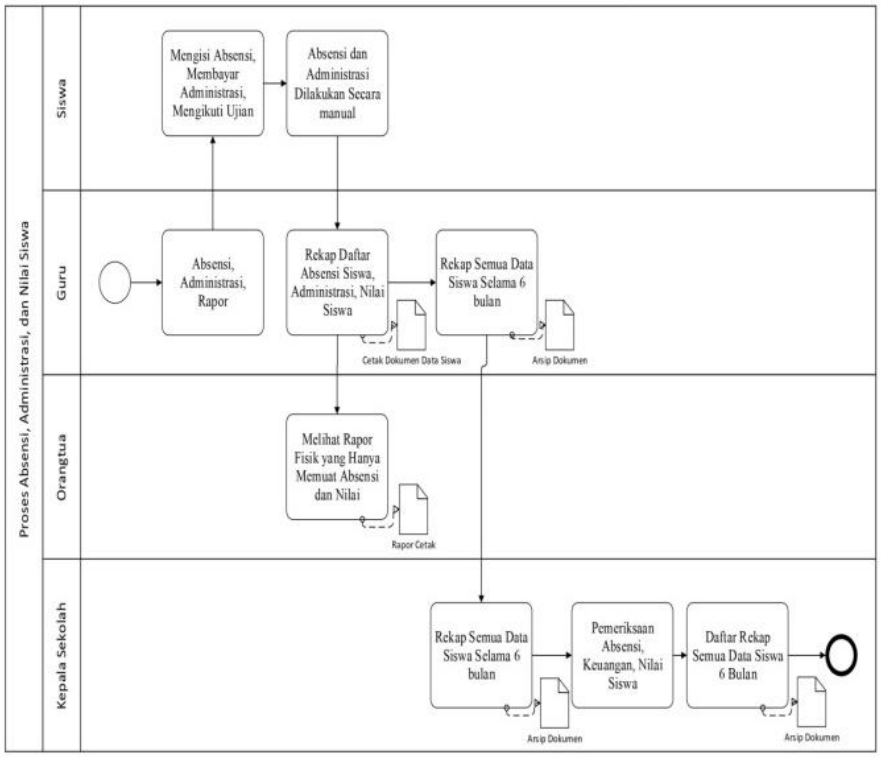

Fig. 3. Expected Business Process Diagram

Advantages; 1) There are no redundancies in attendance, administration, and grades for students; 2) There is no cheating of absenteeism, administration, and grades in students; 3) Data can be stored safely and accurately; 4) Transparency of data that can be seen directly by the student's guardian through the system.

2.3.2. Literature Studies

The literature study method is a series of activities related to collecting library data, reading, recording, and managing research materials [18]. In this study, problems were obtained by reading the appropriate and supporting literature from books and journals related to the Technology Readiness Index method. In addition, this literature study was conducted to learn about matters related to the readiness of school human resources in implementing the smart school concept, such as government policies regarding the Pekanbaru Smart City master plan. Literature can be in the form of scientific journals, scientific articles, books, or information from internet sites that can be used as references in the work of this thesis.

2.3.3. Sample Determination

In determining the number of samples, researchers use the Slovin formula, which is commonly used with an error level between 5% and 10%.

$$n = \frac{N}{1+Ne^2} \quad (1)$$

Information :

n = number of samples searched

N = population size

e = the margin of error value (significant error) of population size

Using the Slovin formula, researchers took samples from junior high school 17 Pekanbaru with 85 (error level 10%) - 240 (error level 5%) of the total number of learners, 586, and teachers with staff, which were 39.

The respondents were selected by random sampling, which took samples randomly [19]. The respondents who would fill out the questionnaire were students from grades 1–3, Teachers, and Guardians of students. In this sampling, researchers considered the population, time constraints, and conditions of the Covid-19 pandemic as it is now because 100 to 200 samples are the ideal starting point in the analysis.

2.3.4. Research Model Using Technology Readiness Index Method

Research variables are everything that is set by researchers to be studied, so that information about it is obtained, then concluded. The indicators used were 16 TRI 2.0, with four items for each dimension. Of the 16 items, 11 were in TRI 1.0, while five were new (2 were in optimism dimensions, and three were in the dimension of insecurity).

This study used questionnaires to determine student readiness responses in applying the concept of Smart Schools. The questionnaire consisted of several questions and statements related to readiness in the utilization of technology for learning, and each question has four types of answers assessed on the Likert scale.

Measurements were made by using the Likert scale. The scale will be used by respondents to choose from each list of questions in the questionnaire. Another variation of the Likert scale was used in this study: removing neutral responses [20]. Likert scale as show in Table 1.

Table.1 Likert Scale

Answer options	*Abbreviation*	*Likert Scale*
Strongly Disagree	SD	75%-100%
Disagree	D	50%-74.99%
Agree	A	25%-49.99%
Strongly Agree	SA	0%-24.99%

In this study, reverse coding was used for negative variables. The weight used in statements that have done reverse coding can be seen in Table 2.

Table.2 Likert Reverse Coding Scale

Answer options	*Abbreviation*	*Likert Scale*
Strongly Agree	SA	75%-100%
Agree	A	50%-74.99%
Disagree	D	25%-49.99%
Strongly Disagree	SD	0%-24.99%

2.3.5. Research Instrument Testing

Instrument testing was conducted on a sample of 35 pilot test respondents. Instruments were in the form of questionnaires distributed to the sample of respondents. After obtaining the questionnaire results, validity and reliability tests were conducted. Tools for measuring this test used SPSS 25.0.

2.3.6. Data Collection and Processing

Data collection is an activity carried out to obtain the necessary information to achieve a study's goals. At this stage, researchers collected data through interviews and questionnaires. Due to the constraints of the situation during the Covid-19 pandemic, the researchers cannot make maximum observations. Data collection with interviews would be carried out with teachers or IT staff within the scope of the school, as well as data collection with questionnaires carried out to teachers, students, and students' guardians as respondents. The interview and observation location was at junior high school 17 Pekanbaru. The location of data collection through questionnaires was also within the scope of the junior high school 17 Pekanbaru area.

1. Interview

The researcher conducted the interview at School IT parties regarding the use of existing technology by teachers and students. But, from the results of the initial interview that researchers conducted with the school's IT, there were still obstacles experienced, among others,

- All were done manually at junior high school 17 Pekanbaru and still used print/paper media, starting from the absence of teachers and students, administration, to student data.
- There were still some constraints on school IT facilities for teachers and students, such as the use of computers laboratory that must be alternated and small bandwidth/internet speed in schools.
- There was still a lack of procurement of other IT facilities that could support the concept of Smart School. Teachers must have their laptops. The limited number of hotspots in schools significantly affects teachers in utilizing technology

2. Questionnaire Spread

Sampling in this study utilized Random sampling and Non-Probability Sampling techniques whose determination takes samples randomly based on the consideration that the concept of Smart Schools will be used for all school residents. The questionnaire became a medium to determine respondents' feedback on technology adoption plans such as Smart Schools (Smart Cards). The questionnaire refers to the Technology Readiness Index (TRI) variables, which will be made based on a literature review. This is because the written questionnaire is also based on the problems to be discussed, so the author must conduct validity and reliability tests. The distribution of questionnaires to respondents in junior high school 17 Pekanbaru can be seen in Table 3.

Table.3 Questions/Questionnaire Statements

Deployment Method	Valid	Invalid	Total
Online	138	0	138
Live	-	-	-

2.3.7. Data Analysis

Based on the results of the spread of the questionnaires, which used valid data, the next stage of data processing was carried out by grouping data according to the specified variables. Variables that had negative values were reverse coding. The Technology Readiness Index (TRI) assessment was calculated from the mean value of each questionnaire multiplied by the weight of each statement. The weight of each statement was obtained from the total weight of the variable divided by the number of statements of each variable. After obtaining the weight of each statement of n, the mean value of the statement was multiplied by the weight of each statement to get the total score for each statement. The variable score is obtained from the total number of statement scores present in the variable. The total score of TRI was obtained from the sum of all variable values. Calculating the TRI value of each variable can be seen from the following equation.

$$Bobot\ Pernyataan = \frac{25\%}{\sum Pernyataan\ Variable} \quad (2)$$

$$Nilai\ Pernyataan = \frac{\sum\ (jumlah\ jawaban\ X\ skor\ jawaban}{Jumlah\ Responden} \quad (3)$$

$$Nilai\ Variable = \sum Nilai\ Penyataan \quad (4)$$

$$Nilai\ TRI = \sum Skor\ variable \quad (5)$$

The category of the level of readiness in the application of the *Technology Readiness Index* developed by [10] is:

1. Low Technology Readiness: if TRI =< 2.89
2. Medium Technology Readiness: if TRI 2.90 =< TRI =< 3.51
3. High Technology Readiness: if TRI > 3.51

2.3.8. Result and Discussion

The discussion of the results in this research data presents and discusses the data obtained descriptively. After all the data were collected, an analysis was carried out in this study, namely statistical analysis using SPSS 25.0. Analysis conducted by researchers in this stage was done by testing the validity and reliability of research instruments.

- Validity test the purpose of the validity test is to determine the degree of validity of the questionnaire used to collect assessment results data [21]. This test is done by comparing the number r count and r table. If the r count is more significant than the r table, then the item is said to be valid, and vice versa. If the r count is more minor than the r table, then the item is said to be invalid. R count is searched using the SPSS program, while the r table is searched by looking at table r with the minimum r provision is 0.3 [22].
- In reliability testing, there is a value to measure the level of reliability using the TRI instrument. This test is done by comparing the Cronbach alpha number with the provision that the Cronbach alpha value is at least 0.6, meaning that if the Cronbach alpha value obtained from the SPSS calculation results is more significant than 0.6, it is concluded that the questionnaire is reliable [23]. Conversely, if Cronbach's alpha is smaller than 0.6, it is concluded that the questionnaire is unreliable.

Next is the interpretation of the results. The researchers discussed the results of a demographic analysis of respondents with current field conditions and translated the quantitative statistical model analysis results by comparing and considering several related literatures. Furthermore, the analysis and interpretation results will be fully explained in the results and discussions.

2.3.9. Recommendations

It contains a summary of the processes and results obtained as well as answers from the formulation of the problem, which is then given recommendations for all the results obtained. Recommendations are in the form of input for policymakers on what is expected to improve the level of readiness that is

still lacking related to the implementation of the Smart Schools concept both for junior high school 17 Pekanbaru and parties who intend to conduct further research.

3. Results and Discussion

3.1. Demographic Data

At this stage, the researchers analyzed the answers to questionnaires that respondents had filled out, especially in the respondent profile section that would produce short demographic information. This is related to the respondent's name and the respondent's role in the school. The data the researchers managed to collect currently were 138 respondents who were teachers, parents, and students, with 138 valid and 0 invalid data. Demographic analysis results can be see in Table 4.

Table.4 Demographics of respondents

Category	Number	Percentage
Students	86	62.3%
Student Guardian	17	12.3%
Teacher / Educator	35	25.4%
Total	138	100%

Based on the table above, the results of a brief questionnaire filled out by 35 respondents at junior high school 17 Pekanbaru from the Teacher, Student Guardian, and Student parties were known to be mainly from the Teachers, which were 35 respondents (25.4%), Student guardians as many as 17 respondents (12.3%), and 86 respondents (62.3%) from Students.

3.2. Questionnaire Result

3.2.1. Validity

The measurement to find the results of validity with the test criteria is if the r count is more excellent than the r table with a significant level of 5%, then it can be stated that the instrument item is valid, and vice versa if r calculates smaller than r table with a significant level of 5% then the instrument item is invalid. Moreover, from the test results, it was obtained that 16 instrument items for Teachers / Guardians of students and 16 items of instruments for students with slight language adjustments with the same question had r count values > r table. It proved that the research instrument item was declared valid. The questionnaires measured in this study were optimism, innovation, discomfort, and insecurity. More details can be seen in the Table 5 to Table 12.

Table.5 Validity of optimistic questionnaire items of teachers and parents

Question Item	RCount	Significance Value	Description
OPT1	0.520	0.001	Valid
OPT2	0.429	0.010	Valid
OPT3	0.483	0.003	Valid

Table.6 Validity Of Teacher And Parent Innovative Questionnaire Items

Question Item	RCount	Significance value	Description
INV1	0.566	0.000	Valid
INV2	0.521	0.001	Valid
INV3	0.406	0.016	Valid
INV4	0.379	0.025	Valid

Table.7 Validity Of Teacher And Parent Discomfort Questionnaire Items

Question Item	RCount	Significance Item	Description
DIS1	0.405	0.016	Valid
DIS2	0.508	0.002	Valid
DIS3	0.336	0.049	Valid
DIS4	0.385	0.022	Valid

Table.8 Validity Of Teacher And Parent Insecurity Questionnaire Items

Question Item	RCount	Significance Item	Description
INS1	0.502	0.002	Valid
INS2	0.351	0.039	Valid
INS3	0.384	0.023	Valid

Table.9 Validity Of Optimistic Items Of Student Questionnaires

Question Item	RCount	Significance Item	Description
OPT1	0.435	0.001	Valid
OPT2	0.311	0.023	Valid
OPT3	0.410	0.002	Valid
OPT4	0.482	0.000	Valid

Table.10 Validity Of Innovative Items Student Questionnaire

Question Item	RCount	Significance Item	Description
INV1	0.283	0.040	Valid
INV2	0.364	0.007	Valid
INV3	0.408	0.002	Valid
INV4	0.365	0.007	Valid

Table.11 Validity Of Student Questionnaire Discomfort Items

Question Item	RCount	Significance Item	Description
DIS1	0.275	0.047	Valid
DIS2	0.335	0.014	Valid
DIS3	0.518	0.000	Valid
DIS4	0.662	0.000	Valid

Table.12 Validity Of Student Questionnaire Insecurity Items

Question Item	RCount	Significance value	Description
INS1	0.534	0.000	Valid
INS2	0.579	0.000	Valid
INS3	0.516	0.000	Valid

3.2.2. Reliability

Several valuable question items were then tested for reliability. Reliability indicates the degree of reliability if the instrument used can produce almost the same data at different times and places [24]. The criteria for reliability test testing is that if it is greater than with a significant level of 5% (0.05), then it can be stated that the measuring instrument is reliable, and vice versa. If it is smaller than the measuring instrument, it is not reliable. Moreover, the results of reliability test tests can be seen in the Table 13.

Table.13 Results of the Research Instrument Reliability Test

Question Segmentation	Rtable	Recount (Cronbach Alpha)	Information
Teacher and Student Guardian	0.334	0.689	Reliable
Student	0.266	0.702	Reliable

3.2.3. TRI Value

The TRI test is used to analyze the extent of a person's readiness to adopt the latest technologies around them. Four measurement variables that can be used to measure how far a person's readiness with existing technology are: Optimism, Innovation, Discomfort, and Insecurity. Using these four variables will make it easier to assess a person's readiness for new technologies existing today. In this study, the level of readiness of prospective users in junior high school 17 Pekanbaru was observed and analyzed with the TRI method. The TRI value calculation method is calculated from the mean

value of each questionnaire associated with the weight of each statement. Each variable weighs a total of 25%. The total weight is then divided by the number of statements of each variable. After gaining the weight of each n statement, the mean value of the statement is multiplied by the weight of each statement to get a total score. The variable score is obtained from the total number of statement scores presented in the variable.

The total TRI score is obtained from the sum of the values of all variables. After collecting and testing, the following results show in Table 14.

Table.14 Tri-Teacher Test Results

No	Variable	TRI Value
1.	*Optimism*	0.79
2.	*Innovativeness*	0.81
3.	*Discomfort*	0.55
4.	*Insecurity*	0.56
Total Value of TRI		2.71

Based on Table 14 above, it can be known that innovative variables had the most significant contribution of 0.81, and the second-largest value of variables was optimism 0.79, which means that educators at junior high school Pekanbaru had an innovative attitude to adopt and utilize technology. The level of discomfort and insecurity had a lower value than the value of optimism and innovation. If summed up, the TRI value was 2.71. The TRI value < 2.89 was included in the Low Technology Readiness Index category, meaning prospective users tended to have a low level of readiness to adopt the technology. Tri parental test results as show in Fig. 5

Table.15 Tri parental test results

No	Variable	TRI Value
1.	*Optimism*	0.85
2.	*Innovativeness*	0.87
3.	*Discomfort*	0.81
4.	*Insecurity*	0.82
Total Value of TRI		3.35

Table 15 shows that the variable with the most significant innovative contribution was 0.87, and the second largest value of the variable was optimism 0.85. This means that the parents of students also had an innovative attitude to adopting and utilizing technology. The level of discomfort and insecurity had a high value. This certainly raises doubts and can weaken the process of adopting new technology. If summed, the value of TRI was 3.35. The TRI value between 2.90 =< and =< 3.51 was included in the Category of Medium Technology Readiness Index, in which the score obtained is high and can be said to be ready. Tri students test results as show in Table 16.

Table.16 Tri-Student Test Results

No	Variable	TRI Value
1.	*Optimism*	0.92
2.	*Innovativeness*	0.90
3.	*Discomfort*	0.63
4.	*Insecurity*	0.64
Total Value of TRI		3.09

Based on Table 16 above, it is clear that the optimism variable contributes the largest, which was 0.90, and the second most significant value of the variable was innovative 0.90, which means that students at junior high school 17 Pekanbaru welcomed new technological innovations and were ready to adopt and utilize technology. However, the level of discomfort and insecurity still had a lower value than the value of optimism and innovation. If summed, the tri value was 3.09. Tri values were between

2.90 =< and =< 3.51, belonging to the category *Medium Technology Readiness Index*, which means prospective users tend to have a sufficient level of readiness to adopt the technology.

3.3. Discussion

Before the discussion, the researchers segmented the TRI score based on four TRI variables, namely, optimistic, innovative, discomfort, and insecurity, so it is easier to classify, and the classification is divided according to 3 roles, namely, teachers, parents, and students. The results of segmentation can be seen in the Table 17.

Table.17 Teacher Type Segmentation Results

No	Variable	Mean	Value
1.	*Optimism*	3.18	Medium
2.	*Innovativeness*	3.24	Medium
3.	*Discomfort*	2.22	Low
4.	*Insecurity*	2.26	Low

For the teacher segmentation type, most respondents fell into the Explorer segmentation category, which can be seen in Table 17 above. The character of the Explorer segment is that they have A relatively high interest and motivation towards new technologies and have a sense of comfort and security when using new technologies because it has a low value of insecurity and discomfort. Paren type segmentation results as show in Table 18.

Table.18 Paren Type Segmentation Results

No	Variable	Mean	Value
1.	*Optimism*	3.39	Medium
2.	*Innovativeness*	3.46	Medium
3.	*Discomfort*	3.25	Medium
4.	*Insecurity*	3.27	Medium

For the type of Parent segmentation, overall, most respondents were in the Pioneer segmentation category. The character of the Pioneer segment is that the existence of new technologies quickly attracts them because they have a high value of optimism and innovation, but at the same time, they will quickly stop trying if they face inconvenience and insecurity because their value is high. Student type segmentation results as show in Table 19.

Table.19 Student Type Segmentation Results

No	Variable	Mean	Value
1.	*Optimism*	3.67	High
2.	*Innovativeness*	3.62	High
3.	*Discomfort*	2.53	Low
4.	*Insecurity*	2.57	Low

In the type of student segmentation, overall respondents include in the Category of Explorer segmentation. The character of the Explorer segment is that students have a high interest in and motivation for new technologies. They may also feel comfort and security while adopting new technologies, but the value of insecurity and discomfort was on the verge of Medium-Low.

From Table 19 which shows that the statistics of the instruments have been grouped into each research variable. The total TRI score for teachers obtained in this study was 2.71, the total score of parents was 3.35, and the total student score was 3.09. If the total number of scores of each was combined, the total accumulation of scores was 3.05. Then it can be concluded that the level of readiness of prospective *Smart School* users was still at the moderate level or *Medium Technology Readiness*. This is because the total value of TRI was between 2.90 =< and =< 3.51.

Overall, innovative and optimistic variable items got the most outstanding value around Medium-High, but the variables of discomfort and insecurity still had lower values and were at a Low level.

This is what needs to be considered in improving the readiness of prospective users in the adoption of *Smart Schools* technology later.

In the TRI category described in the Theory Study section, Optimism and Innovativeness values contributed the most to the total TRI value, which was at least 3.24 and 3.18 in the Medium category. This shows that school residents at junior high school 17 Pekanbaru owned a positive view of technology, where technology gave positive benefits to their work, and users also had an innovative nature in adopting technology and utilizing the technology around them. It could be seen from statements number 1, 3, and 9 that the existence of new technologies quickly attracted them because they possess a high value of optimism and innovation, but at the same time, they would quickly stop trying if they faced the discomfort and insecurity because they had a low value.

The Insecurity variable got a low value of at least 2.26. This shows that prospective *Smart School* users felt uncomfortable using *Smart Schools* and were still hesitant to apply the technology thoroughly in all areas.

The Discomfort variable also had a value that was also still low, which was at least 2.22. This is because when there are uncomfortable conditions, the influence of doubt is due to the lack of understanding of prospective users about the use of *Smart Schools (Smart Card)* technology.

The constraints of technology mastery are not a problem for the prospective user because the *Smart Schools (Smart Card)* performance will be more efficient and minimize human error if done automatically by using technology. As in the question "I quickly understand the technology that exists today," which got a mean value of 3.47. For the total accumulated value of the TRI score from 3 roles of respondents, namely teachers, parents, and students, it obtained an average final result of 3.05, which means that there will not be many obstacles in the technology adoption process.

3.4. Recomendation

Based on the results of research that has been conducted, here are some recommendations to improve the level of readiness that is still lacking related to the application of the concept of *Smart Schools* and parties who intend to conduct further research, namely.

- Judging from the factors of insecurity that fall into the low category, all processes that will be automatized by using *Smart Schools (Smart Cards)* will be expected to be more transparent in the procurement process and more straightforward system workflow. Thus, it can increase the sense of security of the school and students to apply the system in the future.
- Judging from the low inconvenience factor, when adopting the *Smart Schools (Smart Card)* system, it is expected to increase to provide information about how it works and its use which is easily understood to provide convenience and comfort, which will strengthen the perception of prospective users in which *Smart Schools* can facilitate activities such as attendance, administration, and tracking values to be more efficient because it has been done automation with technology.
- It is expected that for further research, the application of the concept of *Smart Schools* can get a reference from this study to increase readiness in the application by paying more attention to factors that are still weak or the least valuable, namely discomfort and insecurity factors so that the application of the *intelligent schools (Smart Card)* concept can run optimally.

4. Conclusion

Based on the results of the analysis and research that has been done, it can be concluded that the level of readiness of prospective Smart School users after being accumulated from the segmentation of teachers, parents, and students is 3.05. The TRI value is between 2.90 =< and =< 3.51. This indicates that the readiness level of prospective Smart School users is still in the medium category (Medium Technology Readiness), which means that the school is quite ready to adopt Smart Schools technology. However, some improvements are still needed in the development from the human resource side.

Then the Innovativeness value contributes the most to the total TRI value, which is at least 0.81 (in the segmentation of teacher scores). This shows prospective Smart School users are quickly attracted by new technologies such as this Smart Schools concept.

Furthermore, the optimism value gives the second-largest score in the total TRI score with a minimum score of 0.79 (in the segmentation of the teacher score). This shows prospective Smart School users have a good view of Smart School technology. They believe that Smart Schools can positively impact learning activities in their schools.

Discomfort and insecurity variables contribute to lower TRI values with minimum values of 0.56 and 0.55 (in teacher score segmentation). This shows that prospective Smart School users feel uncomfortable using Smart Schools and are still hesitant to apply the technology thoroughly in all areas.

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