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EVALUATION IMPLEMENTATION OF UI / UX IN MONITORING & CONTROLLING STUDY IMPROVEMENT WITH USER-CENTERED DESIGN METHOD

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ABSTRACT

Implementing *UI/UX* Adjustments to Control & Monitor What *Users* of All Ages Can Understand is much easier as it takes a lot of deliberation. So organizations need to know whether the *UI/UX* applied can understand all *users'* ages. *Users* aged 40 and over are struggling with the current *UI/UX* appearance. Therefore, this study aims to fight for *UI/UX* adjustments for *Controlling & Monitoring* that are reachable and understandable by *users* of all ages. The *evaluation* will begin by conducting data collection using the Behavioral – Qualitative, Questionnaire and Interview methods. After all the data has been collected, a *UI/UX* analysis will be made, focusing on the approach through a discussion process with *users* or the User-Centered Design method. Data was collected using questionnaires and interviews, then analyzed with the help of *Heuristic Evaluation*. To get the results achieved, a comparison will be made between the design before *implementation*. So that *users* can find out which factors make a design that is suitable for *users* of all ages. After which factors in creating a suitable design for all ages, and organization will make recommendations to improve the design. Based on the research results, it can be concluded that Overall, Parents need a *Monitoring & Controlling* Learning Progress Application with a simple and easy to understand *UI/UX* Design for *Monitoring & Controlling* their child's Learning Progress; Usability factor is not significantly influenced by external factors Learnability, Memorability, and Satisfaction. This is because these factors do not affect parents' views about the UI / UX of the application, but the parents see from the functions or features provided by the application itself. In addition, other external factors have a significant effect on Usability, namely Efficiency and Error, meaning that the efficiency and errors that occur in the application can affect parents in using the *Monitoring & Controlling* Learning Progress application; Overall, Parents are more concerned with scheduling features/child activities for *Monitoring & Controlling* Learning Progress Applications with UI / UX Design.

Keywords: *UI/UX, User, User-Centered Design, Heuristic Evaluation, Implementation, Adjustment, Evaluation, Controlling, Monitoring*

1. INTRODUCTION

Technology and humans can never be separated. Humans will forever still need technology to facilitate their activities. The benefits of technology will be felt if humans themselves are wise in using it. So, technology that continues to develop in the future can continue to turn on human civilization that is more advanced than the era we are experiencing today. And maybe even with the undiscovered technology of the future, things that we humans can't currently do. This final result shows that this research is needed to help parents who are older and do not understand how to use technology, which is one of the limitations of technology and humans that is currently happening, such as understanding the human center in technological development where there is a very important factor. in this modern era.

Along with the times, many things can be done and facilitated by the presence of technology. Even crime (Cyber Crime) is also very much done with technology because of today's sophisticated technology. Even Robots (Artificial Intelligence)

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have also started to appear replacing humans with jobs that were previously done by humans themselves. So that parents above the Millennial Era must also begin to adapt to remain to Survive in the future for the current Digital Era. For educational institutions themselves, many have used technology to make it easier and more flexible for parents/guardians to monitor and control their children. But unfortunately, the existing UI/UX design is still very confusing and parents find it difficult to use it. So that the benefits of this research are raised to make it easier for parents with a simpler UI/UX design concept so that parents can be more flexible in monitoring & controlling because UI/UX is easier to understand and understand. Parents will also begin to try Adaptation with the ease of technology so that they can survive in the future also for all ages/groups. But, Not all parents want to adapt to technology because they are used to being without technology and continue

to do Monitoring & Controlling directly at school even though it is very easy for Websites/Applications to be used, including UI/UX Design which has been adapted for all groups/age.

Using deep neural networks, Computer Vision can figure out what a neuron looks like in a person's brain. These networks have three parts: an input layer that takes source material from text, structured data, or an image; an output layer that gives the desired output; and a lot of hidden layers that connect the input and output layers, so they work together[3].

It is the study of how the body works. As well as telling us how our bodies work, physiological knowledge is important when we get hurt or sick because it helps us keep our bodies working. As in all of the biological sciences, research in human physiology is based on observation, inference, imaginative ideas for hypotheses, and the testing of these hypotheses by doing experiments, just like in all of them. Many experiments on human physiology are done right on people who are willing to help. Data from people is obviously the most important for understanding human biology. The next part of the chapter talks about imaging technologies and how explanations work in human physiology, as well[10].

In higher education, a lot of research has been done to figure out what the most important things are and how to deal with them when you start an ERP project. But only a few studies looked at implementation issues in the context of higher education institutions. The authors try to look at and compare two different higher education institutions in South Africa and India in order to figure out what the real-world factors are that make it hard for an ERP project to be successful and then give the readers ideas for how to fix them. Project management issues, which include technical and functional aspects,

as well as human capital issues, which include beliefs and attitudes, are the three main areas where implementation problems arise, according to the study. The authors think that the information learned from the case studies is very important for businesses to know about technology and business process reengineering[2].

Data privacy is becoming one of the major risks faced by organizations. With the emergence of new technologies such as Internet of Things (IoT), Automated vehicles, mobile payments, privacy is no longer a compliance issue, but also a user responsibility to ensure users are aware of the risks of sharing personal data with third parties[12].

Implementation and Evaluation of the Dag. - Based Decentralized Oracle Model, Blockchain comes up to solve problems with centralization and to be an alternative to traditional money. This technology looks very promising, and it has worked very well at making people trust each other. It thinks up new ways to run businesses and allocate money, and it promises decentralized financial services like credit, exchange, insurance, and so on. It is the use of computer programs called "smart contracts" in a network that isn't controlled by any one person. These programs replace traditional middlemen and make business processes easier. When smart contracts are used in the blockchain, they must be based on solid data from the outside world, like market prices that are seen on all exchanges. Blockchains aren't built to work with data from the " outside," so oracles are outside systems that solve the problem of feeding an isolated network with data from the outside. There is also a risk of data being corrupted and being unreliable because these systems are all in one place[15].

Organizations in every industry are trying to use effective User Experience (UX) practices, but they often have to spend a lot of money trying and failing because there isn't a standard way to do so. To solve this problem, we present

the UX Capacity Assessment Framework (UXCAF) as a comprehensive tool that can help organizations understand the strengths and limitations of their current UX practices and choose the best ways to improve them. People, resources, practices and processes, organizational literacy, organizational decision-making, and benefits are some of the 21 concepts that make up the UXCAF.

It was created after a literature review and interviews with UX professionals. In this video, we show how the UXCAF can be used to show how businesses of any size or type can learn how to improve their own UX practices and stay competitive in a world that is becoming more digital[9].

There isn't enough research on how to teach UX pedagogy in general, but there isn't much on how to teach UX Research instead of UX Design. So, this article looks at what it would take to build such a program, how difficult it would be to do so, and whether a separate research-focused program is needed. On the basis of my work as a UX Researcher and as an Assistant Professor teaching UX/Applied Anthropology, I think that the industry would benefit from interdisciplinary UX Research programs that use the strengths of different departments to teach the skills needed for this job[17].

Implementing User Interface (UI) / User Experience (UX) *Adjustments* for *Controlling & Monitoring* that can be understood by *Users* of All Ages is not easy because it requires a lot of consideration. So we need to know whether the implemented UI / UX is understandable for *users* of all ages. *Users* who are over 40 years old are sometimes made ambiguous by the current UI / UX appearance. With a problem. Therefore, this research aims to evaluate UI / UX *adjustments* for *Controlling & Monitoring* that can be understood by *Users* of All Ages. The scope of this research will be limited to being the focus of the discussion so that this research can be directed, for this research to be carried out around the Schools in the surrounding area. The evaluation will

begin by conducting Data Collection. The objectives of this research are: to evaluate user *adjustments* to the UI / UX in the *Monitoring & Controlling* Learning Progress Application. Testing what factors affect Users when using *UI/UX* on customized Learning Progress *Monitoring & Controlling* Applications. The benefits obtained from this research are Obtaining Evidence from the Evaluation Results of User *Adjustment* to UI / UX on Learning Progress *Monitoring & Controlling* Applications, Knowing what factors affect Users when using UI / UX on Learning Progress *Monitoring & Controlling* Applications so that they can be used as suggestions improvements in the UI / UX *adjustments*. The data collection was carried out using the Behavior – Qualitative, Questionnaire and Interview methods. After all the data is collected, then an analysis of the UI / UX will be made that will focus on the approach through a discussion process with direct *users* or with these Centered Design methods. Data was collected using a questionnaire, then analyzed using the *User-Centered* Design Method. To get the results achieved will be made a comparison between the design before and after implementation. So that can find out which designs are suitable for users of all ages. After finding a design that is suitable for all ages, the author will design recommendations to improve the design. Creating a better user interface has become an important part of software development. To figure out what people want and need, it's hard to figure out what they want. The field of natural language processing has become very popular in these kinds of situations because these approaches are more linguistically based. This paper looks at all the work that has been done so far on how to find and make user interface designs based on voice and design-driven approaches. These works have flaws and reviews about major parts are looked at. This paper is the first step in a long process of research, and in the near future, we hope to use this information to build a system that will solve the research gap that we found[4].

Web usability is very important for people to like and be satisfied with the site. There were a lot of free and paid website testing tools available, which made it easy to quickly check the usability of websites. However, their ability to produce meaningful, consistent, and valid results is still up in the air. In this study, we first came up with a usability framework that includes 19 usability dimensions. We then looked at how well 10 popular web usability testing tools worked with this framework. Next, we used the automated evaluation to look at nine websites in three major categories: e-commerce, vacation rentals, and education. On the bright side, the tools looked at a lot of different things, like performance, SEO, page size, accessibility, and security. However, we found a lot of important problems when we did a more in-depth analysis. Most of the tools don't seem to pay attention to how easy it is to use. Second, the automated tools gave different and conflicting results when they looked at the same websites. As a third thing, the analysis report was hard for non-technical people to understand. Fourth, the tools found and explained problems with the technical implementation of the websites, but didn't pay attention to web usability flaws. SEOptimiser, Dareboost, Website Grader, and Sure Oak were the only tools that suggested ways to speed up and improve the quality of the websites they looked at. Finally, the inner workings of the tools don't seem to be based on the theory of usability, which calls

for urgent collaboration between industry experts and people who study usability[1].

Agile is the most common way to make software all over the world. People who use this method work quickly, work in short iterations, and deliver working software as soon as possible. User-Centered Design is a more traditional way to make things that are good for people and their needs first. It says that you should spend more time getting to know your users and their needs and wants, while the implementation process can be pushed back and take longer. Both ways try to make the best software for the people who use it, but they use different methods. This paper looks at a case study to see how Agile and User-Centered Design can work together and whether this combination adds value. Then, a development method is suggested that combines both of these ideas[20].

Then the hypothesis is compiled based on 2 aspects that become the benchmark for User Satisfaction with the UI / UX Display for Student and Student Monitoring Applications. The first is about the quality of service provided by the manager of the application and the second is about the application product, namely the quality of the appearance of the application and features that are useful or not. How the quality of service and the quality of page views (products) can affect user satisfaction, of course only services and page views (products) that have the quality that meet the expectations of students and parents as users can create satisfaction that leads to repeated use and recommend it to others. others, it means to have Loyalty. After that, conclusions are made which are the results of the analysis and evaluation that have been carried out on this UI / UX design[5].

Nothing is more critical than an outstanding user experience in today's highly competitive digital economy. The user interface and user experience are the primary components of your digital product that ensure a positive user experience. A fantastic user interface may create an immediate impression on users, while an incredible user experience can leave a lasting effect on their thoughts. As a result, both should be completed properly to ensure the success of your application.

A positive user experience results in increased earnings for every firm. All you need to do is create an intuitive UI/UX design that enables users to navigate the app quickly.

Today, the country has proposed a change in the way research is judged. This has led to a big change in the way research is judged in universities, which the country backs. So, how to do effective scientific research evaluation at the universities is a big question for them to figure out. Neural networks are used in this study to solve problems with service evaluation in scientific research. Based on neural networks, the model is broken into two parts: getting evaluation index weights and getting the final evaluation results. The multi-model fusion method was used. Finally, the experiments on real data from the university are done. Using our model to get research evaluation results shows that it can do a good job. This means that it can get both faculty evaluation results as well as team evaluation results[8].

According to Statista, there are over 6.3 billion smartphone users worldwide. According to some statistics, the Google Play Store currently has 2.89 million applications accessible for download.

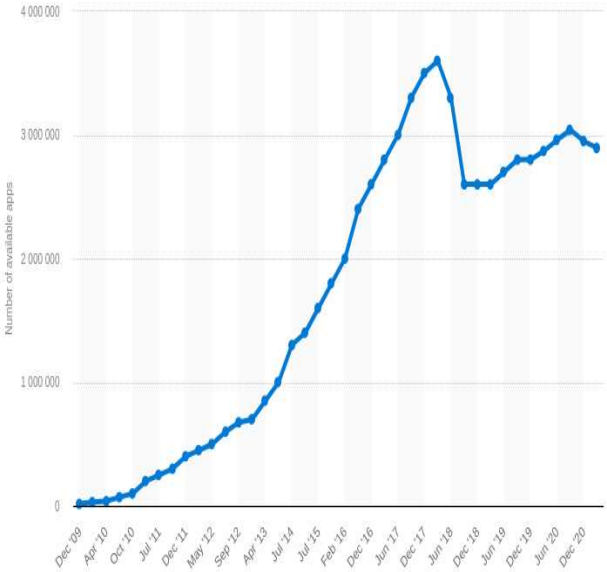

Figure 1: Data Statistic Number of available apps (Source: Mindinventory)

How Does an Effective UI / UX Design Contribute to an App's Success?

Mobile customers choose apps that are visually appealing and simple to use. You must provide them with an intuitive navigation system and an easy-to-use interface. Creating a well-designed application result in company success. The majority of users choose an app that is visually appealing and easy to use yet packs a punch in terms of features and usefulness.

As a result, developing an excellent interface will provide your users with a realistic experience while using your program. Additionally, it provides essential information regularly. If more users utilize your app daily, it will automatically generate more

traffic. This improves sales conversions and hence strengthens your brand's identity.

UI and UX designs help establish a brand's identity and strengthen its digital presence. When it comes to user experience, online users have slightly higher expectations. As a result, they seek out applications with an intuitive and engaging user interface.

Your firm will benefit from an amazing visual identity and a flawless user interface/user experience design. As a result, it will continue to grow[14].

2. LITERATURE REVIEW

This research focuses on parents and aims to help parents understand the application that will be made to monitor their child's learning progress at school this uses the User-Centered Design method to explore what users want, then Heuristic Evaluation to evaluate the usability of the existing UI. It can be concluded that this study builds a design that is easy to understand by collecting data from user desires and comparing it with existing designs to make it simpler or easier to understand.

While other research usually uses other methods such as Design Science Research Methodology to improve or develop existing technology/designs to be more useful.

This section will summarize the important theories and concepts from prior research that have been applied to this research.

2.1 Monitoring

Monitoring is the systematic collection, analysis, and use of data to follow the progress of a program toward achieving its objectives and to guide management choices. Typically, monitoring is concerned with processes, such as when and where actions occur, who performs them, and how many people or entities they affect. The goal of process monitoring and control is to detect possible dangers that require action[16]. Monitoring is helpful to be aware of a person's behavior or find out some of the activities causing the problem so that the problem can be solved.

2.2 Controlling

Controlling is the process of ensuring that actual operations adhere to the plan. Controlling enables managers to evaluate the efficacy of their planning, organizing, and leading efforts. Controlling establishes what is completed — that is, reviewing performance and, if required, implementing corrective actions to ensure that performance occurs as planned. Control can also be defined as the process of identifying and correcting substantial discrepancies in the outcomes of planned activity[13].

By gaining a thorough understanding of the actual governing function, the benefits of supervision can be maximized.

2.3 UI (User Interface)

When users engage with an app, it is present. It ensures easy user engagement with the program. UI is all about an app's look, graphics, and design. The app's UI must be appealing[14].

The term UI / UX has become popular in recent years. UI / UX are inextricably linked, as the User Interface affects the User Experience. Many modern developers take note of and pay attention to this term, as application developers place a premium on user pleasure and addressing user needs. In general, user interface (UI) refers to the link between humans and computers within a device, including both display layers, the keyboard, mouse, and desktop. However, experts assert that the User Interface is how programs and users interact.

User Interface (UI) Type:

- Graphic User Interface (GUI) :

The key to graphical user interfaces (GUIs) is the ongoing feedback they provide to users regarding task completion. Continuous feedback on the manipulated object enables rapid modification or reversal of operations without incurring error messages[18].

- Command Line Interface (CLI) :

A command-language interface enables the user to control a program via a sequence of keystrokes, commands, words, or a combination of these three ways. Command language syntaxes are thought to be close to natural language.

The command language is devoid of inherent meaning for the user, which distinguishes it from the other interfaces covered thus far. By allowing the user to manage the dialog, command languages allow the computer to be used as a tool. The command language provides the user with a greater degree of total freedom and control. When a user uses command language, the command is immediately performed by the system. The user may then issue another command.

Command languages need users to memorize syntax rules, which may prove difficult for unskilled users.

The preference of experienced users is towards command languages, probably due to their speedier finishing time[18].

- Natural User Interface :

Natural-language interfaces are likely the ultimate goal and excellent for inexperienced users, as they enable people to communicate with the computer in their native, or every day, language. The user does not require any particular abilities; he or she communicates with the computer using natural language [18].

UI (User Interface) refers to the appearance and feel of a website or application that you develop. Layout, Visual Design, and Branding are all included. Additionally, it includes a variety of different types of information (documents, text, images, and videos), forms (buttons, labels, text fields, checkboxes, drop-down lists, and graphic designs), and behaviors (what happens when the user clicks/drags /types).

2.4 UX (User Experience)

UX is comprised of human decisions, perspectives, emotions, and feelings both during and after the use of an application. To enhance a user's experience with an app, you must enhance its usability, ease of use, and accessibility. Don't forget to perform a thorough analysis of your users' requirements to create an effective user experience design [14].

A well-designed user interface (UX) will provide a pleasant experience for *users* when they use your product. When *users* use the product, they get at ease and comfortable.

Meanwhile, this UX component encompasses how elements are presented on the Product, the Design Structure, product navigation, visual design components, and other aspects of user interaction. UX also includes the process by which you determine the Branding, Content,
and Copywriting that is most appropriate for your Target Users.

UX (User Experience) is concerned with how a product feels, whether it solves a user's problem, is simple to use, and is not confusing. Products with an effective user experience design will almost always provide a positive user experience.

2.5 User-Centered Design

The user-centered design (UCD) method explains the phases that occur throughout the design and development lifecycle, with an emphasis on acquiring a thorough understanding of the intended users. When a product team creates digital products, they take the user's requirements, objectives, and feedback into
consideration. Satisfying users' needs and desires become a priority, and each design decision is evaluated in terms of its worth to users. User-centered design enables you to infuse your goods with an emotional component. The UCD process is divided into the following phases:

- **Specify the context of usage**: Identify the individuals who will use the product, the purpose for which they will use it, and the conditions in which they will use it.
- **Specification of requirements**: Determine any business criteria or user goals that the product must meet to be effective.
- **Create design solutions**: This stage of the process may be completed in stages, starting with a rough concept and progressing to a finished design.
- **Evaluate concepts**: Evaluation - ideally through usability testing with actual users - is as critical to excellent software development as quality testing is[19].

2.6 Human Computer Interaction

A subfield of Human Computer Interaction (HCI) studies the design and use of computer technologies, with a particular emphasis on the interfaces between computers and their users (people). HCI researchers study the ways in which people interact with computers and the technologies that are developed to assist Humans in doing so in an effective manner[7].

3. RESEARCH METHOD

The *evaluation* will be carried out using the *User-Centered 1Design* method. User-*Centered* Design is a User-centered Method. So, the UX that will be made focuses on the approach through a discussion process with direct *users*. Wherefrom the dialogue process, it is expected to be able to provide information in the form of data that can be used as guidelines for making a design. Thus, the initial product design that will be made focuses more on the input or suggestions given by several *users*.

3.1. Hypothesis

The variables used in this research include usability variables which include the principles of *Heuristic Evaluation*. Measurements were carried out using a questionnaire method using a usability model and using ten heuristic principles to measure the usability level[6].

From these methods, the research hypotheses can be formulated as follows:

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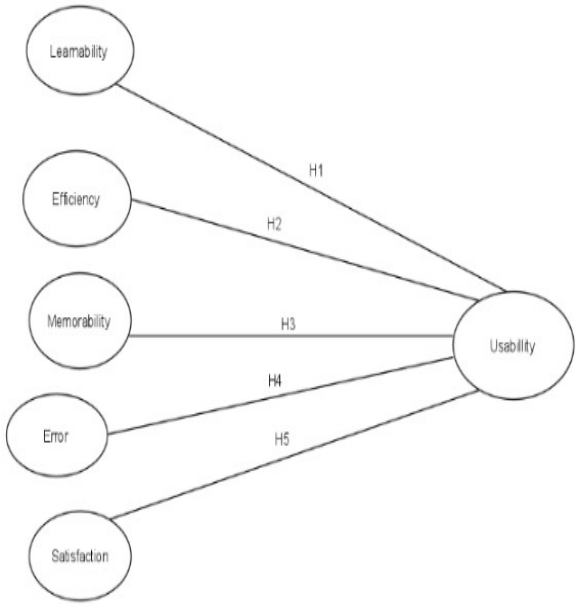

Figure 2: Path Diagram

H1. THE LEARNABILITY FACTOR HAS A POSITIVE EFFECT ON THE USABILITY ASPECT, CAN USERS GET LEARNING / TRAINING EASILY, ACCURATELY, AND COMPLETELY?

H_0: learnability does not have a positive effect on the usability aspect, can *users* get learning/training easily, accurately, and completely?

H_1: learnability has a positive effect on usability aspects, can *users* get learning/training easily, accurately, and completely?

H2. THE EFFICIENCY FACTOR HAS A POSITIVE EFFECT ON THE USABILITY ASPECT, WHETHER THE USER CAN RECOGNIZE THE FEATURES HE NEEDS AND COMPLETE HIS WORK QUICKLY AND THE USER CAN EASILY OPERATE

H_0: efficiency does not have a positive effect on the usability aspect, whether the user can identify the features he needs and complete his work quickly and the user can easily operate

H_1: efficiency has a positive effect on the usability aspect, whether the user can recognize the features he needs and complete his work quickly and the user can easily operate

H3. THE MEMORABILITY FACTOR HAS A POSITIVE EFFECT ON THE USABILITY ASPECT, WHETHER THE USER SHOULD BE ABLE TO EASILY UNDERSTAND AND REMEMBER HOW TO USE THE SYSTEM.

H_0: memorability does not have a positive effect on the usability aspect, whether the user should be able to easily understand and remember how to use the system.

H_1: memorability has a positive effect on the usability aspect, whether the user should be able to easily understand and remember how to use the system.

H4. THE ERROR FACTOR HAS A POSITIVE EFFECT ON THE USABILITY ASPECT, WHETHER THE USER WILL NOT MAKE MISTAKES WHEN USING THE SYSTEM SO THAT IT INTERFERES WITH THE TASKS BEING CARRIED OUT.

H_0: the error does not have a positive effect on the usability aspect, whether the user will not make mistakes
when using the system so that it interferes with the work being done.

H_1: the error has a positive effect on the usability aspect, whether the user will not make mistakes when using the system so that it interferes with the task being done.

H5. THE SATISFACTION FACTOR HAS A POSITIVE EFFECT ON THE USABILITY ASPECT, WHETHER THE USER IS SATISFIED WITH THE INFORMATION PRESENTED.

H_0: satisfaction does not have a positive effect on the usability aspect, whether the user is satisfied with the information presented.

H_1: satisfaction has a positive effect on the usability aspect, whether the user is satisfied with the information presented.

3.2. Duration and Object Research

This study was place between September and December of 2021. The research's target group is Indonesian parents, particularly those with children enrolled in Elementary School through Senior High School. There are no restrictions on the respondent's age or gender.

3.3. Methods of Data Analysis and Hypothesis Testing

This Research will use the SEM - PLS method as a data analysis method. To facilitate Data Processing and Analysis, Microsoft Excel version 16.0.14701.20210 and SmartPLS version 3.0. After the questionnaires are distributed, the respondent's data will then be recapitulated and tabulated using Microsoft Excel to

facilitate data processing in SmartPLS. SmartPLS is used to perform Model Tests. Data processing and analysis in SmartPLS aims to analyze the relationship between variables and to test the proposed hypothesis whether it is accepted or rejected. Before starting to process the data using the SEM - PLS method, the researcher will create a path model as a diagram that describes the hypothesis and the relationship between variables. Path Model is a model in SEM - PLS that describes the *Inner Model* and *Outer Model* in this research, where the *Inner Model* describes the relationship between Latent Variables and the *Outer Model* describes the relationship between Latent Variables and their Indicators. To test the research model, some rules apply in concluding data which will be explained below[11].

Outer Model Test (Measurement Model)

Outer Model Testing is used to check whether each construct's indicator is valid and capable of measuring what should be measured to provide valid and reliable research. There are two stages to testing the Outer Model, namely the Validity and Reliability Tests.

1. Validity Test

a. Convergent Validity Indicates the extent to which a measure is positively linked with other measures of the same concept[11].

b. Discriminant Validity This test is used to establish how distinct each construct is from the others [11].

The reliability test is conducted in two ways, notably by examining the *Composite Reliability* value and Cronbach's Alpha. This test is intended to determine whether the indicators being used to measure are capable of producing consistent or identical results[11].

Table 1: Rule of Thumb for Testing Outer Model

Type Test	Parameter	***Rule of Thumb***	Source
Convergent Validity	*Loading Factor / Outer Loading*	• According to the Hair Book, a proper outside loading should be > 0.70[11]. • According to Chin's research, the *Outer Loading* Value ≥ 0.5 can be 145 2+ approved[11].	•(Diamantino & Mau, 2021) •(Diamantino & Mau, 2021)
	Average Variance Extracted (AVE)	A decent AVE score is > 0.50, indicating that each Latent Variable may account for at least 50% or more of its corresponding Indicator Variance[11].	(Diamantino & Mau, 2021)
DiscriminantValidity	*Fornell Larcker Criterion*	The correlation coefficient between variable A and itself must be bigger than the correlation coefficient between variable A and other variables[11].	(Diamantino & Mau, 2021)
	Cross Loading	The indicator's correlation with the measured variable must be stronger than the indicator's correlation with other variables[11].	(Diamantino & Mau, 2021)
Reliability	*Composite Reliability*	The *Composite Reliability* value starts from 0 to 1. The *Composite Reliability* value must be > 0.70. The closer the value is to 1, the better the *item* explains the latent construct variance or the higher the level of reliability	(Diamantino & Mau, 2021)
	Cronbach's Alpha	**Cronbach's Alpha** value must be > 0.70 to be said to be satisfactory or reliable	(Diamantino & Mau, 2021)

Inner Model Test (*Structural Model*)

[9] The purpose of *Inner Model* Testing is to investigate the link between Exogenous and Endogenous Latent Variables. The following indicators can be used to evaluate the *Structural Model* :

1. *Coefficients of Determination (R^2)*

The coefficient of determination is invariant for linear transformations of the distributions of independent variables, and an output value close to one yields an accurate forecast regardless of the scale used to measure such variables[5].

2. *Effect Size* (f^2)

Used to determine the extent to which an exogenous variable affects an endogenous variable.

3. *Predictive Relevance* (Q^2)

Q2 is used to demonstrate the extent to which a *Path Model* can anticipate the observed variable's value. These are the results of the *BlindFolding* procedure.

4. *Path Coefficients*

Path Coefficients are used to indicate the direction of the variable relationship, whether a hypothesis has a Positive or Negative influence. The *Path Coefficients* values are standardized from the range -1 to +1.

5. *T - Statistics*

The *BootStrap* technique is used to determine the value of *T - Statistics*. This formula is used to determine the significance of the relationship between the Latent Variables in the Structural Model.

Table 2: Rule of Thumb The Inner Model Test

Parameter	***Rule of Thumb***	**Source**
Coefficients of Determination (R^2)	1) Value $R^2$0.67 = Strong[5] 2) Value $R^2$0.33 = median or moderate[5] 3) Value $R^2$0.19 = Weak[5]	(Chicco et al., 2021)
Effect Size (f^2)	1) Value f^2 0.02 = possess negligible influence[11] 2) Value f^2 0.15 = possess moderate influence[11] 3) Value f^2 0.35 = possess considerable influence[11]	(Diamantino & Mau, 2021)

Parameter	*Rule of Thumb*	Source
Predictive Relevance (Q^2)	1) Value $Q^2>0$ indicates that the model has a considerable standard of *predictive accuracy*[11]. 2) Value $Q^2<0$ indicates that the model is not *predictively relevant*[11].	(Diamantino & Mau, 2021)
Path Coefficients	1) *Path coefficients* near +1 indicate a positive link, whereas values near -1 indicate a negative relationship[11]. 2) Value *Path Coefficients* must be ≥ 0.05 to be considered significant[5].	(Diamantino & Mau, 2021) (Chicco et al., 2021)
T-statistics	The significance value used in this research is 1.96 with a significant level of 5% (*Two-Tailed*). If the *T - Statistics* Value is greater than 1.96 with a Significance level of 5% (*Two-Tailed*), then it is said to be significant. If the *T - Statistics* value is < 1.96, the relationship is considered insignificant[11].	(Diamantino & Mau, 2021)

4. RESULTS AND DISCUSSION

This section will discuss the result

4.1. Analysis SEM-PLS Using SmartPLS

The analytical approach employed in this research is SEM-PLS with SmartPLS *software* for data processing and testing.

4.1.1 Path Model

Before the data is processed and tested, the writing team will construct a *path model* based on the research model employed. The process of creating the *path model* is guided by the *Heuristic Evaluation* framework. There are five exogenous or independent

variables in this research model, namely *Learnability* (LA), *Memorability* (MA), *Efficiency* (EF), *Error* (ER), and *Satisfaction* (ST), and one endogenous or dependent variable, namely Usability (US).

Variable LA, MA, EF, ER, and ST associated with the variable US.

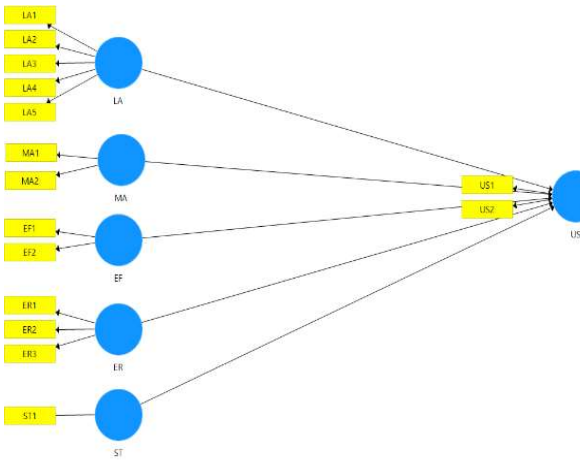

Figure 3: Path Diagram
(Source: Test Result SmartPLS)

In this research, the regression equation took the following form: Y = aX + ε. Where Y is an endogenous variable, X is an exogenous variable, and is the direction coefficient's value, and is another exogenous variable.

The regression equation for the research model depicted in Figure 3 is as follows:

1. US = A1 * LA + ε1
2. US = A2 * MA + ε2
3. US = A3 * EF + ε3
4. US = A4 * ER + ε4
5. US = A5 * ST + ε5

The variables ε1, ε2, ε3, ε4, ε5 in the regression equation above can be described as factors that are not included in the study or are not observed by the researcher. To be determined from Variables A1, A2, A3, A4, and A5, as indicated by the *path coefficient* values in the structural model analysis findings.

4.1.2 Testing the Measurement Model (Outer Model / Measurement Model)

The outer model test determines whether each construct's indicator is valid and capable of measuring what should be tested to create valid and reliable research. There are two stages to assessing the outer model, namely validity and reliability test

a. Validity Test

Convergent Validity Test

The value of the *loading factor* (*outer loading*) and the *Average Variance Extracted* (AVE) indicate *convergent validity*. *Outer loading* refers to the correlation between latent variables and each indicator. The *Average Variance Extracted* (*AVE*) metric indicates the degree to which the hidden variable adequately explains the indicator. The outer loading corresponds to the value of each indicator, and the AVE corresponds to the value of each variable.

Table 3: Value Outer Loading

Indicator	Outer Loading
EF1	0.934
EF2	0.963
ER1	0.759
ER2	0.856
ER3	0.886
LA1	0.857
LA2	0.856
LA3	0.849
LA4	0.892
LA5	0.925
MA1	0.967
MA2	0.959
ST	1.000
US1	0.874
US2	0.912

(Source: Test Result SmartPLS)

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From Table 3, there are no indicators with an *outer loading* value less than 0.7.

Table 4 Value *Composite Reliability* and AVE

Variable	Composite Reliability	AVE
EF	0.947	0.900
ER	0.874	0.698
LA	0.943	0.768
MA	0.963	0.928
ST	1.000	1.000
US	0.887	0.797

(Source: Test Result SmartPLS)

Convergent validity testing is also performed using the AVE value, where the AVE value of each construct must be more than 0.50, indicating that each latent variable can account for at least 50% of the variance in the corresponding indicator. Then, convergent validity is determined by examining the Average Variance Extracted (AVE) value for each variable. The AVE value must be > 0.50, indicating that each latent variable can account for at least 50% of the variance in the corresponding indicator. Based on the results of the tests,

the AVE value of all variables is greater than 0.50, indicating that the variable is legitimate and suitable for research usage.

Table 5: Value Average Variance Extracted (AVE)

Variable	AVE
EF	0.900
ER	0.698
LA	0.768
MA	0.928
ST	1.000
US	0.797

(Source: Test Result SmartPLS)

b. Test Discriminant Validity

Discriminant Validity is used to determine the extent to which a construct is different from other constructs. The *Fornell Larcker criterion* and *cross-loading* are used to determine *discriminant validity*. The *Fornell-Larcker criterion value* indicates the correlation between the variable and the variable itself, as well as between the variable and other variables. *Cross-loading* indicates the degree of association between two indicators or variables. The *Fornell larcker criterion* value for a variable must be greater than the correlation value of that variable with other variables.

Table 6: Value Fornerll Lacker Criterion

	EF	ER	LA	MA	ST	US
EF	0.949					
ER	0.742	0.836				
LA	0.783	0.713	0.876			
MA	0.727	0.486	0.757	0.963		
ST	0.534	0.685	0.494	0.543	1.000	
US	0.736	0.810	0.723	0.481	0.580	0.893

(Source: Test Result SmartPLS)

As seen in the table above, the *Fornel lacker criteria* value met the requirement that each variable's correlation value be greater than its correlation with other variables.Cross loading requires that the loading value or correlation of the variable's indicators be greater than the correlation of the indicators with other variables.

Table 7 : Cross Loading Value

	EF	ER	LA	MA	ST	US
EF1	0.963	0.777	0.742	0.629	0.534	0.785
EF2	0.495	0.759	0.466	0.342	0.522	0.544
ER1	0.668	0.856	0.686	0.451	0.525	0.781
ER2	0.674	0.886	0.605	0.412	0.676	0.673
ER3	0.674	0.886	0.605	0.412	0.676	0.673
LA1	0.579	0.613	0.857	0.675	0.469	0.544
LA2	0.693	0.739	0.856	0.523	0.509	0.736
LA3	0.688	0.595	0.849	0.663	0.339	0.603
LA4	0.706	0.584	0.892	0.690	0.421	0.653
LA5	0.748	0.566	0.925	0.796	0.413	0.597
MA1	0.710	0.498	0.764	0.967	0.497	0.485
MA2	0.689	0.435	0.692	0.959	0.552	0.438
ST1	0.534	0.685	0.494	0.543	1.000	0.580
US1	0.703	0.625	0.620	0.527	0.505	0.874
US2	0.621	0.808	0.669	0.347	0.530	0.912

(Source: Test Result SmartPLS)

As seen in Table 7, no indicator has a lower loading value when *monitoring* its variables.

a. Reliability Test

Reliability testing is done by looking at the value of *composite reliability* and *Cronbach's alpha*. *Reliability* shows whether the indicators used in research to measure variables can provide consistent or the same results. The value of *composite reliability* and *Cronbach's alpha* must be greater than 0.70.

Table 8:Cronbach's Alpha Value and Composite Reliability Value

Variable	Cronbach's Alpha	Composite Reliability
EF	0.891	0.947
ER	0.785	0.874
LA	0.924	0.943
MA	0.922	0.963
ST	1.000	1.000
US	0.747	0.887

(Source: Test Result SmartPLS)

It can be seen from the table above, that both composite reliability and Cronbach's alpha values in each variable have a value of more than 0.70. Therefore, it can be concluded that the indicators are reliable to be used in research.

4.2.3 Structural Model Testing (Inner Model / Structural Model)

The test of the *inner model* aims to examine the relationship between exogenous latent variables and endogenous latent variables.

Coefficient of Determination (R^2)

The R-square value shows how much influence the combination of exogenous variables has on endogenous variables or the extent to which the combination of

exogenous variables explains endogenous variables. The value of R2 is the value of the endogenous variable.

The value of R^2 can be categorized as follows:

1) Value $R^2$0.67 = Strong

2) Value R^2 0.33 = Medium or Moderate

3) Value R^2 0.19 = Weak

Table 9: Value R-square

Variable Endogen	R-square	Annotation
US	0.730	Strong

(Source: Test Result SmartPLS)

The table above shows the *R-square* value of endogenous variables. As seen in the table above, it can be seen that the endogenous variables in this research have a strong category.

The variables, namely *Learnability* (LA), *Memorability* (MA), *Efficiency* (EF), *Error* (ER), and *Satisfaction* (ST), affect the *Usability* (US) variable with a value of 0.730. This means that the *Usability* (US) variable can be explained by the *Learnability* (LA), *Memorability* (MA), *Efficiency* (EF), *Error* (ER), and *Satisfaction* (ST) variables of 73.0%, while the remaining 27.0% is explained by variables outside study.

b. Effect Size (f^2)

The value of F^2 shows how much influence an exogenous variable has on endogenous variables. The categories of f^2 values are as follows:

1) The f^2 value of 0.02 indicates that the exogenous construct has a negligible effect on the endogenous construct.

2) The f^2 value of 0.15 indicates that the exogenous construct has a moderate or moderate effect on the endogenous construct.

3) The f^2 value of 0.35 indicates that the exogenous construct significantly influences the endogenous construct.

Table 10: Value effect Size (f^2)

Exogenous Variable	Endogenous Variables	Effect size (f^2)	Annotation
EF	US	0.088	Low
ER	US	0.118	Medium
LA	US	0.111	Medium
MA	US	0.068	Low
ST	US	0.026	Low

(Source: Test Result SmartPLS)

c. *Predictive Relevance* (Q^2)

The value of Q^2 is used to indicate the extent to which a *path model* can predict the value of the observed variable or assess the *predictive relevance* of an *inner model*. The value of Q^2 was obtained from the *blindfolding* procedure.

Table 11: Value Q-square

Variable Endogen	SSO	SSE	Q^2(=1-SSE/SSO)
US	200.000	102.224	0.489

(Source: Test Result SmartPLS)

Q^2>0 represents that the model has predictive relevance or has good predictive accuracy, while Q^2<0 represents that the model lacks predictive relevance. From the table, it can be seen that each endogenous variable has a Q^2 value of more than 0. So it can be concluded that the model in this study has predictive relevance.

d. *Path Coefficients*

Path Coefficients represent the relationship between constructs or latent variables. *Path coefficients* indicate the direction of the variable relationship, whether a hypothesis has a positive or negative influence. The path coefficient value is obtained through According to Urban & Ahlemann (2010), the path coefficient value can be said to be significant and valid with a minimum value of 0.05. The path coefficient values start from -1 to +1, with an estimated value close to +1 representing a strong positive relationship and a value approaching -1 indicating a strong negative relationship. The closer the coefficient estimate value to 0, the weaker the relationship.

Table 12: value Path Coefficient

Line Relationship	Original Sample (O)	Relationship
EF -> US	0.305	Positive
ER -> US	0.369	Positive
LA -> US	0.353	Positive
MA -> US	-0.258	Negative
ST -> US	0.130	Positive

(Source: Test Result SmartPLS)

Table 12 shows that the path coefficient values in the path relationship of this research model have a range from -0.258 to 0.369.

The relationship paths EF -> US, ER -> US, LA -> US, and ST -> US have positive *path coefficient* values. It means that exogenous variables have a positive effect on endogenous variables.

While the relationship path MA -> US has a negative *path coefficient* value. It means that exogenous variables harm endogenous variables.

e. *T-statistic*

The *T-statistic* value is obtained through the *bootstrapping* process. The calculation of *T-statistics* aims to test the significance of the relationship between latent variables in the structural model. The significance value used in this research is 1.96, with a significant level of 5%. If the *T-statistics* value is 1.96 or more, it is significant. If the *T-statistics* value is less than 1.96, it is less significant.

Table 13: T-statistics Value

Line Relationship	*T Statistics* (|O/STDEV|)	Annotation
EF -> US	2.385	Significant
ER -> US	2.176	Significant
LA -> US	1.161	No Significant
MA -> US	1.124	No Significant
ST -> US	1.353	No Significant

(Source: Test Result SmartPLS)

4.2.4 Hypothesis Test

Hypothesis testing aims to test whether the path relationship on the hypothesis has a significant effect or not. To test whether the hypothesis is accepted or rejected, the T-statistics value is used as a reference. The T-statistics value will indicate the significance of the path

relationship in the hypothesis. H_0 is accepted, and H_1 is rejected if the T-statistics value is below 1.96. Meanwhile, H_0 is rejected, and H_1 is accepted if the T-statistics value is more than 1.96.

Table: 14 Hypothesis Test Result

Hypothesis	Line Relationship	*T-Statistics*	Conclusion
H1	LA -> US	1.161	Not significant, H_o is accepted
H2	EF -> US	2.385	Significant, H_1 is accepted
H3	MA -> US	1.124	Not significant, H_0 is accepted
H4	ER -> US	2.176	Significant, H_1 is accepted
H5	ST -> US	1.353	Not significant, H_0 is accepted

(Source: Test Result SmartPLS)

Based on table 14, the following conclusions are obtained for hypothesis testing in this study:

Hypothesis 1: The learnability factor affects the usability factor

The *T-statistic* value in the LA -> US relationship is 1.161, which means it is below 1.96. This results in H_0 being accepted and H_1 being rejected, which means that the *Learnability* factor has no significant effect on the *Usability* factor.

Hypothesis 2: The efficiency factor affects the usability factor

The *T-statistics* value in the path relationship EF -> US is 2,385, which is means it is above 1.96. the resulted in H_0 is rejected and H_1 accepted, which means the *efficiency* factor significantly affects the *usability* factor.

Hypothesis 3: The memorability factor affects the usability factor

The *T-statistic* value in the MA -> US relationship is 1.124, which means it is below 1.96. This results in H_0 being accepted and H_1 being rejected, which means that the *Memorability* factor has no significant effect on the *Usability* factor.

Hypothesis 4: The error factor affects the usability factor

The *T-statistics* value in the ER -> US path relationship is 2.176, which is means it is above 1.96. The resulted in H_0 is rejected and H_1 accepted, which means the Error factor significantly affects the *Usability* factor.

Hypothesis 5: The satisfaction factor affects the usability factor

The *T-statistic* value in the ST -> US relationship is 1.353, which means it is below 1.96. This results in H_0 being accepted and H_1 being rejected, which means that the *Satisfaction* factor has no significant effect on the *Usability* factor.

4.2.5 Regression Equation

In the regression equation, the value of the variables A1, A2, A3, A4, and A5 is the *path coefficient* value. For example, the following is the result of the regression equation for this research model[12].

1. US = 0.353 * LA + 1
2. US = -0.258 * MA + 2
3. US = 0.305 * EF + 3
4. US = 0.369 * ER + 4
5. US = 0.130 * ST + 5

From the regression equation above, it can be seen that all variables are included in the research model.

In the *path coefficient*, the direction of the positive relationship shows that exogenous variables can strengthen the value of endogenous variables. While the direction of the negative relationship shows, the exogenous variable weakens the value of the endogenous variable.

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The factor with the strongest relationship to *Usability* (US) is the Error factor with a *path coefficient* value of 0.369, then the *Learnability* (LA) factor with a *path coefficient* value of 0.353. Furthermore, the *efficiency* (EF) factor with a *path coefficient* value of 0.305. Then the *Satisfaction* (ST) factor with a *path coefficient* value of 0.130. these four factors have a positive influence. In comparison, the *Memorability* (MA) factor negatively influences a *path coefficient* value of -0.258.

4.3 Discussion

After the data collection is complete, the writing team will carry out processing and analysis of the data that has been collected using the theories described previously. The results and discussion of the data analysis will be described in this chapter.

4.3.1. Respondent Demographics

Respondents in this study were parents who have elementary to high school children. At the beginning of the study, a sample of 100 respondents was determined, which is the number of parents from various regions. After the questionnaire was distributed online from

December 2, 2021, to December 7, 2021, we received 100 respondents.

Before starting data processing, the demographics of the respondents will explain first, which explains the number of respondents based on age, gender, children's education, recent education, and questions regarding *monitoring & controlling* children so far. The following is the respondent's data collected.

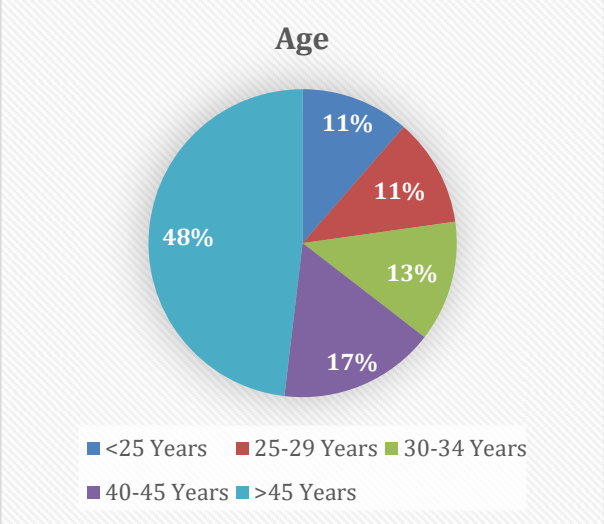

Figure 4: Percentage Diagram of Respondents by Age

In Figure 4, it is shown that out of 100 respondents to the questionnaire. There were 9 people (9%) aged <25 years, 9 people (9%) aged 25-29 years, 10 people (10%) aged 30-34. Years, 13 people (13%) with the age of 35-39 years, 38 people (38%) with the age of 40-45 years, 21 people (21%) with age>45 years. It can conclude that most respondents are parents aged 40-45 years.

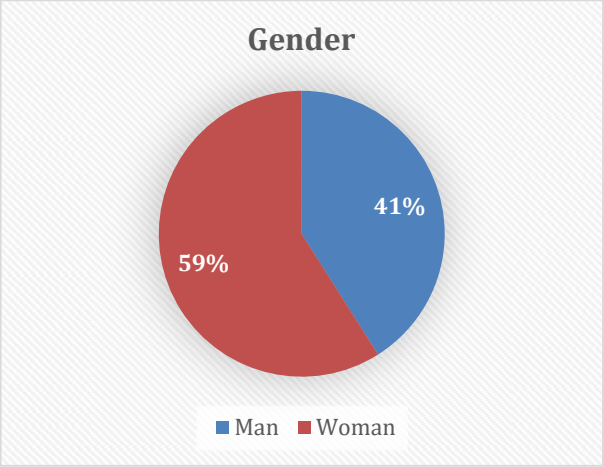

Figure 5: Diagram of Percentage of Respondents Based on, Gender

In Figure 5, it is shown that out of 100 respondents to the questionnaire, there were 59 people (59%) who were female, and 41 people (41%) were male.

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Therefore, it can conclude that most of the respondents' parents are female.

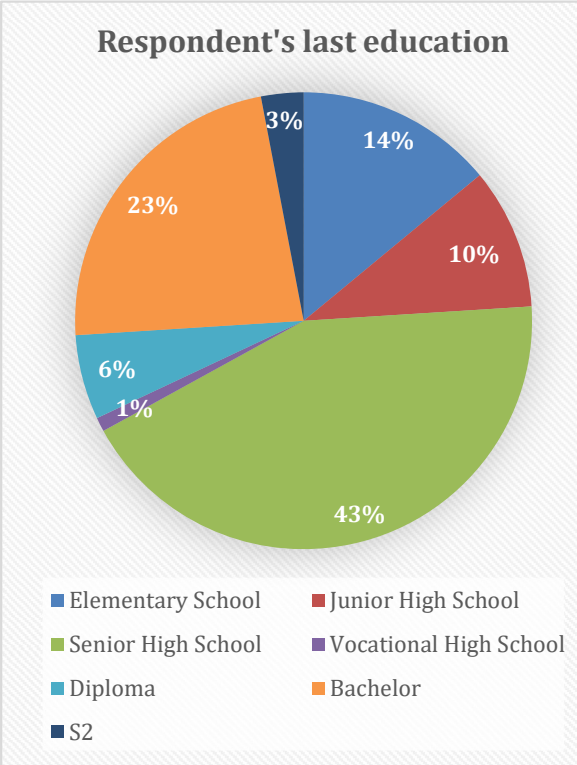

Figure 6: Diagram of Percentage of Respondents Based on the respondent's last education

In Figure 6, it is shown that of the 100 respondents to the questionnaire, 14 people (14%) with the last education in elementary school, 10 people (10%) with the last

education in junior high school, 43 people (43%) with the last education in high school, 1 person (1%)) with the latest education at Vocational School, then 6 people (6%) with the latest education being a Diploma, there are 23 people (23%) with the latest education S1, 3 people (3%) with the latest education S2. Therefore, based on the data above, it can be concluded that most respondents' last education was high school.

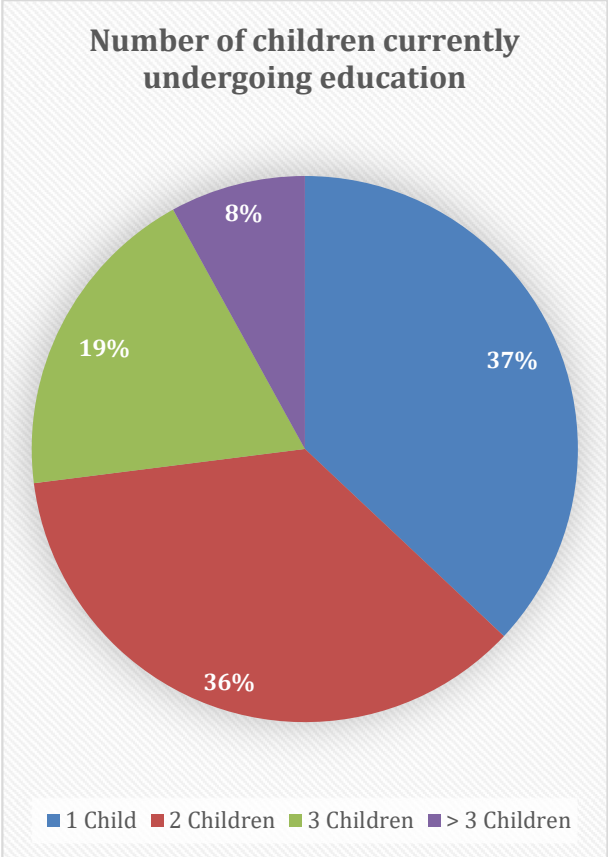

Figure 7: Diagram of Percentage of Respondents Based on, Number of children currently undergoing education

In Figure 7, it is shown that out of 100 respondents to the questionnaire, 37 people (37%) have 1 child who is currently undergoing education, 36 people (36%) have 2 children who are currently undergoing education, 19 people (19%) have 3 children. who are currently undergoing education, and 8 people (8%) have >3 children currently undergoing the education.

The data above can conclude that most respondents' children who are currently undergoing education are 1 child.

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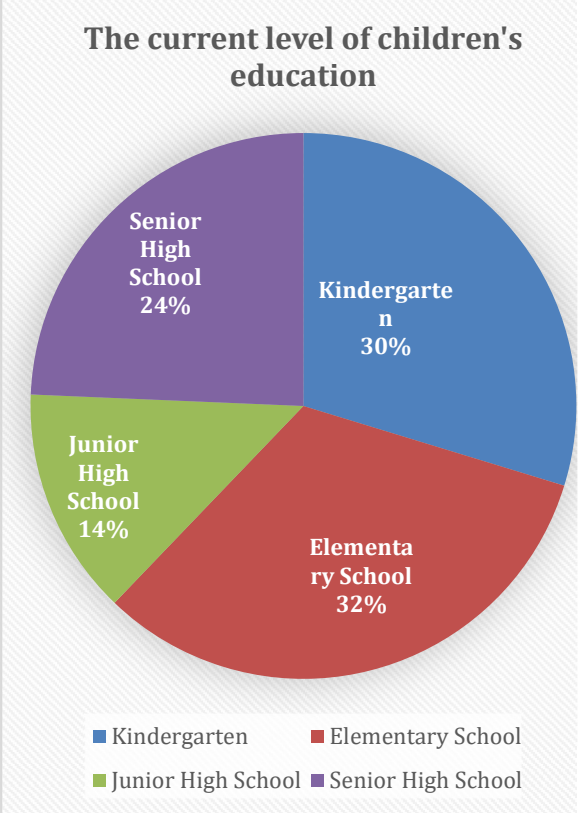

Figure 8: Diagram of the Percentage of Respondents Based on the Education Level of Children who are currently running (Respondent Has 1 Child)

In Figure 8, it is shown that out of 100 respondents to the questionnaire who have 1 child, there are 11 children (29.7%) who are undergoing Kindergarten level education, 12 children (32.4%) who are experiencing elementary level education, 5 children (13.5%) who are currently undergoing education at the junior high school level, and 9 children (24.3%) who are presently undergoing high school education. Therefore, based on the data above, it can be concluded that for parents who have 1 child, most of the children's education level is currently being run in elementary school.

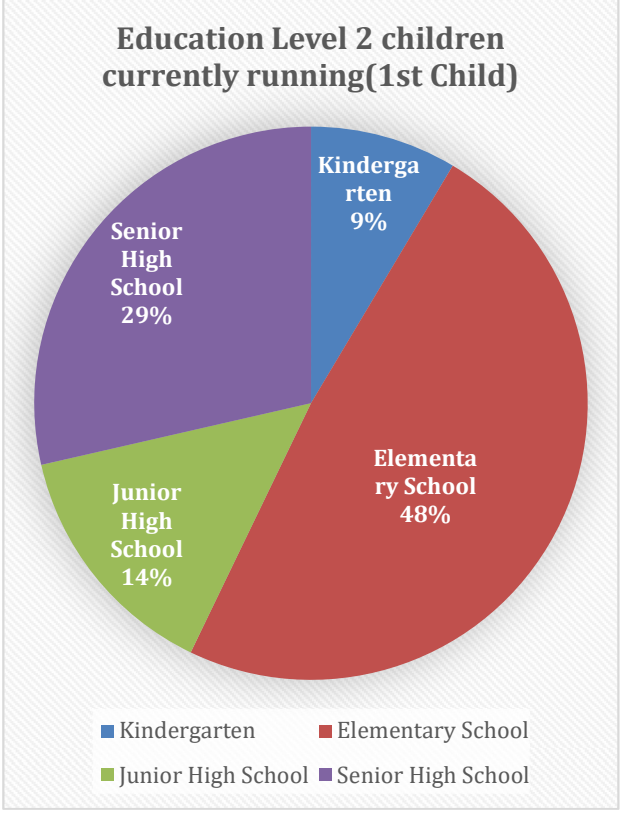

Figure 9: Percentage Diagram of Respondents Based on the Education Level of the First Child being Run (Respondent Has 2 Children)

In Figure 9, it is shown that out of 100 respondents to the questionnaire who have 2 children. Therefore, in the data for the first child, there are 3 children (9%) who are undergoing Kindergarten level education, 17 children (48%) who are currently undergoing elementary level education, 5 children (14%) who are presently experiencing education at the junior high school level, and 10 children (29%) who are currently undergoing high school education. Based on the data above, it can be concluded that most of the children's education level is carried out in elementary school.

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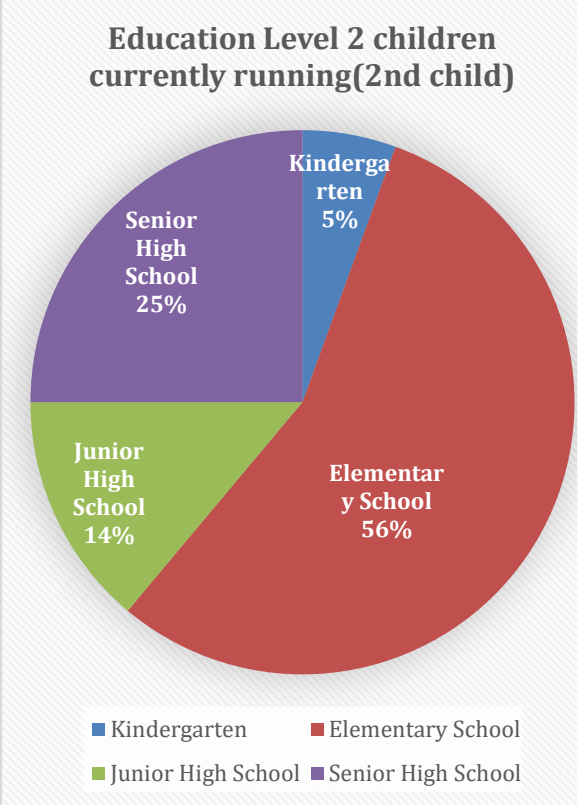

Figure 10: Percentage Diagram of Respondents Based on the Education Level of the Second Child currently being Run (Respondent has 2 Children)

In Figure 10, it is shown that out of 100 respondents to the questionnaire who have 2 children. In the data for the second child, there are 2 children (5%) who are undergoing Kindergarten level education, 20 children (54%) who are experiencing elementary level education, 5 children (14%) who are currently undergoing education at the junior high school level, and 9 children (27%) who are presently undergoing high school education. Based on the data above, it can be concluded that most of the children's education level is elementary school.

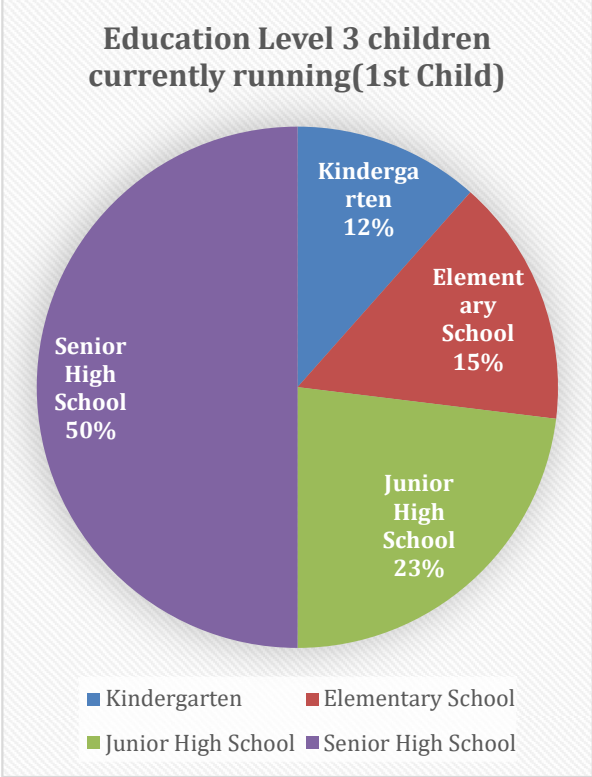

Figure 11: Diagram of the Percentage of Respondents Based on the Education Level of the First Child being Run (Respondent Has 3 Children)

In Figure 11, it is shown that out of 100 respondents to the questionnaire who have 3 children, and in the data for the first child, there are 3 children (14%) who are undergoing Kindergarten level education, 4 children (18%) who are experiencing elementary level education, 6 children (27%) who are currently undergoing junior high school education, and 13 children (41%) who are presently undergoing high school education. Therefore, based on the data above, it can be concluded that most of the children's education level is high school.

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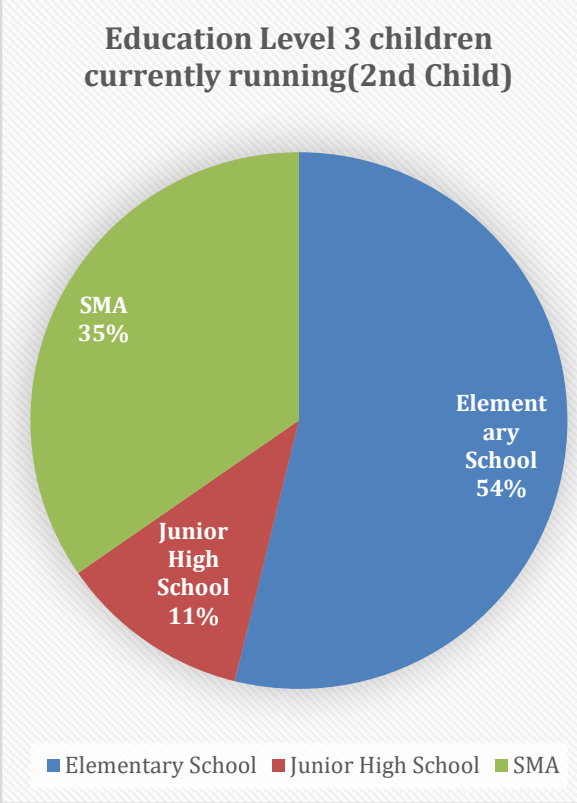

Figure 12: Diagram of Percentage of Respondents Based on Education Level of Second Child being Run (Respondent Has 3 Children)

In Figure 12, it is shown that out of 100 respondents to the questionnaire they have 3 children. In the data for the second child, there are 14 children (54%) who are currently undergoing elementary level education, 3 children (1%) who are presently undergoing junior high school education, and 9 children. Children (35%) currently undergoing high school education. Based on the data above, it can be concluded that most of the children's education level is elementary school.

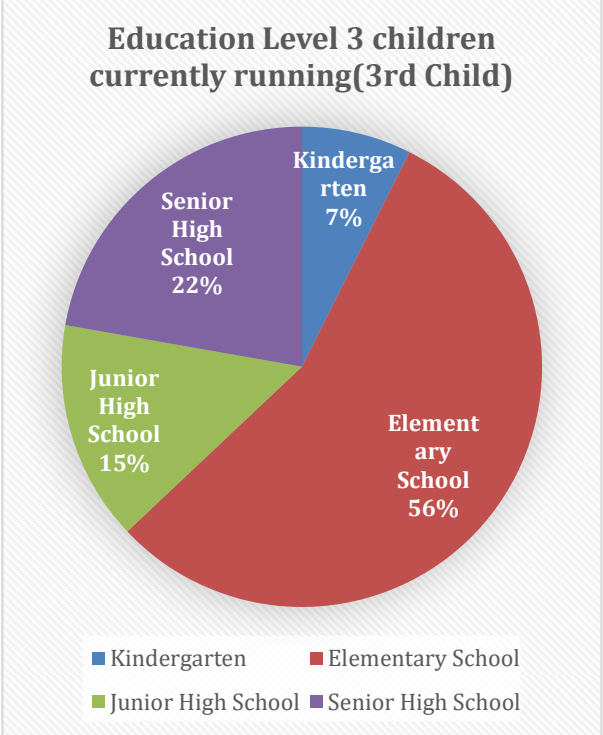

Figure 13: Percentage Diagram of Respondents Based on the Education Level of the Third Child being Run (Respondent Has 3 Children)

In Figure 13, it is shown that of the 100 respondents to the questionnaire who have 3 children. In the third child data, there are 2 children (7%) who are undergoing Kindergarten level education, 15 children (56%) who are experiencing elementary level education, 4 children (15%) who are currently undergoing junior high school education, and 6 children (22%) who are presently undergoing high school education. Based on the data above, it can be concluded that most of the children's education level is elementary school.

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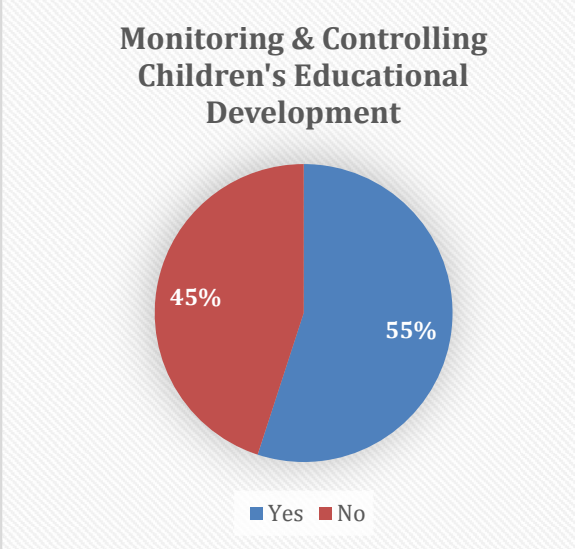

Figure 14: Percentage Diagram of Respondents Based on, Monitoring & Controlling Children's Educational Development

In Figure 14, it is shown that out of 100 respondents to the questionnaire, 45 people (45%) answered no, 55 people (55%) answered yes. Thus, it can be concluded that most parents often visit schools where children are undergoing education to monitor & control (view & supervise) the development of children's education.

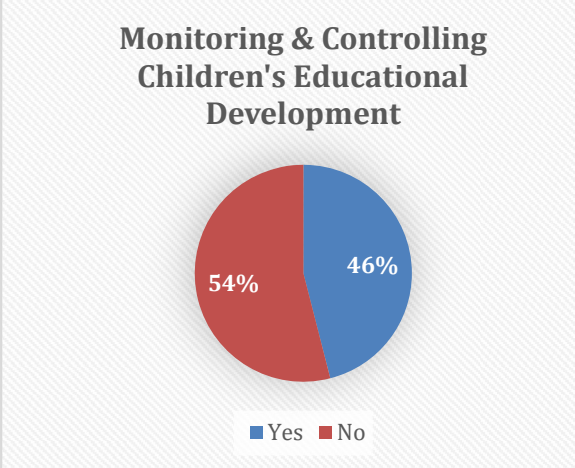

Figure 15: Percentage Diagram of Respondents Based on, Monitoring & Controlling Children's Learning Activities

In Figure 15, it is shown that out of 100 respondents to the questionnaire, 54 people (54%) answered no, 46 people (46%) answered yes. Thus, it can be concluded that the majority of Children's Schools do not have an Application to Monitor & Control (view & supervise) children's learning activities.

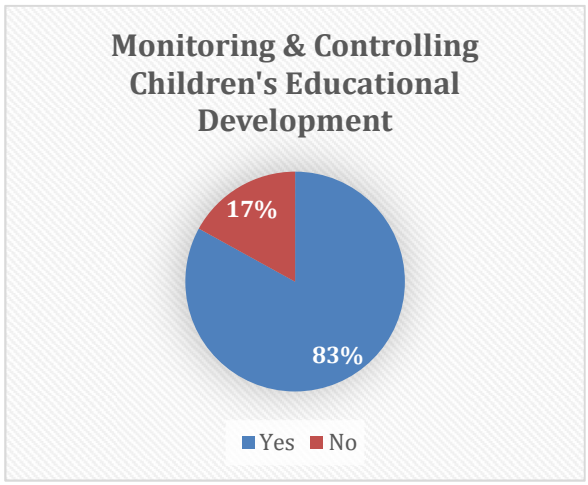

Figure 16: Diagram of the Percentage of Respondents Based on, Monitoring & Controlling the Educational Development of your child's father/mother

In Figure 16, it is shown that from 100 respondents to the questionnaire, there were 17 people (17%) who answered no, 83 people (83%) answered yes. That way, it can be concluded that most parents feel they need an application that can monitor & control (view & supervise) the development of children's education.

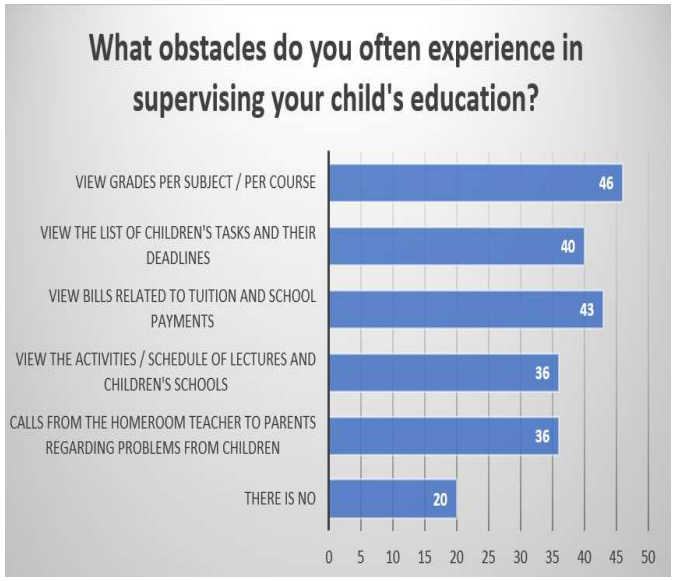

Figure 17: Percentage Diagram of Respondents Based on the obstacles that you often experience in supervising children's education

(Source: Results of Filling Out the Questionnaire)

In Figure 17, it can be seen that the majority of parents want to see grades per subject, with a total of 46% answers.

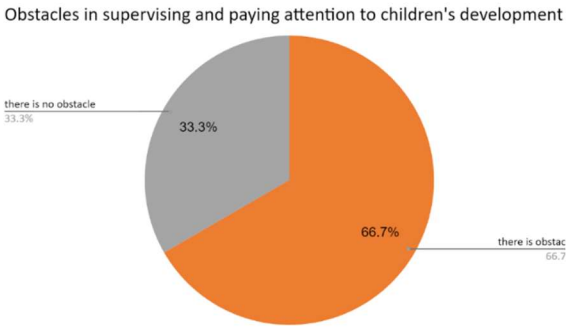

Figure 18: Percentage Diagram of Respondents Based on the obstacles experienced in supervising children's education

(Source: Interview Results)

Figure 18 shows that most parents have problems, with a total of 66.7% answers.

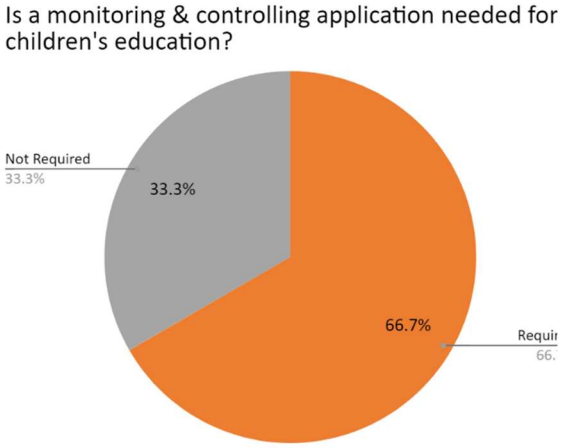

Figure 19: Diagram of Percentage of Respondents Based on, Need / Whether Applications To Supervise Children's Education

(Source: Interview Results)

In Figure 19, it can be seen that the majority of parents feel they need *monitoring and controlling* application, with a total of 66.7% answers.

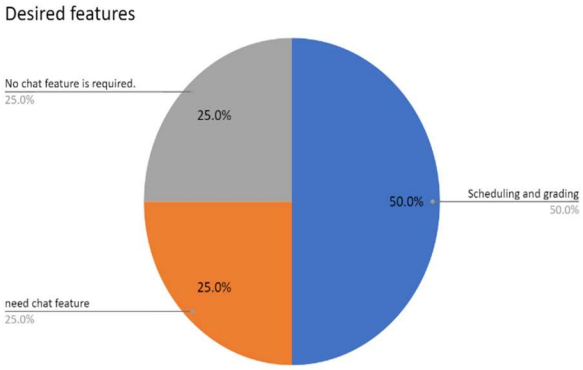

Figure 20: Percentage Diagram of Respondents Based on, the desired feature is in the Application to Supervise Children's Education

(Source: Interview Results)

In Figure 20, it can be seen that the majority of parents feel the need to see their child's schedule/activities, with a total of 50% of answers.

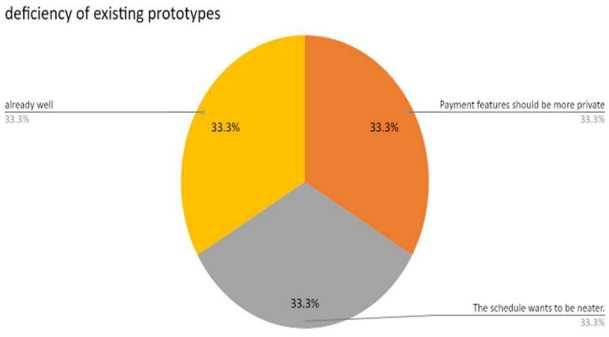

Figure 21: Percentage Diagram of Respondents Based on, Lack of Prototypes that already exist in the Application to Supervise Children's Education

(Source: Interview Results)

In Figure 21, it can be seen that parents who feel untidy in the schedule and payment features still

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want more privacy with a total of 33.3% each answer; the rest feel good with a total of 33.3%.

This study aims to evaluate the *implementation* of UI / UX in *the Monitoring & Controlling* Learning Progress Application, whether the application can be accepted by parents and positively impacts them.

The research model used is *Heuristic Evaluation*. This model is used to see what factors influence parents in accepting and using the *Monitoring & Controlling* Application.

What distinguishes this research from previous studies with similar methods is that this research focuses on parents as *users* of the *Monitoring & Controlling* Application.

Respondents who were collected from filling out the questionnaire and were valid for use in the research amounted to 100 respondents. After getting respondent data, the next step is to create a *path model* and perform SEM-PLS analysis. In the SEM-PLS analysis, there are tests of the *outer model* and *inner model*. In the *outer model*, the author tests the *convergent validity*,

discriminant validity, and *composite reliability*. In the *convergent validity* test, the AVE value of all variables is more than 0.50 so it can be said that the variable is valid and acceptable for use in research.

After that, a *discriminant validity* test was carried out to test the *Fornell lacker criterion* and *cross-loading*. For the *Fornell lacker criterion* value, the value has met the requirements where the correlation value of each variable is greater than the correlation with other variables.

The value of *composite reliability* and *Cronbach's Alpha* in each variable has a value of more than 0.70. Thus, it can be concluded that the indicators are reliable in research.

After testing the outer model and all variables and indicators have been declared valid and reliable for use, the next step is to test the *inner model*. From testing on the *inner model* or *structural model*, can obtain the highest value of r^2 on the US (*usability*) endogenous variable with a value of 0.730, which can be categorized as strong. This r^2 measurement is carried out to determine how much the combination of exogenous variables influences or explains endogenous variables.

Then conducted an f^2 test to determine how much influence the exogenous variables had on the endogenous variables. The test found that several exogenous variables have a weak or minor effect on the endogenous US variables, namely the EF, MA, and ST variables. Exogenous variables ER and LA have a moderate influence on the endogenous variable US.

After the f^2 test, the author's team conducted a Q^2 test which aims to show the extent to which a *path model* can predict the value of the observed variable or assess the *predictive relevance* of an *inner model*. That each

endogenous variable has a Q^2 value of more than 0, so it can be concluded that the endogenous variable has met the existing requirements.

The *path coefficient* values are used to see the direction of the influence relationship between variables, which is explained in the regression equation results.

Furthermore, the *path coefficients* and *T-statistics* values will show the significance level of the path relationship in hypothesis testing. For the results of hypothesis testing, the author's team got the results in the form of 2 hypotheses with a significant effect, and 3 other hypotheses having an insignificant effect.

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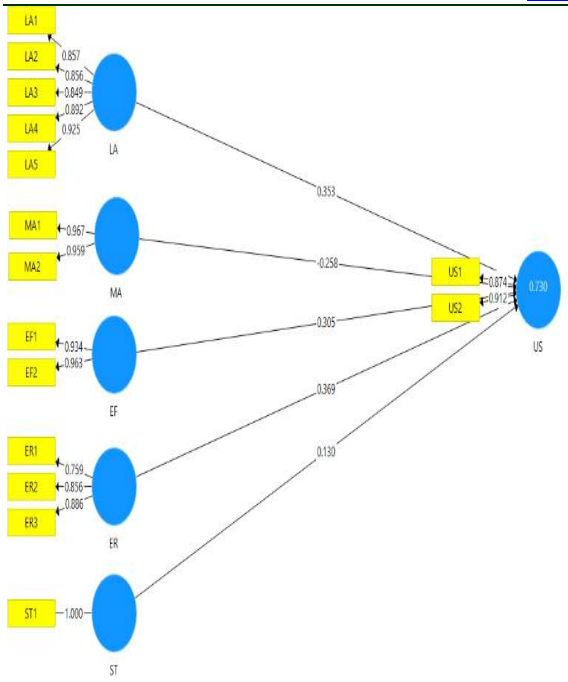

Figure 22: Final Research Results

(Source: Test Result SmartPLS)

Figure 22 shows the relationship between the existing variables and the T-statistic value for testing the hypothesis. The following is a discussion of the results that the author's team got from testing the hypothesis in this research:

4.3.2 Learnability has no significant effect on the Usability factor

According to Nielsen in Harrison et al. (2021), *Learnability* is an easy-to-learn system so that *users* can complete tasks with the system quickly.

4.3.3 Efficiency has a significant effect on the Usability factor.

According to Nielsen in Harrison et al. (2021), *Efficiency* is a resource expended in connection with the accuracy and completeness of the user's goals. meaning, meaning, users get convenience and efficiency.

4.3.4 Memorability has no significant effect on the Usability factor.

According to Nielsen in Harrison et al. (2021), *Memorability* is an easy system to remember so that ordinary *users* can easily use the System without having to learn again when not using it for a while.

4.3.5 Error has a significant effect on the Usability factor.

According to Nielsen in Harrison et al. (2021), *Error* is the System should have a Low *Error* Rate so that *Users* make some mistakes while using the System, and when they make Errors, they can recover from them. Therefore, the Error cannot occur.

4.3.6 Satisfaction has no significant effect on the Usability factor.

According to Nielsen in Harrison et al. (2021), *Satisfaction* is free from confusion and a positive attitude towards using the product.

5. CONCLUSION AND SUGGESTION

This section will summarize the conclusions and suggestions for this research

5.1 CONCLUSION

This study aims to evaluate the implementation of UI / UX in Monitoring & Controlling Learning Progress Applications.

This study aims to evaluate the implementation of UI/UX on the Monitoring & Controlling Learning Progress Application. and found several advantages such as users

will be easier because they can adapt to technology, can stay afloat with current developments, especially the Industrial Revolution 4.0 to 5.0, will not be easily fooled & trapped by Technological Crimes, can easily adapt to their children's technology abilities so that it will make it easier parents and children in the future, it is not easy to be trapped by their own children because they do not understand using technology and also find weaknesses such as users will start not doing direct monitoring at school because they can already use the Website/Application Online Monitoring & Controlling, will be more busy with technology and tend to ignore Family Needs and Concerns, Parents prefer to stay at home with existing technology rather than go out to interact with the community, The possibility of being cheated is very large because they believe in wrong technology and information l more than s advice from the

people around them, everything will be ignored to spent with Technology.

The weakness of this research is that parents are more dependent on existing data and do not monitor children directly

Based on the results of the study, it can be concluded that:

1. Users need a Monitoring & Controlling Learning Progress Application with a simple and easy-to-understand UI / UX Design for Monitoring & Controlling their child's Learning Progress.

Usability factor is not significantly influenced by external factors Learnability, Memorability, and Satisfaction. This is because parents' views about the UI / UX of the application are not influenced by these factors, but the parents see from the functions or features provided by the application itself. In addition, other external factors have a significant effect on usability, namely efficiency, and error, meaning that the efficiency and errors that occur in the application can affect parents in using the Monitoring & Controlling Learning Progress application.

5.2 SUGGESTION

This study certainly has several shortcomings which are expected to be corrected in future research. This research certainly has some shortcomings which are expected to be corrected in future research. Future research directions can be such as producing new applications with simpler UI & UX designs so that they can be more easily understood and understood by everyone/of all ages so that unwanted problems do not occur in the future.

Some things need to be considered in further research regarding the evaluation of UI/UX implementation in Learning Progress Monitoring & Controlling Applications or similar research so that they can provide better and useful results:

1. Examining other external factors outside of this research that may affect the use of the Learning Progress Monitoring & Controlling Application.
2. Research on Evaluation of UI / UX Implementation in Learning Progress Monitoring & Controlling
3. Applications can be expanded by evaluating other aspects besides Heuristic Evaluation, such as other design aspects by using User-Centered Design.

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REFERENCES:

[1] Abdallah Namoun, Ahmed Alrehaili, A. T. (2021). A Review of Automated Website Usability Evaluation Tools: Research Issues and Challenges. *Design, User Experience, and Usability: UX Research and Design, Springer International Publishing*.

[2] Arunava Ghosh, Tuhin Sengupta, A. K. S. (2021). A Comparative Evaluation of ERP Implementation Factors in Higher Education. *Handbook of Research on Modern Educational Technologies, Applications, and Management*.

[3] Aziz Nazha. (2021). Can the computer see what the human sees? *American Society of Hematology*.

[4] Chaveen Ellawela, K. B. N. L. (2021). A Review about Voice and UI Design Driven Approaches to Identify UI Elements and Generate UI Designs. *International Conference on Intelligent Technologies (CONIT), IEEE*.

[5] Chicco, D., Warrens, M. J., & Jurman, G. (2021). The coefficient of determination R-squared is more informative than SMAPE, MAE, MAPE, MSE and RMSE in regression analysis evaluation. *PeerJ Computer Science*, *7*, 1–24. https://doi.org/10.7717/PEERJ-CS.623

[6] Christian, L. (2021). *Heuristic Evaluation*. https://sis.binus.ac.id/heuristic-evaluation-2/

[7] Christos Troussas, Akrivi Krouska, C. S. (2021). Enhancing Human-Computer Interaction in Digital Repositories through a MCDA-Based Recommender System. *Advances in Human-Computer Interaction*.

[8] Chunjuan Zang, M. X. (2021). A Neural Network-based Research Performance Service Portfolio Evaluation Model and Its Implementation. *International Conference on Service Science (ICSS), IEEE*.

[9] Craig M. MacDonald, July Sosebee, A. S. (2021). A Framework for Assessing Organizational User Experience (UX) Capacity. *International Journal of Human–Computer Interaction*.

[10] Davies, J. A. (2021). Human physiology. *Human Physiology: A Very Short Introduction*.

[11] Diamantino, N., & Mau, P. (2021). *Sel Control , Illusion of Control and Information*

Technology Support Towards Rational Decision Making and Their Effects on Performance. 1–14.

[12] Glorin, S. (2021). A Cross-sectional Study on Improving Privacy Policy Read Rate and Comprehension via Better UX/UI Design. *Communications of the IBIMA*.

[13] Kangal, S. (2022). *What is Controlling?* Iedunote. https://www.iedunote.com/controlling

[14] Rajput, M. (2021). *Top Reasons Why Your App Needs an Efficient Ul/UX Design*. Mind Inventory. https://www.mindinventory.com/blog/effective-app-ui-ux-design/

[15] Ramy Gouiaa, Farouk Hdhili, M. J. (2021). A Dag Based Decentralized Oracle Model: Implementation and Evaluation. *Blockchain and Applications*.

[16] Ransom, N. (2021). *Monitoring & Controlling Phase of Project Management*. Study.Com. https://study.com/academy/lesson/monitoring-controlling-phase-of-project-management.html

[17] Rodwell, E. A. (2021). A Pedagogy of Its Own: Building A UX Research Program. *Society for Applied Anthropology*.

[18] *Types of User Interface*. (2022). W3Computing. https://www.w3computing.com/systemsanalysis/types-user-interface/

[19] *User-Centered Design Basics*. (2022). Usability.Gov. https://www.usability.gov/what-and-why/user-centered-design.html

[20] Yekaterina Pakhtusova, Swati Megha, N. A. (2021). A Case Study on Combining Agile and User-Centered Design. *Communications in Computer and Information Science, Springer International Publishing*.