Planning System Si-GIIS (Goods Inventory Information System)

Dewi Rahmasari[1], Feri Nugroho[2*], Anindya Ananda Hapsari[3], Untung Suprihadi[4], Muhamad Aldiansyah[5], Safira Faizah[6], and Nurul Aslamiah Istiqomahi[7]

[1,3,4,6]Informatics Engineering, Jakarta Global University, Depok, Indonesia, 16412
[2,7]Digital Business, Jakarta Global University, Depok, Indonesia, 16412
[5]Information Technology Innovation Centre, Management & Science University, Shah Alam, Malaysia, 40100

e-mail: [1]dewirahmasari679@gmail.com, [2]ferinugroho@jgu.ac.id, [3]anindya@jgu.ac.id, [4]untung@jgu.ac.id, [5]muhd_aldiansyah@msu.edu.my, [6]safirafaizah@jgu.ac.id, [7]nurulaslamiah@jgu.ac.id

Abstract

Web-based information technology is currently developing very rapidly. The utilization of web-based information technology is widely used in various types of work. One of them is the processing of inventory data. Talenta Store is a store engaged in the sale of mobile phone accessories. The management of inventory at Talenta Store is still not systematized. So that making inventory data with sales often makes mistakes and also owners sometimes find reports that are not appropriate. Therefore, a system that can support inventory data processing activities is made, namely the system Si-GIIS (Goods Inventory Information System) web-based. The development Si-GIIS system uses the FIFO (First in First Out) method design, which means that the goods purchased first will be sold first as inventory management. Si-GIIS was developed using the waterfall method and for system design using UML (Unified Modeling Language). n the test, Si-GIIS uses BlackBox testing with the final result that all systems work as expected. From the results of the satisfaction survey, it can be seen that 93% of employees and shop owners are very satisfied. Therefore, the development of the Si-GIIS system at the Talenta Store can be said to be successful and can be implemented into the inventory data processing system.

Keywords: Information System; Web; Inventory; First in First Out (FIFO)

1 Introduction

The development and utilization of information technology, especially in the use of computer technology for data processing is also a concern in large companies. Various company activities can be developed into a system whose performance uses computer equipment, such as data processing, selling goods, purchasing goods from vendors, and managing data on goods in the warehouse (Setyarini et al., 2017).

Information system is a system of processing raw data into good quality information, so that it can be used as a tool to support decision making, coordination and control systems, data analysis, and describe the data itself (Boell & Cecez-Kecmanovic, 2015). Information systems or information technology has now become an important part of a company's main system, because it is able to have a positive impact by

providing convenience, increasing work effectiveness and efficiency.

One of the uses of information systems in companies is the distribution of goods. Where distribution itself is an activity of distributing products or goods to reach the hands of customers or users at the right time (Nurul, 2021). The distribution of goods plays an important role because if the distribution of goods is carried out properly it can affect the company's performance. This good performance in terms of profits due to the fast turnover of goods and capital, as well as in terms of trust in business partners by providing optimal service (Santoso. et al., 2018).

One of the most frequently used scheduling methods is the First in First Out (FIFO). The FIFO method is a scheduling method that assumes that each process has no priority and will be carried out in the order that it appears in the queue (Siregar,

2020). The queue that comes first will be the first to be processed. The FIFO method can be implemented on all product properties to be distributed. Because this method is a realistic inventory planning method because it corresponds to reality (Abidin, 2018).

Talenta Store is a mobile phone accessories store center that is engaged in service to customers. The system currently running at Talenta Store is the inventory system and the goods service system to customers. These daily activities are still not programmed systemically. Where transactions for purchasing goods from suppliers and selling goods to customers are recorded in advance on a note. This causes when recording data items there is often a discrepancy between the data and the physical amount. And the lack of efficiency in reporting goods data to shop owners.

With these problems, developed was system Si-GIIS (Goods Inventory Information System) web-based. With the existence of Si-GIIS, it is hoped that it will make the process of operational activities at the Talenta Store easier and minimize human errors.

2 Methodology
2.1 Data Collection Method

Data collection methods are techniques or methods that can be used by researchers to collect data (Tanujaya, 2017). In this research, there are several ways, namely:

a. Observation
   Researchers collect data and information by observing and reviewing directly at Talenta Store. Observations made are participating in all activities of recording goods, inputting, checking and reporting inventory of goods to shop owners.

b. Interview
   To better understand the current state of the system, the author conducted interviews with employees and shop owners at Talenta Store.

c. Documentation
   Researchers collect data in the form of inventory activity documents, which will later be analyzed and applied to the Si-GIIS system.

d. Questionnaire
   After the Si-GIIS system was built, the researchers conducted a survey. The survey covers the level of user satisfaction with the Si-GIIS system.

2.2 FIFO Method

In designing the Si-GIIS system, the reseacher applies the FIFO (First In First Out) method. The FIFO is a queuing method, so that it can be explained like the first item entered, the item will be the first one to take out (Sembiring et al., 2019). Finally the quality of the goods in Talenta Store is guaranteed.

The purpose of FIFO is to measure the cost of goods used based on the price / cost of goods at first this method can lead to a lower valuation (under value), if the price decreases, and a higher valuation (over value), if the price increases. The FIFO method often does not directly show the physical flow of the goods because the collection of goods from the warehouse is more based on the arrangement of the goods. The FIFO method in calculating prices uses stock prices from previous transactions, so this method looks more inclined to calculating the cost of goods.

2.3 System Development

For system development, researchers use the waterfall method. The waterfall method can be said in its development to describe a systematic approach or often referred to as the life cycle (Prasetya, 2017). This starts from the analysis of user requirements and then continues with the planning, modeling, construction and testing stages or delivery of the system to users.
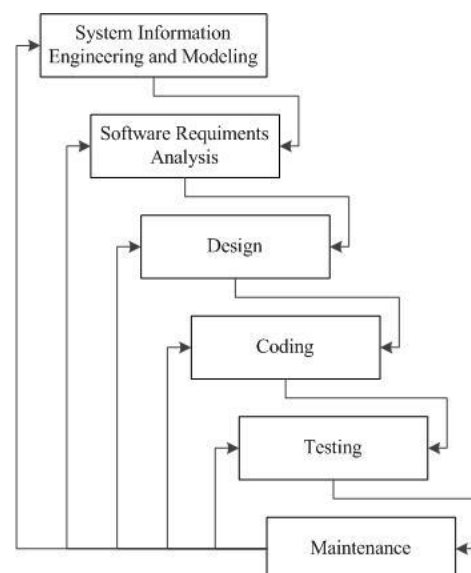

Figure 1 Waterfall method used in Si-GIIS

2.3. 1 System Information Engineering and Modeling

To support the design of a system Si-GIIS web-based, a supporting device is needed. Supporting devices in the development of the Si-GIIS system are in the form of hardware and software.

2.3. 2 Software Requiments Analysis

Requirement Analysis is carried out through interviews and observations with the Talenta Store supervisor to obtain information about operational activities at the Talenta Store. That way researchers get an idea of the system that will be developed.

2.3. 3 Design

Design the system by describing it using Microsoft Visio 2010 tools for flowcharts and erd (entity relation diagrams). For use cases and class diagrams using UML (Unified Modeling Language). In object-based software development systems, UML (Unified Modeling Language) is often used because it can be used to visualize, define, construct, and document system development (Koç et al., 2021).

2.3. 4 Coding

In developing a web-based Si-GIIS system using PHP & MySQL programming. And assisting with the Codeigniter framework and additional libraries such as bootstrap, sublime text, XAMPP, and PHPMyAdmin as the database.

2.3. 5 Testing

At the testing stage, the researcher used the blackbox testing method. The blackbox testing method is a method used to test software without having to pay attention to software details (Priyaungga et al., 2020). This test only checks the output value based on each input value (Amin, 2016). There is no attempt to find out what program code the output is using.

The blackbox testing process is done by trying the program that has been made by trying to enter data on each form (Sholeh et al., 2021). This test is needed to find out that the program is running as needed in the Talenta Store.

2.3. 6 Maintenance

The finished software is put to use and kept up to date. Maintenance entails correcting any faults that were not discovered in the previous step. In the Si-GIIS system, the researcher performs periodic maintenance starting when the researcher implements the design made in coding.

2.4 Area Study

The research location is held at Talenta Store II. Address Jl. Irigasi, RT.5/RW.2, Ujung Menteng, Kec. Cakung, East Jakarta, Jakarta Capital Special Region, 13960. Talenta Store is a trading company engaged in the sale of mobile phone accessories. Talenta Store was founded in 2014. Currently, Talenta Store has 2 branches in Jakarta.

3 Results and Discussion

After all the stages of designing the Si-GIIS system are completed. Then we get a system that can manage all inventory items in the Talenta Store.

3.1 Use Case Diagrams

In the Use Case diagram there are 3 actors involved, namely admin, user, and owner. Each account has different login permissions. For access, user and owner logins are made by admin. The following is an illustration of the use case diagram of a system Si-GIIS web-based.
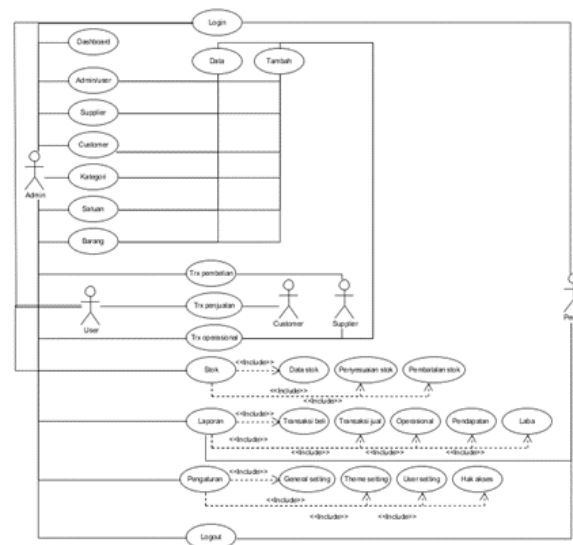

Figure 2 Use case diagrams Si-GIIS

The following table describes the access of each user.

Table 1. Si-GIIS user access rights.

Actor	Access rights
Admin	1. Processing admin data, suppliers, customers, categories, units, goods 2. Make purchases of goods to suppliers 3. Carry out operational transactions to suppliers

Actor	Access rights
	4. Check stock data
	5. Carry out stock adjustments
	6. Cancel stock
	7. Print sales transaction reports, purchase transactions, operations, income, profit
	8. Change general settings, themes, users, access rights
User	1. Carry out sales transactions
	2. View supplier data
	3. View customer data
	4. View category and unit data
	5. View item data
	6. View item stock data
Owner	1. View account information
	2. View item stock data
	3. View reports
	4. Print report

3.2 Flowchart

To provide an explanation of the flow of the system, a flowchart was made. The following is a flowchart diagram of the Si-GIIS system.
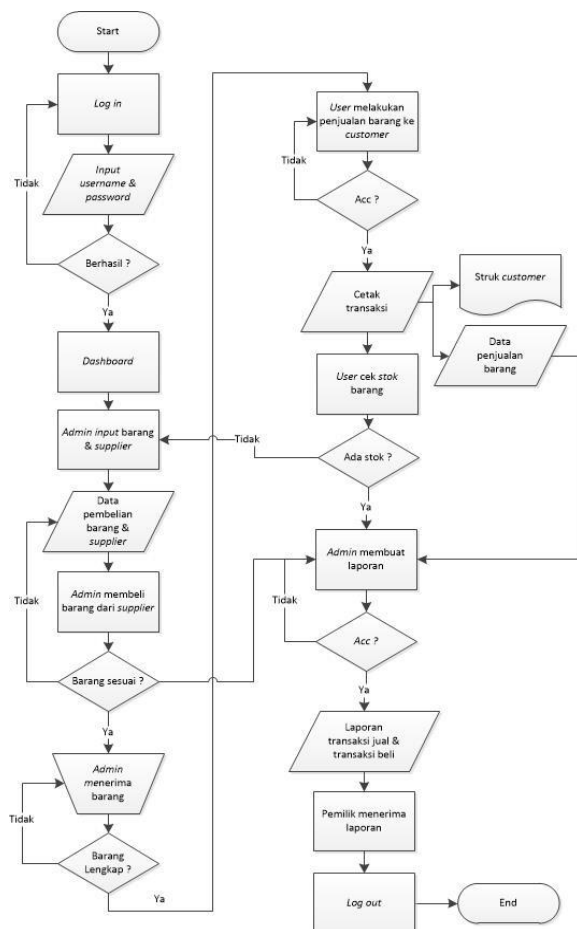

Figure 3 Flowchart Si-GIIS.

3.3 Dasboard Page View

On the dashboard page, there is a summary of all transactions in the Si-GIIS system. The following is a display of the Di-GIIS dashboard page.
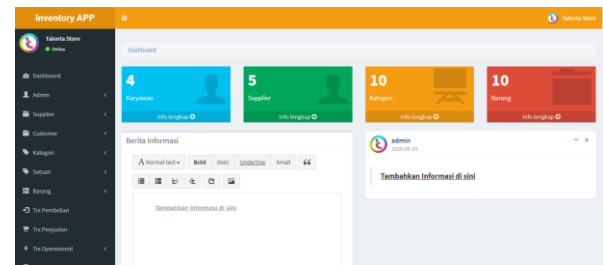

Figure 4 Dashboard page.

3.4 Admin Page View

On this admin page, all menus can be accessed. And on the admin page, you can add users and add access menus according to the user's scope of work.
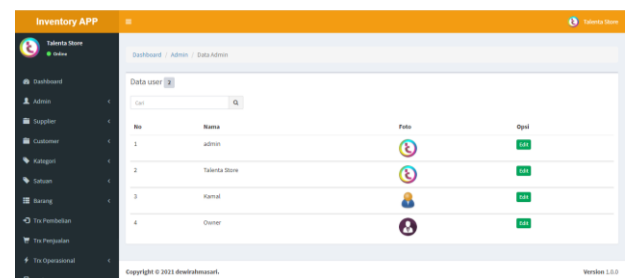

Figure 5 Admin page.

3.5 Supplier Page View

On the supplier page, we can see all suppliers of goods in the Talenta Store. This makes it easier for users or shop owners to manage suppliers.
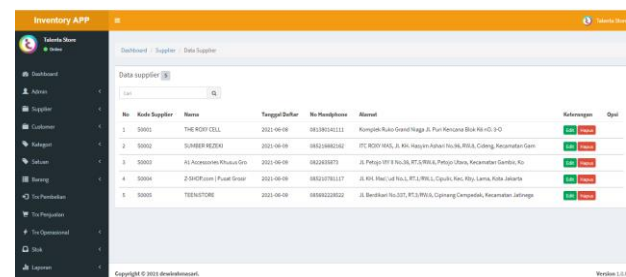

Figure 6 Supplier page.

3.6 Customer Page View

On the customer page, displays all the list of Talenta Store customers. So if a store owner wants

to see which customers have made the most purchases in the store, they can access that page.
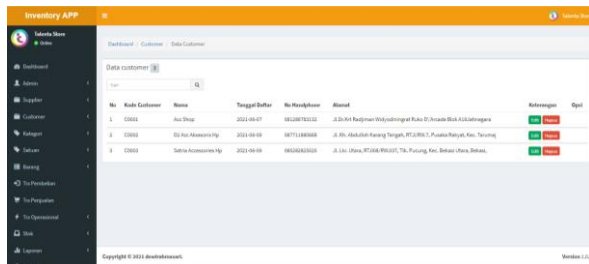

Figure 7 Customer page.

3.7 Item Page View

The item page serves to display the entire number of items available in the Talenta Store. This makes it easier to control the inventory of goods in the store.

Figure 8 Item page.

3.8 Purchase and Sale Transaction Page View

The purchase transaction page serves to record all purchase data for goods. Making it easier to record transactions as a Talenta Store.
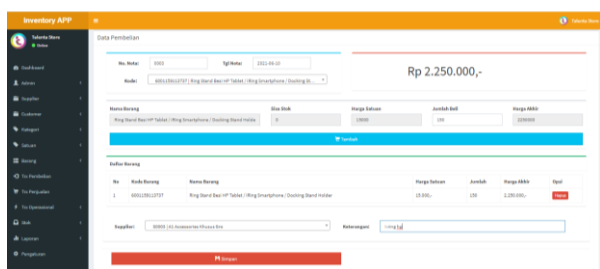

Figure 9 Purchase transaction page.

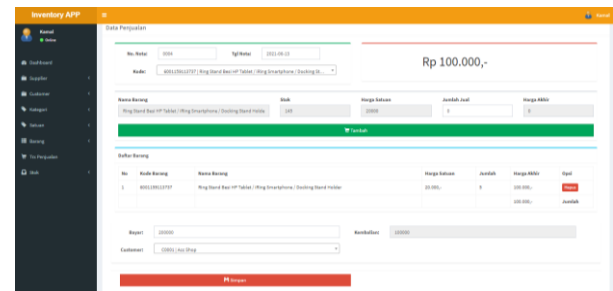The sales page serves to record all sales that occur at the Talenta Store.

Figure 10 Sales page.

3.9 Item Stock Page View

On this page, the user can see all the available stock in the warehouse. If the stock of goods runs out, then the user makes a request to purchase goods.
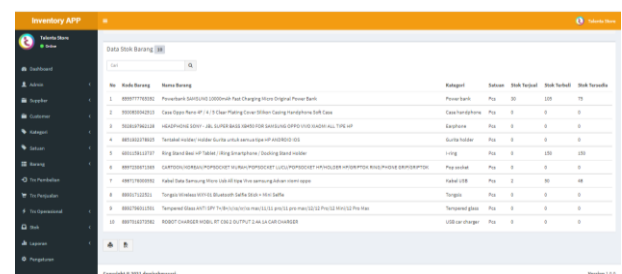

Figure 11 Item stock page.

3.10 Blackbox Testing

Blackbox testing is carried out for functional assessment of the system. In practice, testing is carried out with Talenta Store employees.

The results of the blackbox test show that the application that has been built has met the functional requirements. Functionally, the system that has been built has been able to produce the expected output. All menus and buttons can work according to their functions.

3.11 Questionnaire Results

To find out the responses of respondents (users) to system Si-GIIS web-based, a questionnaire was made. In this questionnaire, respondents were given 10 questions. The parameters of the questions given to the respondents include (Ayuni & Karismariyanti, 2019).

Table 2. Questionnaire parameter weigh.

Information	Weight
Strongly Agree (SA)	5
Agree (A)	4
Neutral (N)	3
Disagree (D)	2
Strongly Disagree (SD)	1

There are 10 respondents in Talenta Store consisting of employees and owners. The following are the score interpretation criteria in getting the results of the questionnaire (Yulvinamaesari & Tenriawaru, 2017):

Table 3. Score interpretation criteria.

Presentation	Information
0% - 20%	Very weak
21% - 40%	Weak
41% - 60%	Enough
61% - 80%	Strong
81% - 100%	Very Strong

After the data from the questionnaire is obtained, the next step is the processing of answers. To get the percentage of the questionnaire, the researcher used the formula (Untari et al., 2020):

$$P = (f/n) \times 100\%$$

Information:
P = Percentage
f = Answer frequency
n = Number of respondents

Based on the percentage obtained from the questionnaire. Then it can be seen that the response from Talenta Store employees to this web-based inventory information system based on the acceptance rate is very strong, with a percentage of 93%. The percentage results obtained reach 81% - 100%, then the test results can be said to be very strong or the system was successfully created with problems in the Talenta Store.

4 Conclusion

The design of system Si-GIIS web-based at Talenta Store can be said to be successful. The Si-GIIS system was developed using the FIFO (First in First Out) method and designed with the waterfall method. In the design of the waterfall method on Si-GIIS includes the stages of needs analysis, hardware and software, system design, program development, and testing. After the system is ready for use, the researcher conducts application testing on users. Testing is done with a user satisfaction level questionnaire. From the results of the questionnaire obtained a value with a percentage of 93%. From these values, it can be seen that the Si-GIIS system is in accordance with the functions and expectations of employees and Talent Store owners.

5 Future Work

From the results of the analysis and design of system Si-GIIS web-based at Talenta Store. The researchers' suggestions for developing system Si-GIIS web-based in the future are:
a. Adding a barcode reader system to make it easier to input goods during sales transactions.
b. Development Si-GIIS system for online sales transactions.

References

Abidin. (2018). Perancangan Sistem Informasi Persediaan Barang pada Toko Multi Mandiri dengan Metode FIFO (First In First Out). *Jurnal JUPITER*, *Vol. 10 No*, 59–68.

Amin, M. M. (2016). Implementasi Kriptografi Klasik Pada Komunikasi Berbasis Teks. *Jurnal Pseudocode*, *III*(September), 129–136.

Ayuni, G. D., & Karismariyanti, M. (2019). Penerapan Penilaian Persediaan Dan Perhitungan Harga Pokok Makanan Dengan Metode Fifo Pada Aplikasi Berbasis Web. *Is The Best Accounting Information Systems and Information Technology Business Enterprise This Is Link for OJS Us*, *4*(1), 381–395. https://doi.org/10.34010/aisthebest.v4i1.1828

Boell, S. K., & Cecez-Kecmanovic, D. (2015). What is an information system? *Proceedings of the Annual Hawaii International Conference on System Sciences*, *2015-March*(January), 4959–4968. https://doi.org/10.1109/HICSS.2015.587

Koç, H., Erdoğan, A. M., Barjakly, Y., & Peker, S. (2021). UML Diagrams in Software Engineering Research: A Systematic Literature Review. *Proceedings*, *74*(1), 13. https://doi.org/10.3390/proceedings2021074013

Nurul, mas'ud waqiah. (2021). Sistem Informasi Akuntansi Penerimaan Dan Pengeluaran Persediaan Bahan Bakar Dan Pelumas Menggunakan Metode Fifo Berbasis Web Pt. Kereta Api Indonesia Daop Iii Cirebon. *Persepsi Masyarakat Terhadap Perawatan Ortodontik Yang Dilakukan Oleh Pihak Non Profesional*, *53*(9), 1689–1699.

Prasetya, E. B. (2017). Pembuatan Aplikasi Car Storage Dengan Menggunakan Metode Fifo (First in First Out) Berbasis Web. *Elektum*, *14*(1), 45. https://doi.org/10.24853/elektum.14.1.45-51

Priyaungga, B. A., Aji, D. B., Syahroni, M., Aji, N. T. S., & Saifudin, A. (2020). Pengujian Black Box pada Aplikasi Perpustakaan Menggunakan Teknik Equivalence Partitions. *Jurnal Informatika Universitas Pamulang*, *3*(3), 150. https://doi.org/10.32493/jtsi.v3i3.5343

Santoso., Rahmatuloh, M., & Susanti, N. (2018). Aplikasi Pengolahan Data Barang Keluar pada Gudang Sepatu dengan Metode FIFO. *Jurnal*

Teknik Informatika, *10*(2), 21.

Sembiring, A. C., Tampubolon, J., Sitanggang, D., Turnip, M., & Subash. (2019). Improvement of Inventory System Using First in First Out (FIFO) Method. *Journal of Physics: Conference Series*, *1361*(1). https://doi.org/10.1088/1742-6596/1361/1/012070

Setyarini, P., Setiyadi, D., & Khasanah, F. N. (2017). Sistem Informasi Inventory Dengan Metode FIFO Pada PT Albahar Cipta Sentosa Bekasi. *Jurnal Mahasiswa Bina Insani*, *2*(1), 49–62.

Sholeh, M., Gisfas, I., Cahiman, & Fauzi, M. A. (2021). Black Box Testing on ukmbantul.com Page with Boundary Value Analysis and Equivalence Partitioning Methods. *Journal of Physics: Conference Series*, *1823*(1). https://doi.org/10.1088/1742-6596/1823/1/012029

Siregar, I. K. (2020). Implementasi Model Rapid Application Development Pada Sistem Informasi Persediaan Barang Dengan Metode Fifo. *JURTEKSI (Jurnal Teknologi Dan Sistem Informasi)*, *6*(2), 187–192. https://doi.org/10.33330/jurteksi.v6i2.593

Tanujaya, C. (2017). Perancangan Standart Operational Procedure Produksi Pada Perusahaan Coffeein. *Jurnal Manajemen Dan Start-Up Bisnis*, *2*(1), 90–95.

Untari, F., Kusdiawan, W., & Supriadi, D. (2020). Sistem Informasi Akuntansi Persediaan Material Berbasis Web Menggunakan Metode FIFO (First In First Out) (Studi Kasus Pada PT. Teknik Bina Mandiri Cikarang). *Jurnal Interkom: Jurnal Publikasi Ilmiah Bidang Teknologi Informasi Dan Komunikasi*, *14*(1), 4–15. https://doi.org/10.35969/interkom.v14i1.61

Yulvinamaesari, & Tenriawaru, E. P. (2017). Analisis Kemampuan Berpikir Kreatif Mahasiswa Fisika Ditinjau Dari Perbedaan Multipple Intelligence. *Jurnal Dinamika*, *8*(1), 1–15.