

DEVELOPMENT OF ACCOUNTING INFORMATION SYSTEM BASED ON BUSINESS PROCESS MODELLING AND NOTATION AND WEB-BASED FINANCIAL REPORT FOR MSMEs

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Abstract: Malang is a tourist city that has natural beauty and various culinary tours, including Coffee Shops. The purpose of this paper is to evaluate an Accounting Information System (AIS) for SME stakeholders, particularly the food and beverage sector, and to design an SME AIS, in particular the revenue and expenditure processes based on Business Process Modelling and Notation (BPMN). This study adopts Research and Development approach with a case study method in four coffee shops in Malang. The results of the evaluation show that there are still shortcomings and weaknesses in the acceptance and expenditure process. To reduce such cases and improve SME operations, a BPMN-based AIS has been developed, specifically in four business processes, namely Ordering, Purchase of Raw Materials, Payroll and Balance Sheet Summary, equipped with documents to monitor business developments and prepare profits. / loss report. Prior to implementation, material experts and media experts conducted validation tests, with the results that the AIS was feasible to be implemented. In addition, the new system was piloted in two coffee shops for one month. Implementation results suggest that a BPMN-based AIS should be built to reduce these problems and improve the operations of small businesses. This would include four business processes, including ordering, purchasing raw materials, payroll, and preparing financial statements, which would be accompanied by documents and a website, <https://rekapyuks.xyz>, to keep track of business changes and compile a Profit/Loss Report. Prior to implementation, two experts performed validation tests, which revealed that the AIS could be implemented. Furthermore, the new system and website were tested for a month in two coffee shops. According to the study's findings, MSMEs should improve internal control to reduce fraudulent actions by segregating duties and utilizing information technology to create a web-based Profit/Loss Report.

Keywords: *Accounting Information Systems, Business Process Modelling and Notation, Financial Reports, MSMEs*

1. Introduction

Tourism industry has grown rapidly along with globalization in Indonesia, particularly in technology or information sector. Thus, the global growth should be followed by both information technology and communication development which then generate a lot of

changes, not only for individually but also for the government or business sector which must be able to adapt with this technological advance. The delivery of performance support in processes occurred in the business sector is a success key in the business venture.

This business process has developed from micro, small, and medium enterprises scale and now is growing rapidly, due to the total of Indonesian population in 2018 was about 265 million people, it was estimated that about 58,97 of Indonesian population were businessmen or entrepreneur (Walfajri, 2018). One of rapid growing micro, small, and medium enterprises sectors in Indonesia is food and beverage sector, especially coffee shop which already grabs a very high interest. According to Wahyudi (2020), the growth of business world in Indonesia in these three last years are improving. For instance, coffee shop entrepreneurs those have reached the total of one million coffee shops and keep increasing by three times compared to 2016. In short, recently there are approximately 2.950 coffee shops. Opening coffee shop business, apparently, has been attracting various groups of society due to the their potential profit. This might , such as micro, small, and medium enterprise in culinary sector, called as coffee shop, which was aimed to offer beverage and snack products and facilities for people gathering. Moreover, it has a special attraction of coffee buying and selling activity. Hence, a lot of coffee shops were appeared in Malang.

The growth of this business process has made either shop or café spread in various regions in Indonesia, as in East Java precisely in Malang. The pandemic situation has also become an obstacle for coffee shop entrepreneurs to be able to maintain their business and financial condition also regulate the business management. Viewing that coffee is a new lifestyle that attracts a lot of millennial generation and therefore the coffee shop entrepreneurs are interested to develop the business sector of coffee shop. This is a significant component in the development of business, particularly in cash management.

A cash manager knows the business processes that can be carried out on these MSMEs by using the process Business Modeling Notation in improving financial reports. This can help in a modeling of a business process in a business flow that can be described clearly and in detail in the use of this BPMN. relationships and with any existing activities can be documented in a model designed in accordance with cash management. As well as in cash management, it provides a web-based financial reporting system that makes it easier for the financial department to manage MSME financial reports and assists in reporting to Café owners (Mukhofifah et al., 2016). The BPMN can make a business process efficient and productivity of an activity very important in business battles (Azhari et al., 2021).

Financial reporting is very important to be considered by all type of business, including small business, because it shows the results of the business being run. A good financial report must have well-integrated data from transaction documentation to the resulting financial reports. One of the problems that often occurs in making financial reports is where an error occurs when the admin recaps transaction data and lacks the ability to process and make good financial reports. Therefore, with a computer, it is hoped that it can help overcome these problems and make it easier (Rosadi & Lousiani, 2012). Krisantoso et al., (2015) suggest that a process model centered on business processes can also be created by incorporating an overview, submission, and editing into the reporting process. Adding a level of business processes to the financial statement website can have a substantial Environmental Strategy Impact on Environmental Performance and Management Commitment to Moderate large Environmental Strategy Impacts on Economic Performance (Mayndarto. Eko Cahyo, 2021).

Therefore, BPMN in business process will focus on how to enhance accuracy and control in the administration of financial reports, as indicated by (Azaro et al., 2021), who used BPMN to find out the evaluation of the purchase order and inventory system in MSMEs. As a result of these findings, a greater separation of duties and management is required to obtain better results. This can provide changes for the better to make it easier for business owners and some employees to know the needs that exist in each of their jobs. That the accounting information system has a positive and significant effect on internal control in controlling a sale (Pujiati, 2021). Thus, it can be concluded that BPMN is very helpful so that business processes are more easily understood by users and can be analysed, resulting in suggestions for improvements to business processes to achieve business effectiveness (Sulthan et al., 2021). Furthermore, AIS have an influence in creating good financial reporting. This research aims to to evaluate an AIS for SME stakeholders, particularly the food and beverage sector, and to design an SME AIS, in particular the revenue and expenditure processes based on Business Process Modelling and Notation (BPMN). This research adopts Research and Development approach, particularly ADDIE Model, to enable the output directly implemented in the coffee shops.

2. Research Method

The research method was used to bring about certain product, test the product, learn and analyze the research object, and then conduct a further analysis in order to obtain a conclusion. So, it could generate the best implementation from accounting information system and financial management at selected coffee shops in Malang. Sugiyono (2012) stated that the method and development was exerted to create certain product and test the product effectiveness. Before the product is ready to be used, the researcher must firstly analyze and identify problems and test feasibility and effectiveness of product. In addition, the researcher should explain the situation of chosen object with a request of information and explanation in the form of several variants, so the data could not be actualized in numbers, but in the form of explanation which would figure out the situation of certain product. Sugiyono (2012) has also added the following several stages which could increase the development of website-based financial report:

a. Analysis

To identify the potential problem was referred that when everything was misused, it would have added value to examine, investigate, and collect information. This step included activities such as need analysis, literature review, problem identification and observation in the business process, and data collection of either supporting or inhibiting factors.

b. Development

To design technological development, orientation of technology product that could be benefitted for human life, for example product with good quality, energy saving, cheap price, light weight, ergonomic, and double benefit.

c. Design

To develop the temporary form of initial product that was made completely and as good as possible.

d. Implementation

This step was aimed to conduct limited trial concerning to the proposed business model. During the implementation step, the researcher could observe user or costumer activity in performing the product. After the implementation step was completely done, the researcher then discussed and received suggestions from the users or through questionnaire distributed to the users.

e. Evaluation

To conduct test result on the successful product and find improvement that might not really matter, next, the product in form of a new work system would be implemented in the real condition for a wide range. During the operation, the new work system must be assessed for its deficiency and hindrance that might appear in order to have a further improvement.

This research was conducted at four coffee shops, those are Niwa Coffee Garden located at Kedawung Street, Homirast.Ind located at Borobudur Street, Toko Kopi Koopen located at Klojen Street, and Teras Engkong located at Kesatrian Street, Malang.

3. Results and Discussion

3.1. Results

Business Model Design for Coffee Shop

In this modeling step, the suggestion for Coffee Shop to exert transaction register with device tools such as laptop and mobile phone. This suggestion is aimed to ease financial report recording by utilizing Microsoft Excel 2003 software and “rekapyuk.xyz” website:

a. Customer order

The customer order is performed by waitress, cashier, barista, and customer. The sale is performed until the order note was printed.

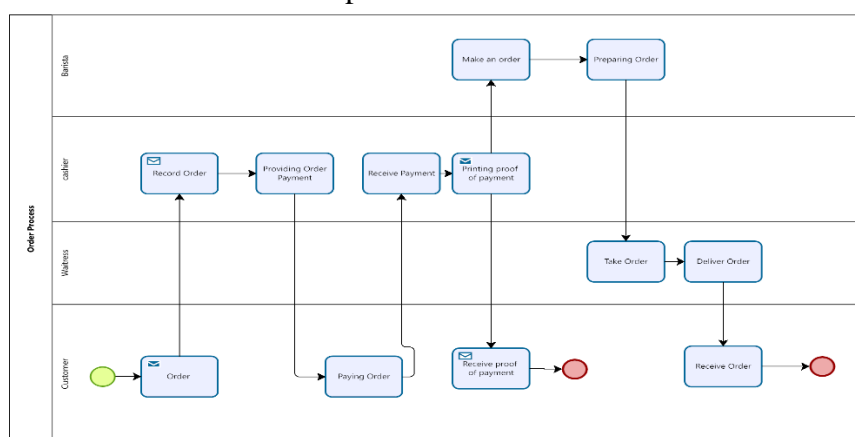


Figure 1. Customer Order Business process

The customer order process is aimed to adjust customer ordering and confirm customer suitability. The order process contains order note document.

The processes of customer order:

1. The customer orders either beverage or food menu
2. The waitress defines any beverage or food detail when the customer asks for it
3. The waitress records customer order on an order form

4. The waitress counts and confirms the order to the customer for payment
5. The customer pays the order and gets order note
6. The copy of order note is then given up to barista to make the order
7. When the order is settled by barista, the waitress will take the order and deliver it to the customer
8. The customer checks the order received

b. Purchase of raw material and operational goods

The purchase process of raw material and operational goods is included into business process. The barista has a duty to check the stock of raw material; in which the limited stock needs to be added to ensure the smooth business process.

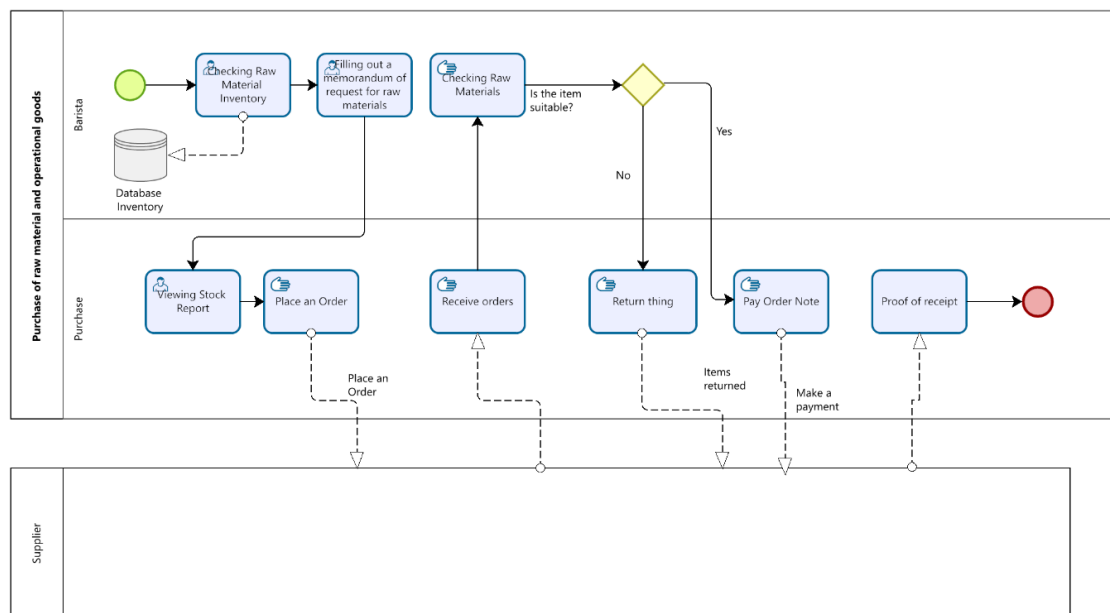


Figure 2. Business Process for Purchasing Raw Materials and Operational Goods

In this purchase process, it is expected that the coffee shop has raw material supply form for checking and receipt document or purchase note from the supplier. The description of raw material and operational goods procedures is as follow:

1. The barista checks raw material supply and prepare the raw material by firstly filling the stock or supply form
2. When the raw material is not available, the barista should inform the purchase staff to take an order by filling raw material note
3. After the purchase staff receives raw material note, he will do the available stock checking and when the stock condition is in accordance to the barista's request, the purchase staff contacts the supplier to order items according to the raw material note
4. After the supplier receives the order, the items will be sent to the coffee shop and the purchase staff will accept and take note the new raw material availability
5. When the items do not suit to the order, the purchase staff will return the item to the supplier

6. When the items already suit to the order, the purchase staff will take receipt and contact the treasurer staff to do payment process. Next, the treasurer staff will get payment note after the payment process is settled
7. The processes end.

c. Payroll

The payroll is referred to the amount of wage given to the workers after doing their duties and exerting work performance. In this step, there are three important aspects, the treasurer staff will record salary recapitulation report, the workers as salary recipients equipped with supporting document of salary slip, and business owner will check the validity of recapitulation report.

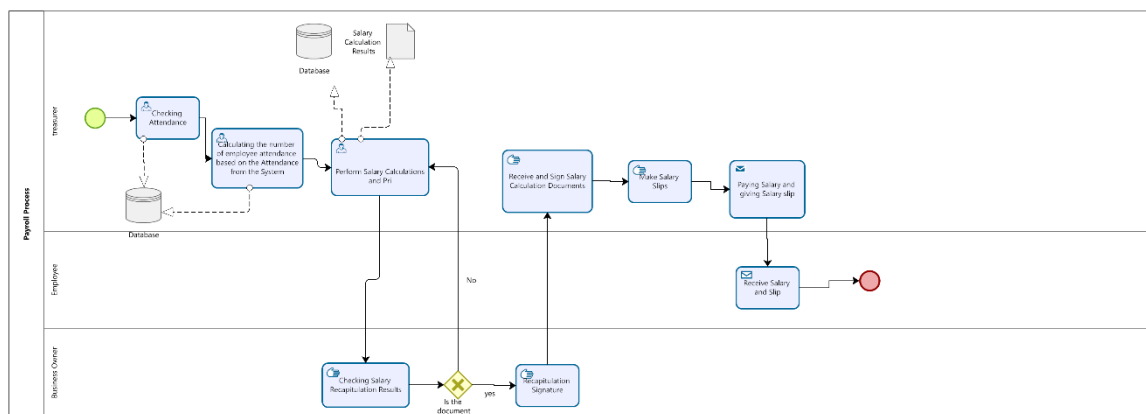


Figure 3. Payroll Business Process

The payroll process is employed in cash payment along with worker attendance document and salary slip document:

1. The treasurer staff checks worker attendance document and counts the total attendance according to the work schedule
2. The treasurer staff counts and prints the salary calculation result of every worker into salary recapitulation document
3. The treasurer staff hands over salary recapitulation document to the business owner for verification
4. After the verification, the business owner signs the salary recapitulation report. If the result of salary recapitulation is not correct yet, the treasurer staff will fix it
5. The treasurer staff prepares pay slip after the salary recapitulation has been signed or approved by the business owner
6. Then, the treasurer staff prepares amount of money and pay slip to be given to the workers
7. The salary is delivered to the workers by treasurer staff
8. The processes end

d. Financial report recapitulation

The recapitulation of financial report is aimed to arrange and calculate profit and loss report. This step will involve cashier as the recapitulation of income and purchase result,

the recapitulation of grocery or purchase result is given to the treasurer staff for profit and loss report estimation and here the business owner will validate the report.

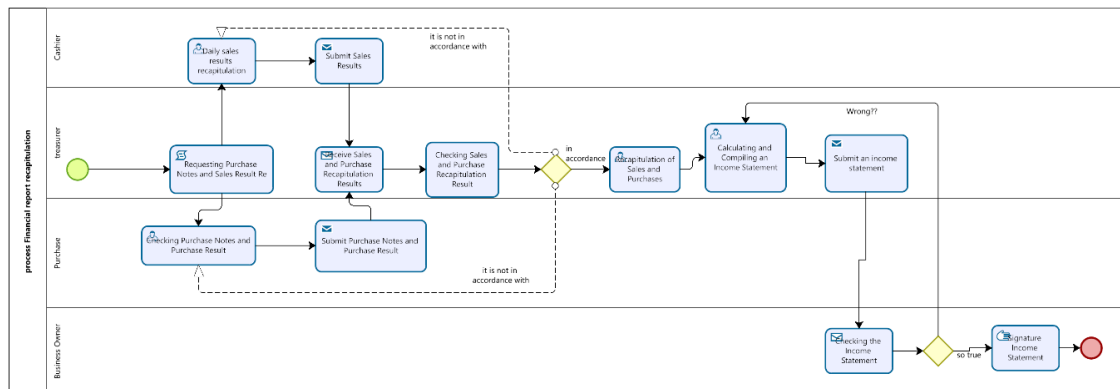


Figure 4. Financial Report Business Process

The recapitulation process is aimed to identify profit and loss by inserting recapitulation form on the daily turnover and recapitulation form of purchase note which expectedly give rise to profit and loss report document.

1. The treasurer staff asks purchase not to the purchase staff and make recapitulation of sales result from the cashier
2. The cashier submits recapitulation of sales result to the treasurer staff
3. The treasurer staff submits purchase note or receipt to the treasurer staff every purchase transaction is taken
4. The treasurer staff will check on the purchase note and sales result recapitulation
5. When they are not correct, the treasurer staff returns the note to the purchase staff and cashier to do recalculation. But, when they are already correct and fit, the treasurer staff will arrange or make financial report in form of profit and loss report
6. The treasurer staff prints out and submits financial report result to the business owner for verification
7. When the financial report is correct, the business owner will sign the profit and loss report, reversely, when it is incorrect, the report will be returned to the treasurer staff for revision
8. The processes end

e. Design of website-based financial report

The treasurer staff takes responsibility of financial reporting from every income and expenditure transaction occurs in the coffee shop. This task is only performed by either the business owner or treasurer staff to arrange income and expenditure financial recapitulation in order to record and take note the financial report of business, since it is accessed either through laptop or smartphone via “rekapyuk.xy website with the help of website browser applications such as Google Chrome, Firefox, and Mobile Browser with the following website view:

Every business user must firstly register the account to get access concerning to financial transaction recording that suits to the business need.

(1) Login page

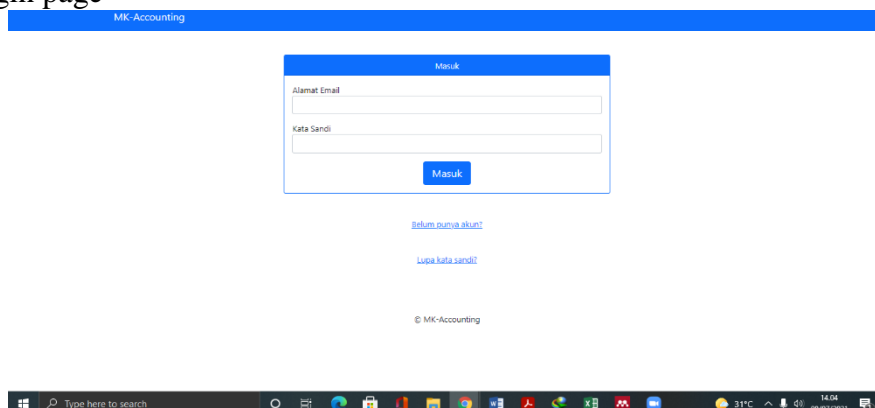


Figure 5. Login page

On the figure 5, search on “rekapyuk.xyz” website and go to the login page. This is functioned for user login which is distinguished into three access rights, such as access right for the business manager. After login into the system, the user will get different dashboard display for each access right.

(2) Page for new business creation

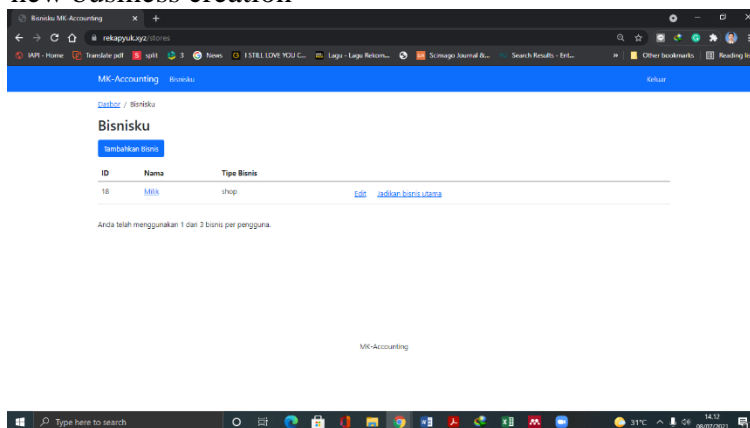


Figure 6. Pages for creation of “New business”

On the figure 6, the use of “add business” page is aimed to input the new business.

(3) Page of “add business”

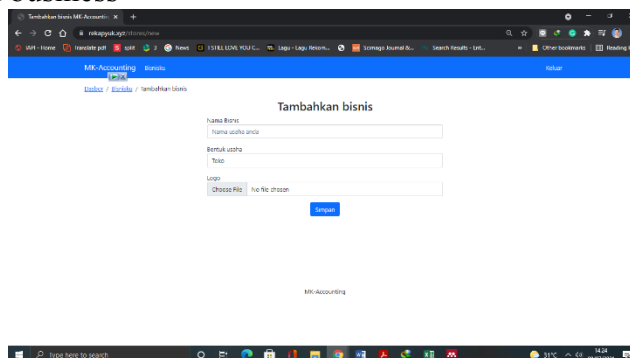


Figure 7. The Add Business Page

On the figure 7, the user fills information or business profile such as business name, business form, and logo which will be saved in the website. After that, the user goes back to the main menu page.

- (4) Page of main menu

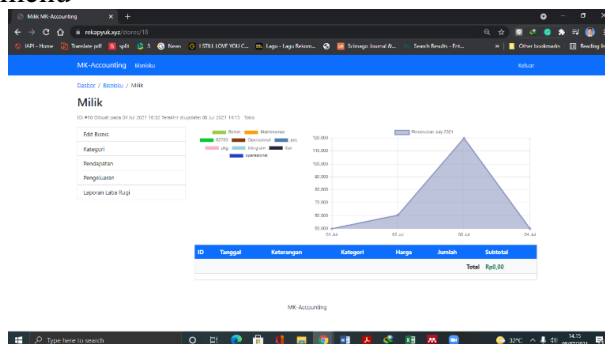


Figure 8. Main Menu Page

The main menu is the front page. It is the website-based accounting information system which contains a number of menus such as business edit, category, business income, expenditure, and profit and loss report. This page can be accessed by the admin.

- (5) Category page

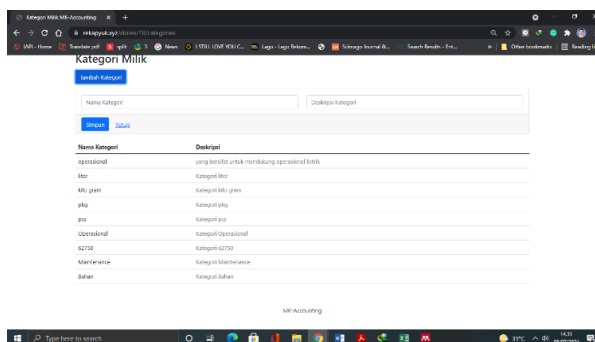


Figure 9. Category Pages

- (6) Next, the figure 9, the category page is used to identify load or cost separation that will be integrated into expenditure. This page will also input category name and category description and save the data by clicking “save” button. Income page

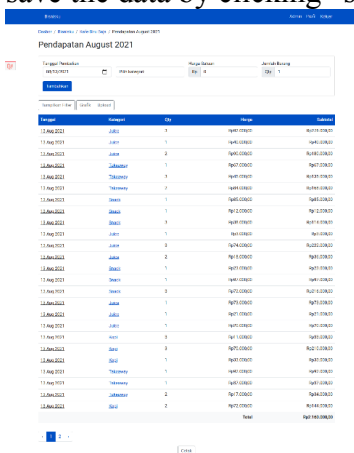


Figure 10. Revenue Page

This page is used to display income data acquired from the total of sales income data through admin input by filling date, month, note-taker name, and income journal that will be useful for making profit and loss report.

(7) Expenditure page

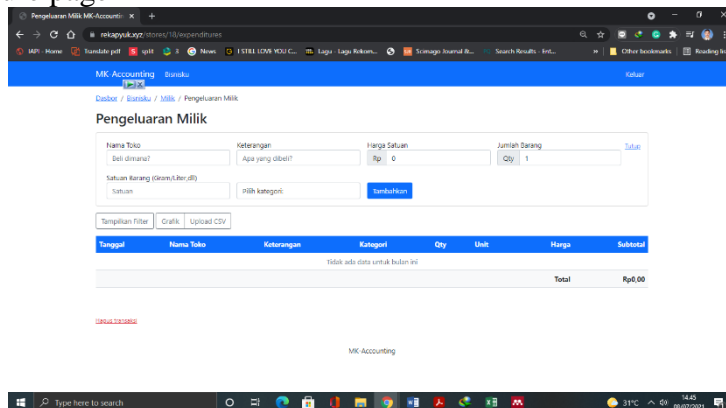


Figure 11. Expenditure Page

This page is used to show expenditure data acquired from purchase note. The expenditure data which derived from admin input by inputting shop name, purchase description, price, number of goods, item unit, and category. This data will be useful for profit and loss reporting arrangement.

(8) Journal page

The journal page is automatically used to demonstrate accounting journal note within expenditure data which has recorded based on accounting, cash on debit and expense on credit, also note-taking according the sales transaction shown in income page by showing accounting journal recording “cash on credit and income on debit”.

Tanggal	Akun	Debit	Kredit
	Modal		Rp388.000,00
	Kas	Rp388.000,00	
08/08/2021	Kas		Rp7.000,00
	Pendapatan	Rp7.000,00	
08/08/2021	Kas		Rp66.000,00
	Pendapatan	Rp66.000,00	
08/08/2021	Kas		Rp1.000,00
	Pendapatan	Rp1.000,00	
08/08/2021	Biaya	Rp83.000,00	
	Kas		Rp83.000,00
08/08/2021	Biaya	Rp45.000,00	
	Kas		Rp45.000,00
08/08/2021	Biaya	Rp92.000,00	
	Kas		Rp92.000,00
07/08/2021	Kas		Rp21.000,00
	Pendapatan	Rp21.000,00	
07/08/2021	Kas		Rp75.000,00
	Pendapatan	Rp75.000,00	
07/08/2021	Kas		Rp74.000,00
	Pendapatan	Rp74.000,00	
07/08/2021	Biaya	Rp76.000,00	
	Kas		Rp76.000,00
07/08/2021	Biaya	Rp68.000,00	

Figure 12. Accounting Journal Page

(9) Profit and loss report page

Laporan Laba Rugi	
Miilk	
Tanggal 08 Jul 2021	
Omset Pendapatan Kafe	Rp200,500.00
Biaya Operasional:	
Bahan	Rp0.00
Maintenance	Rp0.00
62750	Rp0.00
Operasional	Rp0.00
pos	Rp0.00
pkg	Rp0.00
kilo gram	Rp0.00
liter	Rp0.00
Operasional	Rp0.00
Total Biaya Operasional	Rp0.00
Total	Rp200,500.00

Figure 13. Income Statement Page

3.2. Discussion

Evaluation of SIA Financial Report Design

Based on the result of SIA design of cash receipt and expense, in the purpose to make various business process models, for example order, raw material purchase, payroll, and financial report recapitulation. During the development, expert validation test by some related parties in order to develop the business process, involving material experts and practitioners (business owner). The material experts will assess from SIA quality aspect and internal control aspect employed by the lecturer of accounting department, State Polytechnic of Malang, Mrs. Dr. Nurafni Eltivia and Mr. Z also media experts, Mr. Y as the owner of technology company. The implementation test from practitioners (business owner) is conducted to value from quality aspect of accounting information system and internal control aspect which is divided into five divisions: environmental control, risk evaluation, activity control, communication information, and monitoring in several aspects by the business owner of Niwa Coffee Garden, Rijal Arif Maulana and Homirast.Ind, Antonius Wastu.

a. Validation test by material expert and media expert

On the validation of accounting information system, there are a number of indicators used to measure feasibility of SIA quality aspect on financial income and expenditure. These are the indicators used in validation test:

1. The integration of SIA component refers a relation between hardware, software, database, internet network, and procedure to operate the data so it can function optimally
2. The financial report can be accessed based on the need
3. The process of financial report arrangement has flexibility, so it can be easily adjusted to any environmental changes (for instance, laws or government regulation changes, etc.)
4. The business process is easily adjusted to the need change, so it can help the success of work implementation
5. The operating procedure is easily understood, so it can help the success of task or work implementation
6. Easy operation is needed, so it can help the success of task or work implementation

7. The process of report making can be employed easily
 8. The result of financial record is easily accessed everywhere according to the need
- Here is the assessment result of SIA quality from both material expert and media expert.

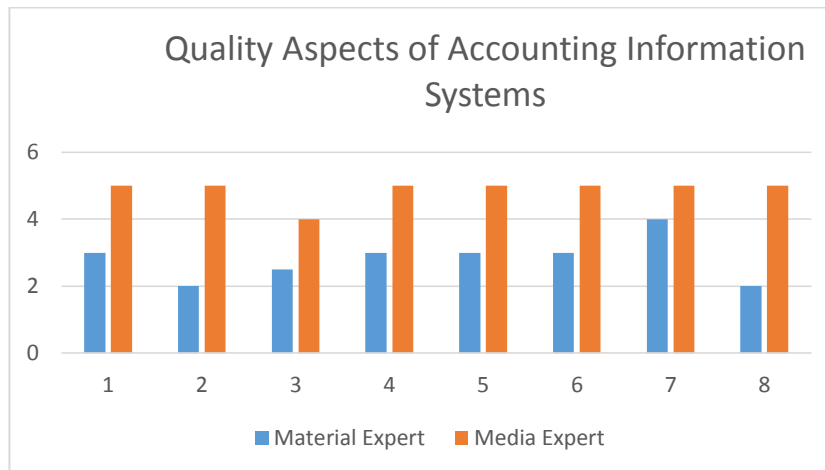


Figure 14. Graph of AIS Quality Aspect Assessment Results

Based on the figure 14, it is concluded from the assessment given by material experts, it has the average value of 3.8, because it still does not cover business process within SIA. Meanwhile, the evaluation given by media expert, it obtains the average score of 5, because it is already perfect globally, but it still needs to be developed for business process. Therefore, the average value on SIA quality aspect from both material and media expert is about 3.57. This score is indicated in score interval of $3,4 < X \leq 4,2$. In conclusion, the quality aspect of developed accounting information system is valued “feasible or worthy”.

On the internal control validation, there are several indicators used to measure the feasibility of internal control aspect:

1. Supervisory function by the business owner
2. Determination, giving, and limitation of authority and responsibility
3. Obedience to the accounting standard record
4. Consideration of several cheating possibilities
5. Evaluation of support and pressure which cause cheating
6. Evaluation of fraud incident
7. Competent personnel as the implementer of internal control activity
8. Consideration of cost-benefit analysis
9. Continuous evaluation is applied in an integrated manner or built in with the business process and always adjusted to a lot of change certainties

The assessment result of internal control aspect from material expert and media expert will be illustrated below.

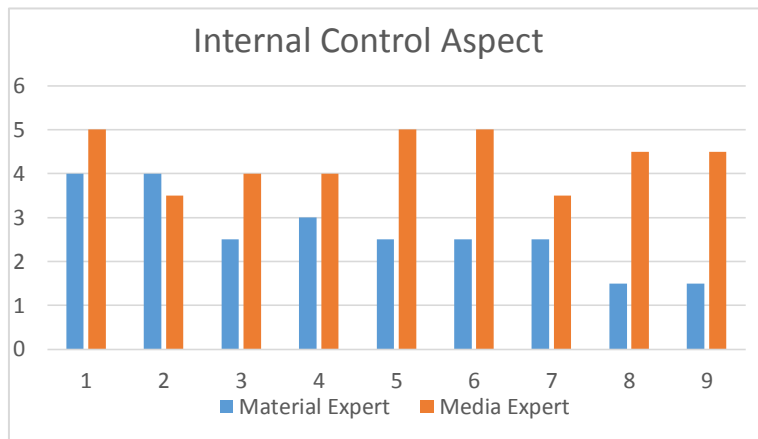


Figure 15. Graph of Internal Control Aspect Assessment Results

Based on the figure 15, it is identified that the average value on internal control aspect performed by material expert has average value of 3,22. It can help supervision on the business process of cash receipt and expenditure, while the assessment performed by media expert has average value of 4,44. Since, it can operate application as well as analyze future planning. On the result of total average of internal control aspect either by material expert or media expert, it gains value of about 3,8333. This value is indicated on score interval of $3,4 < X \leq 4,2$. Thus, the quality aspect of developed accounting information system is valued “feasible or worthy”

To conduct this development, it needs suggestions either from material expert or user in order to develop the business process. The material expert and media expert have valued from quality aspect of accounting information system and internal control aspects. Based on the interview result by material expert below:

The material expert says that:

“Micro, small, and medium enterprises need different business model according to the human resource and facility and infrastructure.. it can be encouraged to start utilizing semi-computerization and give support in database integration that can increase the accessibility”.

(Interview with Mrs. Nurafni Eltivia, 2021)

This strategy can offer development in coffee shop as the need that must be owner to provide sufficient implementation of goods accounting information system along with the support from a good system and recording. Technology in the field of accounting information systems can give ease by building new systems based on databases that can replace manual systems that are still inefficient in terms of time and energy spent on procedures while not undermining existing procedures(Aminudin & Saripudin, 2021). Here is the interview result with media expert:

The media expert says that:

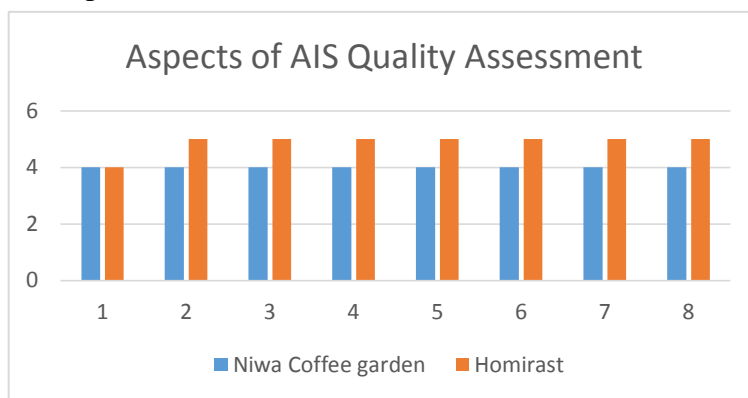
“Through SIA, the process of report records and supervision can be conducted everywhere and easily via PC desktop or smartphone...and to minimize financial record error or fraud”.

(Interview with Mr. R, 2021)

On that interview session, it is explained that the information system is used manually. According to Rauni & Rosnelly (2020), the establishment of this information system is really needed to improve and have some advantages, for example to ease the safe storage and saving, because it is saved in database and make more efficient process. However, it does not decrease the effectiveness of information system and it is still well-controlled (Otinur et al., 2017).

b. User Validity Test (Business Owner)

On the internal control validation, there are several indicators to measure feasibility of internal control aspect, while for the user; it obtains the validation test result as figured



out in figure 16.

Figure 16. Graph of AIS Quality Assessment Aspect Assessment Results

Based on the figure 16, it is known that the assessment from Niwa Coffee Garden users, the average value of 4, it refers that the implementation is already perfect to support the financial report record, so it can identify the profit and loss report in detail. Meanwhile in Homirast.Ind, the average value of 5, since it offers easiness to perform financial report record. Thus, it can reach average value of 4,4375. This value is indicated on score interval of $X > 4,2$. Hence, the quality aspect of developed accounting information system is valued “Highly Feasible or Worthy”.

On the user (business owner), there are five aspects: environmental control, risk evaluation, activity control, communication information, and monitoring until get the result as figured out in figure 17.

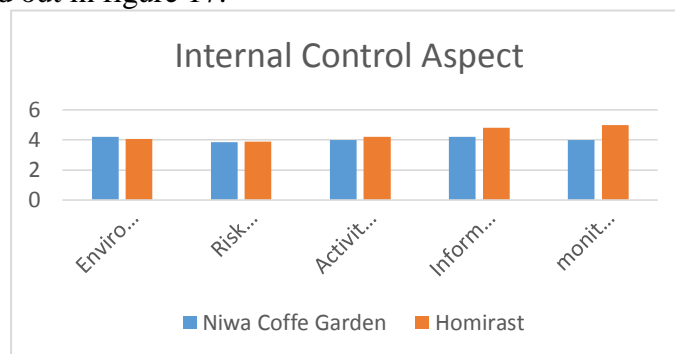


Figure 17. Graph of Internal Control Aspect Assessment Results

Based on the figure 17, it is known that the average value on internal control aspect by Niwa Coffee Garden has average value of 4,05. This score can understand the need in information and communication, while Homirast.Ind has average value of 4,3133. This is because the internal control has been well-implemented by the business owner, especially on supervisory component. Moreover, on the result of total average, the internal control aspect from those two coffee shops acquire the value of 4,18. This value is indicated on score interval of $3,4 < X \leq 4,2$. Therefore, the quality aspect of developed accounting information system is valued “Feasible or Worthy”.

The users can assess from quality aspect of accounting information system, environmental control, risk evaluation, activity control, communication information, and monitoring. The user or business owner can support the development of cash management in the business process, in this context, Niwa Coffee Garden and Homirast.Ind in order to test the business development. The coffee shops are intended to develop their business, due to the result of interview with business owner of Niwa Coffee Garden.

The user says that:

“The addition of business system can ease and facilitate us in financial record. Also, it can identify income and expenditure report in more clearly and be accounted for and lessen error possibility”.

(Interview with Rijal Arif Maulana, 2021).

The informant has explained that it is very significant to do note-taking in financial report and internal control system to decrease storage. It involves internal control of every transaction, supervision or monitoring which is aimed to prevent any manipulation either intentionally or unintentionally (Claudia et al., 2019). According to research Damarto et al., (2022), information technology has a favorable and considerable impact on the performance of new enterprises. This implies that the more effectively technological innovation is used, the more the performance of small enterprises will be. This can be represented in terms of financial statements being converted into useful information for business owners. Nopangga et al., (2021) Explain that MSMEs require a financial accounting business model, which is created with the goal of allowing these businesses to run smoothly and boost their production. The implementation of information technology, on the other hand, has a negative impact on the performance of small enterprises. That The high and poor utilization of information technology evaluates the tiny small business's high and low performance. According to the evaluation results, coffee shops or MSME business players will receive a very useful value. This was explained by Ardiani et al., (2020) as a consideration and additional material regarding the application of information generated from accounting that has a good system, so that business owners can use it to determine and implement cash control from expenditure to income into financial statements in the future.

4. Conclusion

Based on the field observation relating to the implementation of cash receipt and expenditure, it shows that the accounting information system applied at four coffee shops is sufficient. However, it still contain some weakness, the task separation among staffs and unavailability of document completeness relating to SIA implementation. The four coffee shops that have

been this research samples have implemented business process of cash receipt and expenditure, including to order, raw material purchase, payroll, and financial report recapitulation. The arrangement of business process model for micro, small, and medium enterprises in food and beverage sector is conducted according to SIA regulations. Further, this business model is regarded as worthy after passing validation tests either by material expert or media expert. This model is also going through trial process, particularly at two coffee shops. The trial result shows that the developed business process already fits the need of micro, small, and medium enterprises. The implementation of this business process model is already equipped with recapitulation and profit and loss report arrangement via website. The website help is expected to help micro, small, and medium enterprises arranging and completing financial report document and monitor business performance.

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