Design of an Order-Based Cost Accounting Information System Using Microsoft Visual Studio 2017

Ai Elpa Dwiputri[1], Mia Rosmiati[2]
[1, 2] Politeknik Negeri Bandung, Gegerkalong Hilir Street, Ciwaruga, Parongpong, West Bandung District, West Java Province, Indonesia
Email: ai.elpa.akun20@polban.ac.id

ABSTRACT

The Accounting Information System (AIS) is crucial for a company's commercial operations to run smoothly. One type of AIS is the Cost Accounting Information System which has a vital role, especially in manufacturing companies. More specifically, AIS Cost also depends on the method of collecting costs used by a company which consists of two types, namely process-costing and job order-costing. MSMEs MMC Fashion Knitting one of the manufacturing companies in Bandung that produces based on orders (job order-costing) still uses the Cost Accounting Information System manually so that the owner does not know the exact production cost and gross profit of each order. This study aims to create a simple application to process the Accounting Information System of Job Order Costing that can help the company's operational activities. Descriptive-qualitative research methodology is being employed. Interviews and documentation in the form of primary and secondary data were used to acquire the information. The System Development Life Cycle (SDLC) approach and Microsoft Visual Studio 2017 are used in this study's application design. The results of this study are the Accounting Information System of Job Order Costing Application which can produce output including sales order letter, production order letter, bill of material, production activities list, material stock report, cost of goods manufactured report, and income statement with variable costing method.

Keywords: Accounting Information Systems, Job-Order Costing, waterfall, SDLC

Introduction

Current global economic developments are accompanied by technological developments for automation and digitalization in every industrial sector. Currently, access to technology is very open to everyone. Electronic devices such as gadgets and laptops have various advanced features that can make daily activities easier. These various conveniences can be both opportunities and challenges for MSME players because economic competition in this era is becoming tighter. MSMEs play an important role in driving Indonesia's economic growth. The large number of types of MSMEs in Indonesia is proof that MSMEs have an important role, starting from manufacturing, service, trade, agricultural, and extractive companies. Of the various types of MSMEs, manufacturing companies are quite popular with business actors compared to other types of business, one of the reasons is that they can absorb local labor at low costs.

Companies operating in the manufacturing sector generally process raw materials into goods that can be sold. In running their business, manufacturing companies must take into account production elements. Additionally, a company's production system may impact how costs are collected and used to determine the cost of goods produced. Two approaches are often used to collect production costs, namely the order cost system and the process cost system. According to the opinion of Siregar et al. [1], cost-to-order systems allow companies to develop items in response to consumer demand. This costing strategy can be adjusted accordingly by the user as departments or cost centers produce various items so as to identify product-cost relationships. Meanwhile, a process-based cost system involves collecting costs based on departments or manufacturing

processes in the factory. Businesses that use process-based costing techniques are often homogeneous. Businesses with homogeneous production produce the same products in significant volumes. According to this method, the cost per unit is determined by dividing all process costs incurred during a certain time by the total number of units produced.

MMC Fashion Knitting MSME is one of the MSMEs in Bandung that uses an order-based cost system. This company operates in the convection sector and was founded by Mr. Rudi and Mrs. Desi in 2017. However, until now the company has not succeeded in adopting the correct accounting system relating to costs based on orders to calculate COGS. This causes calculation errors because the company does not take into account factory overhead costs including depreciation costs for fixed assets, costs of auxiliary materials, etc. This inaccurate production cost calculation means that the company does not know the exact amount of gross profit earned from each order. Apart from that, the cost accounting system running in this company is still manual so it takes a long time.

There are various other obstacles faced by MMC Fashion Knitting MSMEs due to the incorrect COGS calculation system and manual cost calculation system. Based on interviews conducted by the author, these obstacles include difficulties when getting lots of orders that require immediate handling and difficulty determining which orders should be done first. The owner realizes that to maintain the long-term viability of his business, a computerized system is needed in the form of a simple application system that can help the company overcome these obstacles. The age of globalization fosters the swift advancement of information technology, a resource leveraged by diverse business entities to broaden their reach and enhance operations through the integration of information systems into their daily activities, impacting nearly every sector of society on a global scale [2]. Accounting functions as an information system that initiates with the recording and communication of monetary events within an economic entity. This information serves as a foundation for making economic decisions and entails the consideration of various alternatives [3]. An accounting information system comprises various elements, encompassing both tangible and intangible components, which are interconnected to transform financial data into the essential financial information required for decision-making by both managers and external stakeholders [4].

Research emphasis in the field of accounting information systems (AIS) and information systems (IS) revolves around understanding phenomena and gaining fresh insights into the mechanisms governing diverse processes [5]. Accounting, functioning as an information system, begins with the recording and communication of monetary events within an economic entity. This information provides a basis for economic decision-making, involving the evaluation of different alternatives [6]. The application system is a part of an accounting information system. Mulyadi [7] argues that an accounting information system or abbreviated as AIS is a collection of forms, records and reports that are created and integrated in certain ways to provide management with the financial information necessary to run a company. In addition, it is a system that offers accounting transactions that represent accounting and financial data and other information obtained from business operational processes [8]. Furthermore, Hall [9] argue that financial transaction processing is directly influenced by sub-systems that handle financial and non-financial transactions. While Bodnar and Hopwood [10] argues that a combination of resources, including people and technology, are coordinated to transform data into information. The application system as part of the information system really supports the efficiency and effectiveness of the accounting information system.

There are various kinds of software that can be used to design an application. Microsoft Visual Studio as a software that functions to design applications offers various programming language choices. There are many programming languages available today. The rules and syntax for creating commands or instructions differ depending on the language. The five programming languages supported by Microsoft Visual Studio 2017 are Visual Basic, Visual C++, Visual C#, JavaScript,

and Visual F#. Zak [11] claims that Visual Basic is an object-oriented programming language. In object-oriented programming, anything that can be seen, touched, or utilized is called an object. Text boxes, list boxes, buttons, and labels are the most frequently used Windows items. Each object in object-oriented programming consists of a class, which serves as a template for further object creation by the computer. Of these various options, Visual Basic is the most popular because it emphasizes the visual-based programming side so it is suitable for use if you want to create Windows-based applications [12].

Designing applications that use software such as Microsoft Visual Studio 2017 cannot be separated from electronic data processing (EDP). Bodnar in Budiarti & Ardi [13] believes that Electronic data processing (EDP) is a transaction-oriented data processing process in an organization using computer technology. EDP is the most basic information system application used by all organizations. The advantages and benefits of using electronic data processing in business are economy, speed, and precision. The EDP stages consist of boundary, input, process, storage (database) and output stages. These stages are also designed in designing the application using application development methods that are appropriate to the application required.

Weli [14] believes that system development or application development is the process of modernizing or replacing all or part of an information system. Application development in this design uses the SDLC method and the waterfall method. Romney [15] states that there are five stages in the SDLC system development cycle, namely the system analysis stage, conceptual design, physical design, implementation and conversion, and operation and maintenance. Meanwhile, the waterfall method is the most traditional and easiest approach to system development [16]. For software development with unchanged specifications, this approach is appropriate. This model offers a step-by-step method for understanding the software life cycle, starting with requirements analysis, followed by designing, developing, testing, and utilizing the software on the project. Several previous studies conducted by Andrian & Sudjana [17], Putri & Aisah [18] and Febryani & Firdaus [19] It has been proven that designing an application system that uses the SDLC method or waterfall method and is designed using the Visual Basic programming language can make it easier for companies to calculate production prices along with reports on the cost of goods produced.

Method

The qualitative descriptive research method is the method used in this research. According to Sugiyono [20], Descriptive research is research on one or more variables independently without looking for relationships or comparisons between variables. This research only focuses on designing a cost-based AIS application program for MMC Fashion Knitting MSMEs. The problem-solving steps taken in this research include:

1. Field Survey. At this stage the author investigates the problems that occur in the research subject through interviews. Interview activities were carried out with the owner and sales department at MMC Fashion Knitting MSMEs.
2. Identify the Problem. At this stage the author found that MMC Fashion Knitting MSMEs had not implemented an appropriate cost accounting system so that the company experienced various obstacles in carrying out its business activities.
3. System Analysis & Planning. At this stage the author analyzes the system currently used by the company, identifies its weaknesses so that he can plan the proposed system.
4. General Design. At this stage the author begins to design the system that will be proposed through system documentation activities using flowcharts and DFDs so that the general system specifications can be described well.
5. Detailed Design. At this stage the author designs the appearance of the application that will be seen by the user (user interface).

6. Implementation. At this stage, the application system designed by the author has been completed, then he will demonstrate the Order Cost AIS application to MMC Fashion Knitting MSMEs so that the application and system designed can be implemented.

7. Conclusions and Suggestions. At this stage the author draws conclusions by answering the problem formulations that have been determined.

Furthermore, this research uses qualitative data and quantitative data such as sales order data from customers, information about running systems, company descriptions, and so on. This data was obtained using interview techniques and documentation sourced from primary and secondary data sources. Primary data in this research was obtained through direct interviews with business owners regarding the company profile and an overview of the business processes carried out by MMC Fashion Knitting MSMEs. Meanwhile, secondary data comes from evidence of transactions that occurred in the company from October to December 2022. The source documents used are receipts, notes, invoices, and so on.

In carrying out this design, the author used software as a design tool, namely Microsoft Visual Studio 2017 using the Visual Basic programming language and SQL Server to create the application database. The application development method used in designing application programs is the waterfall method with system analysis through the System Development Life Cycle (SDLC). Apart from that, in designing this application, system documentation was carried out using DFD and flowcharts. The application program produced in this research is single user and not connected to the internet network. Data storage in the application is stored in a database on the computer device used to install the application so that it cannot transfer data to another computer. Therefore, there is only one user of this application, namely the administration department appointed by the company.

Results and Discussion

1. AIS Fees Based on Orders Currently Used by MSME MMC Fashion Knitting

The order-based cost accounting information system currently used by MMC Fashion Knitting MSMEs uses entirely manual processes. The following is a flowchat document of the cost AIS procedure based on manual orders carried out by the company.
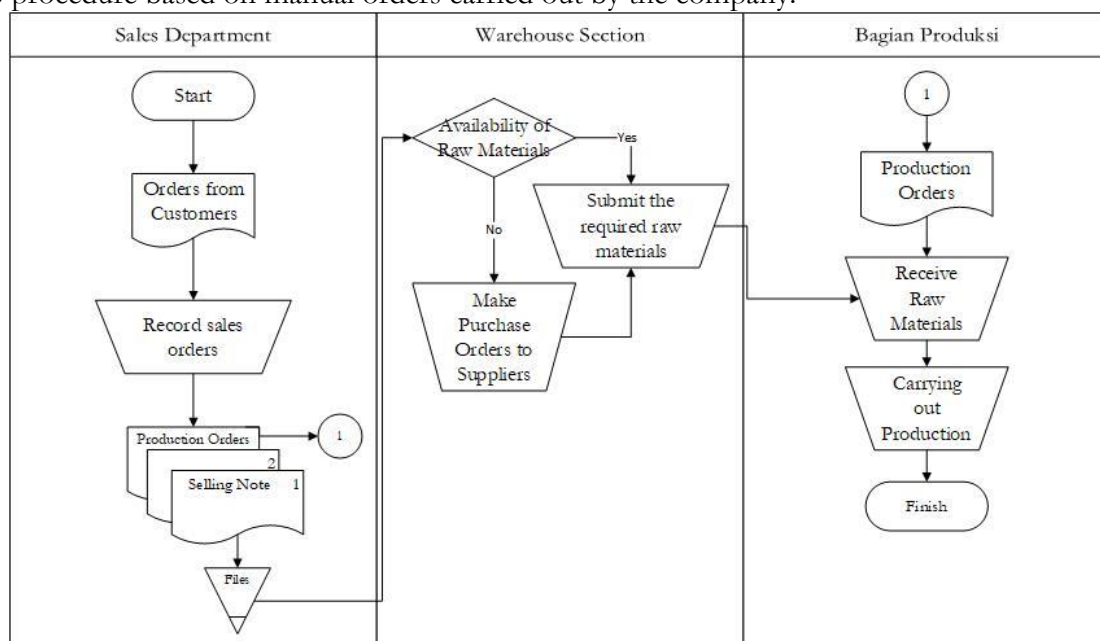

Figure 1. Document Flowchart AIS Order Costs Currently Used

2. Feasibility Study

Before carrying out system design, the author needs to conduct a system feasibility study to determine whether MMC Fashion Knitting MSMEs are suitable for developing the new system that will be proposed.

2.1. Technical Feasibility Study

The following are the minimum specifications required by a company to run the proposed application program: a) Minimum use Windows 10 operating system; b) Minimum processor speed 1.6Ghz; c) Have 4GB RAM or more; d) Has a free storage capacity of 1GB or more.

2.2. Economic Feasibility Study

MMC Fashion Knitting MSMEs already has a laptop with sufficient specifications to run the proposed application program so that the company can immediately use this application without incurring additional costs.

2.3. Operational Feasibility Study

The operational feasibility study looks at the human resources that will implement the proposed application program. At MMC Fashion Knitting MSMEs, the parties who are used to operating computers are the owner and finance department. Therefore, in developing this application program the author refers to the wishes of the owner and the financial department so that the application program can be easy to understand and easy to use.

3. Forms of General Design and Detailed Design in Designing the AIS Application Program Costs Based on Orders

3.1. General Design

The general design for this application includes a system design that is documented using a DFD. This general design aims to ensure that the general system specifications can be described well so that potential users can easily understand them.

a. DFD Context

Creating a context DFD aims to determine the input and output received or produced by a system.
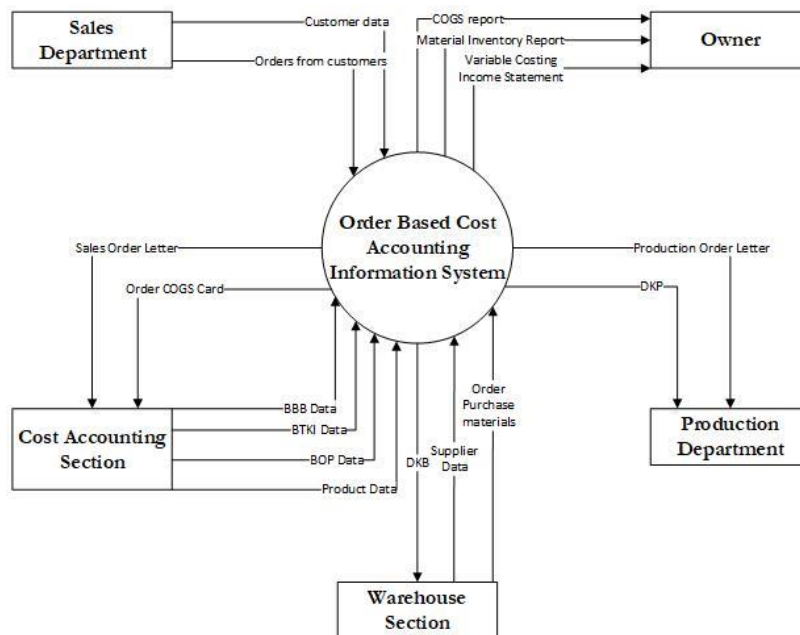
Figure 2. DFD AIS Context Proposed Order Costs

Ai Elpa Dwiputri[1], Mia Rosmiati[2]

b. Logical DFD

Creating a logical DFD aims to determine the sequence of processes, data storage and data flow in a system.
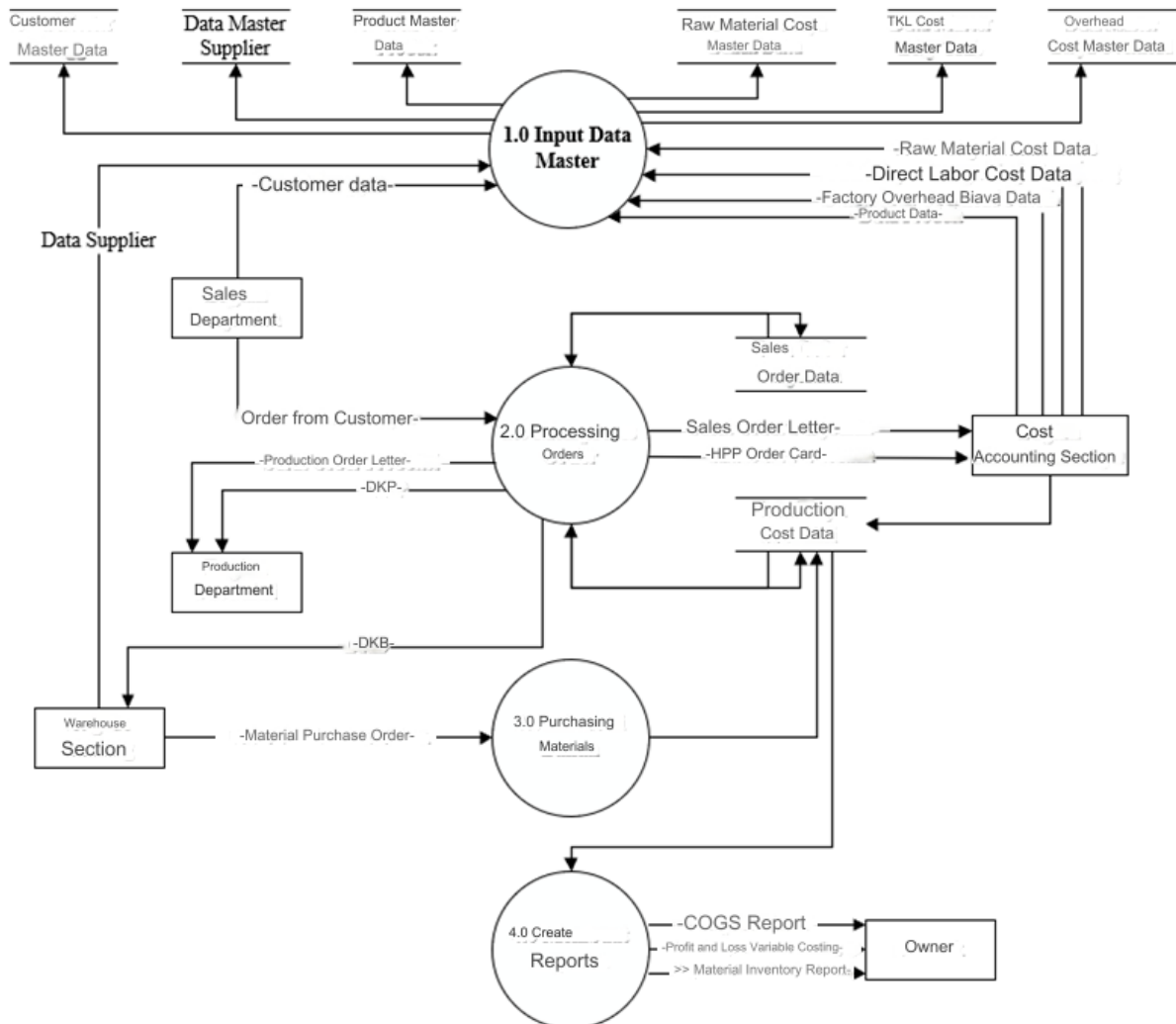

Figure 3. AIS Logical DFD of Proposed Costs

3.2. Detailed Design

The detailed design for this application includes designing the face-to-face display (user interface) which is presented on the form object. Apart from that, there is also a report object that is used to create output reports on the cost of production.

3.2.1. Form

a. Login Form

The login form functions to limit access to application programs so that they can only be accessed by authorized parties who have the correct username and password.

Ai Elpa Dwiputri[1], Mia Rosmiati[2]
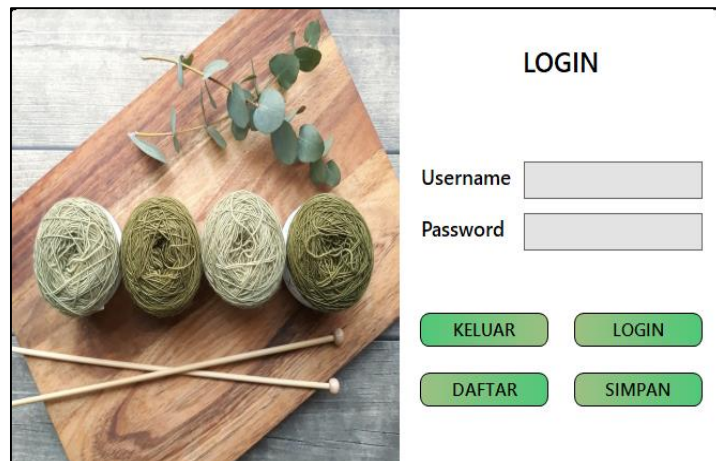
Figure 4. Login Form

b. Dashboard Form
    The dashboard form is the initial display form when the application is opened. The following
    is a display of the dashboard form in this application.
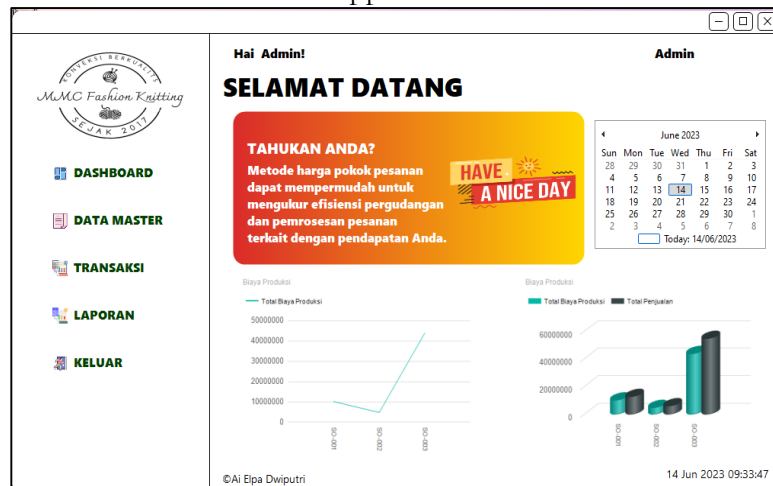
Figure 5. Dashboard Form

c. Master Data Menu
    The master data menu contains the basic data or master data used in this application program.
    In this menu there are several options for entering master data, namely product list, raw
    material costs, TKL costs, BOP, customers and suppliers.
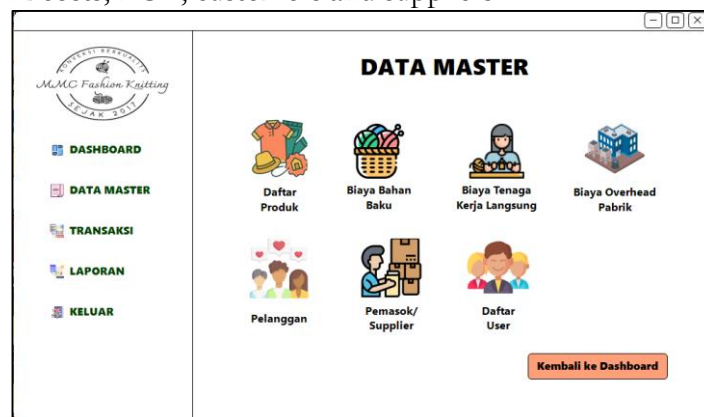
Figure 6. Master Data Menu

d. Product List Form and Raw Material Costs
    In the product list form, users can input, edit, or delete products to be sold. Meanwhile, on the raw material costs form, users can input, edit, or delete the required raw material costs.
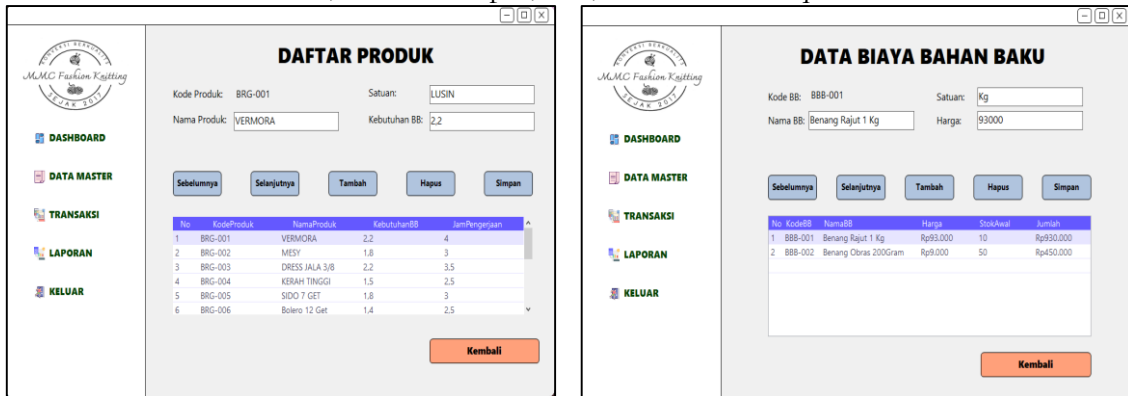
Figure 7. Product List Form and Raw Material Costs

e. BTKL and BOP forms
    On the BTKL form, users can input, edit, or delete the required TKL fees. Meanwhile, in the BOP form, users can input, edit, or delete BOP data to calculate the estimated BOP that will occur during one month. This estimate is used to calculate the BOP rate charged.

Figure 8. BTKL and BOP forms

f. Customer List and Supplier List Form
    In the customer list form, users can input, edit, or delete the customer list. Meanwhile, in the supplier list form, users can input, edit, or delete the supplier list.
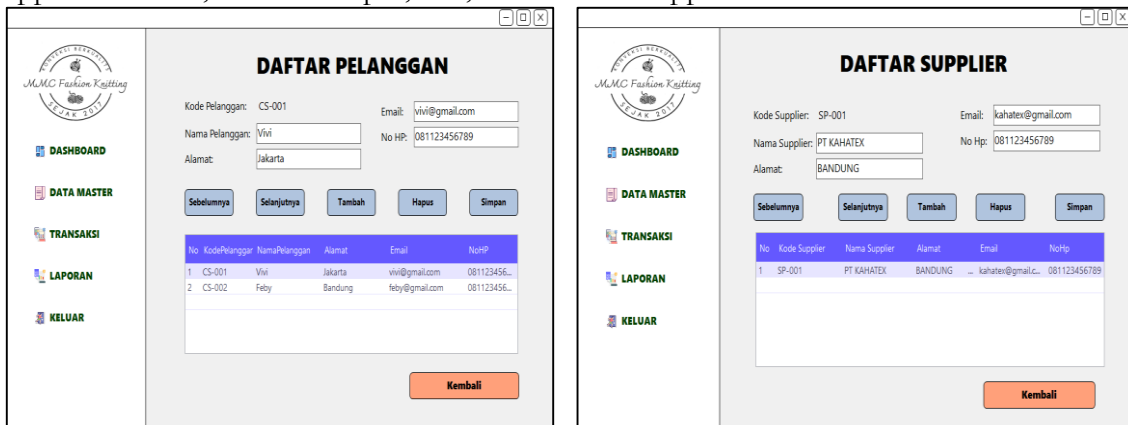
Figure 9. Customer List and Supplier List Form

g.   User Registration Form
      The user list form displays a list of users of this application.
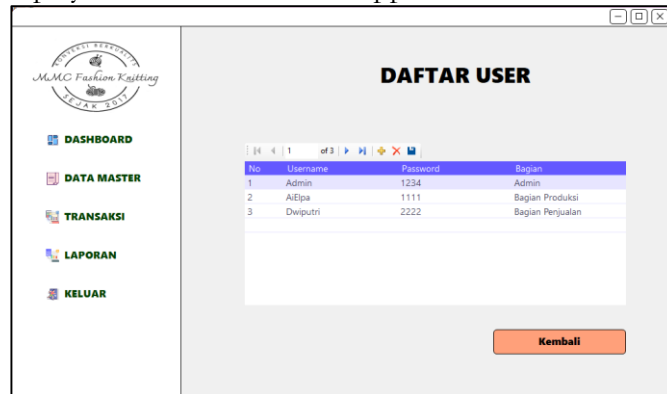
Figure 10. List of Users

h.   Transaction Data Menu Form
      In this form there are several transaction options, namely sales orders, production costs, and
      material purchases.
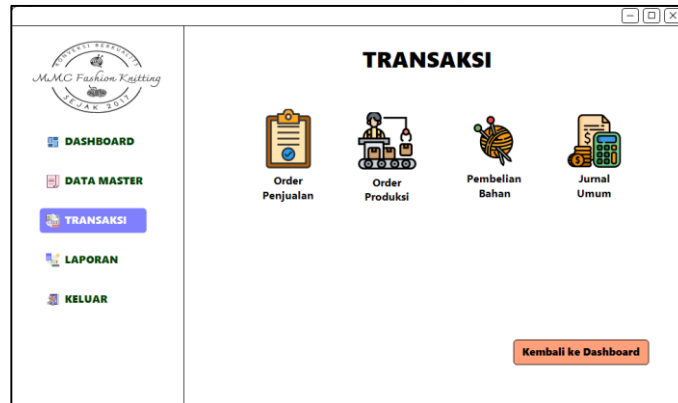
Figure 11. Transaction Menu

i.   Sales Order Form and Sales Order Details
      In the sales order form, users can input, edit, or delete sales orders. To view sales order details,
      users can click a button on the table. Then the following sales order detail form will appear.
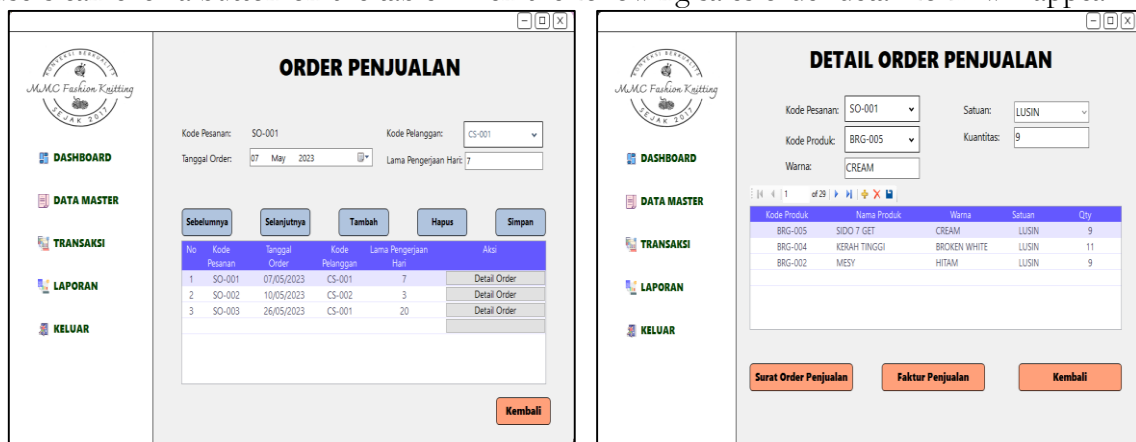
Figure 12. Sales Order Form and Sales Order Details

Ai Elpa Dwiputri[1], Mia Rosmiati[2]

Then to print the sales order letter and sales invoice, the user can click the sales order letter and sales invoice button.

Figure 13. Sales Order Letter and Sales Invoice
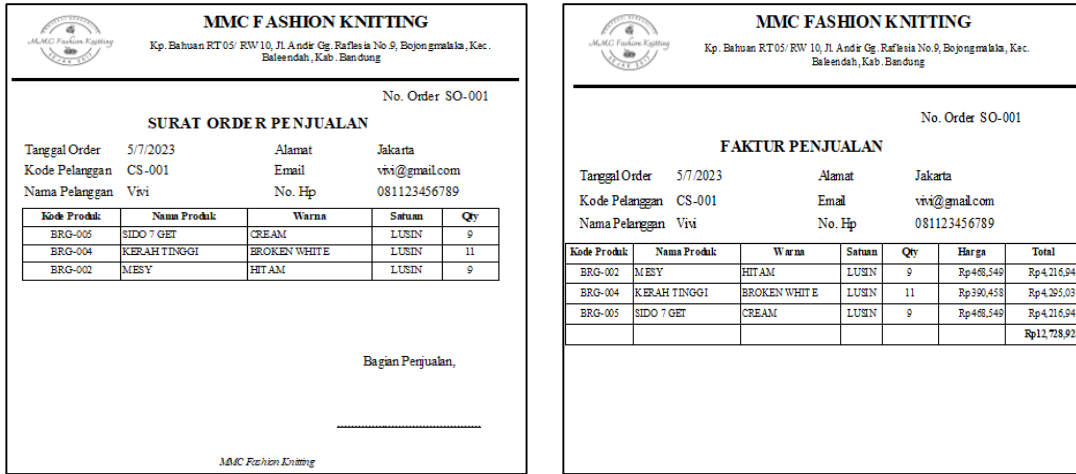
j. Production Order List Form

The production order form automatically displays the orders that have been input by the sales department in the sales order form. This form produces several outputs, namely production order documents, material requirements documents, production activity documents, and order HPP cards. The appearance of the production order form is as follows.

Figure 14. Production Order List Form and Production Order Letter

Then the output display from this form is as follows.

Figure 15. List of Material Requirements

Then the output display from this form is as follows.

Figure 16. List of Production Activities

Next, the ordered HPP card displays as follows.

Figure 17. Order COGS card

k. Material Purchase Form and Material Purchase Details
    On the material purchase form, users can input, edit, or delete material purchase orders. To view sales order details, users can click a button on the table.

Volume 8 Issue 1 (2023) Pages 31-45

Attribution-ShareAlike 4.0 International. Some rights reserved   41
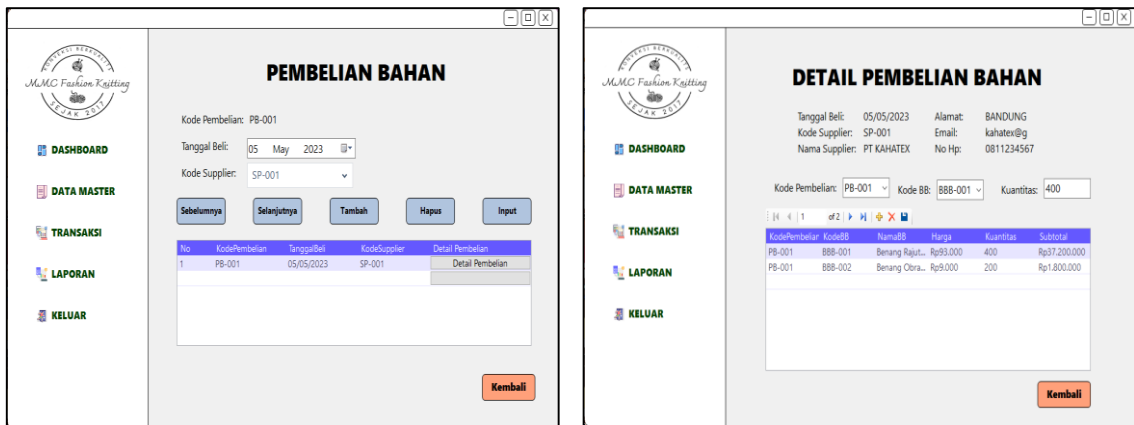
Figure 18. Material Purchase Form and Material Purchase Details

l. General Journal Form

In this journal form, journals related to cost accounting based on orders will appear. The journal will appear automatically according to the sales orders and purchase orders that are input. All transactions recorded in the journal are carried out on credit.

Figure 19. General Journal Form

m. Report Menu Form

In the report menu form there are several options for material inventory reports, COGS reports and variable costing profit and loss reports.

Figure 20. Report Menu Form

4. Report

This order-based cost AIS application produces output in the form of a report. The reports produced by this application include material inventory reports, COGS reports and variable costing profit and loss reports. The raw material inventory report display is as follows.

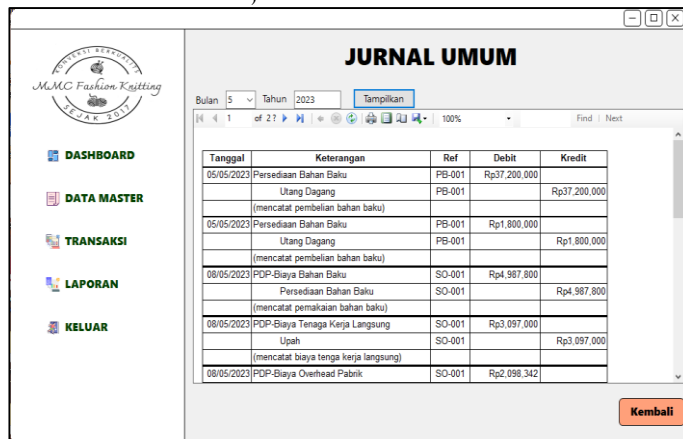**MMC FASHION KNITTING**

Kp. Bahuan RT 05/ RW 10, Jl. Andir Gg. Raflesia No.9, Bojongmalaka, Kec. Baleendah, Kab. Bandung

LAPORAN PERSEDIAAN BAHAN BAKU

Stok Tersedia

Kode BB	Nama BB	Harga	Unit Tersedia	Tersedia
BBB-001	Benang Rajut 1 Kg	Rp93,000.00	135.98	Rp12,646,140.00
BBB-002	Benang Obras 200Gram	Rp9,000.00	75.98	Rp683,775.00

Figure 21. Raw Material Inventory Report

Then the COGS report display is as follows.

MMC FASHION KNITTING

Kp. Bahuan RT 05/ RW 10, Jl. Andir Gg. Raflesia No.9, Bojongmalaka, Kec. Baleendah, Kab. Bandung

LAPORAN HARGA POKOK PRODUKSI

Biaya Bahan Baku:	
Persediaan Awal	Rp1,380,000.00
Ditambah: Pembelian Bahan Baku	Rp39,900,000.00
Bahan Tersedia	Rp41,280,000.00
Dikurangi: Persediaan Akhir	Rp13,329,450.00
Bahan Baku Terpakai	Rp27,950,550.00
Biaya Tenaga Kerja Langsung	Rp18,428,417.00
Biaya Overhead Pabrik	Rp12,485,993.00
Total Biaya Produksi	**Rp58,864,960.00**
Ditambah: Persediaan Dalam Proses Awal	Rp0.00
Dikurang: Persediaan Dalam Proses Akhir	Rp43,887,957.00
Harga Pokok Produksi	**Rp14,977,003.00**

Figure 22. COGS report

Next, the appearance of the variable costing profit and loss report is as follows.

MMC FASHION KNITTING

Kp. Bahuan RT 05/ RW 10, Jl. Andir Gg. Raflesia No.9, Bojongmalaka, Kec. Baleendah, Kab. Bandung

LAPORAN LABA RUGI VARIABEL COSTING

Penjualan	Rp73,581,199.83
Biaya Variabel:	
Biaya Bahan Baku	Rp27,950,550.00
Biaya Tenaga Kerja Langsung	Rp18,428,416.67
Biaya Overhead Pabrik Variabel	Rp1,027,208.20
Margin Kontribusi	Rp26,175,024.97
Biaya Tetap:	
Biaya Overhead Pabrik Tetap	Rp11,458,785.00
Biaya Adm & Umum Tetap	Rp4,000,000.00
Laba Bersih Sebelum Pajak	**Rp10,716,239.97**

Figure 23. Variable costing Income Statement

Conclusion

The order-based Cost Accounting Information System currently used by MMC Fashion Knitting MSMEs is not in accordance with proper cost accounting knowledge. Obstacles faced by companies in connection with the running system include not knowing the exact amount of gross profit from each order, manually calculating production costs which takes a long time, and difficulties when handling orders that require immediate handling. The form of general design and detailed design in designing the AIS application program Cost Based on Orders for MMC Fashion Knitting MSMEs consists of general design and detailed design. General design contains the general design of the application program being designed, including the design of document flow in the system and general system specifications which are documented with document flowcharts and DFDs, as well as database tables. Detailed design contains detailed design including designing the face-to-face display (user interface) which is presented on form and report objects. The main output of this application program is the order COGS card, material inventory report, COGS report and variable costing profit and loss report. It is hoped that MMC Fashion Knitting MSMEs can use this application to overcome the obstacles experienced by the company and simplify its business operations.

Acknowledgment

References

[1] B. Siregar *et al.*, *Akuntansi Biaya*, 2 ed. Jakarta Selatan: Salemba Empat, 2013.

[2] Supriyati, H. Suharman, dan T. Supriadi, "Business strategy and use of information technology toward ASEAN MSMEs performance in the post-pandemic crisis," *Journal of Eastern European and Central Asian Research (JEECAR)*, vol. 10, no. 5, hal. 886–897, Sep 2023, doi: 10.15549/jeecar.v10i5.1438.

[3] A. Radiansyah *et al.*, *Pengantar Akuntansi.* Kab. Serang Banten: PT Sada Kurnia Pustaka, 2023.

[4] S. Supriyati dan R. Bahri, "Model Perancangan Sistem Informasi Akuntansi Laporan Keuangan Pondok Pesantren Berbasis SAK ETAP," *@is The Best : Accounting Information Systems and Information Technology Business Enterprise*, vol. 4, no. 2, hal. 151–165, Feb 2020, doi: 10.34010/aisthebest.v4i02.2749.

[5] S. Supriyati, S. Mulyani, H. Suharman, dan T. Supriadi, "The Influence of Business Models, Information Technology on the Quality of Accounting Information Systems Digitizing MSMEs Post-COVID-19," *Jurnal Sistem Informasi*, vol. 18, no. 2, hal. 36–49, 2022, doi: 10.21609/jsi.v18i2.1141.

[6] Supriyati *et al.*, *Ekonomi Manajerial & Strategi Bisnis.* Kab. Serang Banten: PT Sada Kurnia Pustaka, 2023.

[7] Mulyadi, *Sistem Akuntansi.* Jakarta : Salemba Empat, 2016.

[8] TMbooks, *Sistem Informasi Akuntansi: Konsep dan Penerapan*, 1 ed. Yogyakarta: CV ANDI OFFSSET, 2015.

[9] J. A. Hall, *Accounting Information Systems*, 9 ed. Boston: Cengage Learning, 2016.

[10] G. H. Boodnar dan W. S. Hopwood, *Accounting Information Systems*, 11 ed. New Jearsey: Pearson Education Limited, 2013.

[11] D. Zak, *Programming with Microsoft Visual Basic 2017*, 8 ed. Boston: Cengage Learning, 2018.

[12] Jubilee Enterprise, *Belajar Pemrograman dengan Visual Studio*, 1 ed. Jakarta: PT Elex Media Komputindo, 2019.

[13] T. Budiarti dan B. K. Ardi, "Pengaruh Sistem Pengolahan Data Elektronik Penjualan Dan

Dukungan Teknologi Informasi Terhadap Efektifitas Pengendalian Internal Penjualan Pada PT. Intan Jaya Garmen Kab. Semarang," *STIE Dharmaputra Semarang*, vol. 1, no. 44, hal. 71–83, 2018.

[14] Weli, *Aplikasi Kasus Siklus Transaksi Bisnis*, 1 ed. Jakarta: Penerbit Universitas Katolik Indonesia Atma Jaya, 2019.

[15] M. B. Romney, P. J. Steinbart, S. L. Summers, dan D. A. Wood, *Accounting Information System*, 15 ed. London: Pearson, 2021.

[16] A. Jauhari, D. R. Anamisa, dan F. A. Mufarroha, *Analisis dan Desain Sistem Informasi*, 1 ed. Malang: Media Nusa Creative, 2022.

[17] F. Andrian dan Sudjana, "Analisis Dan Perancangan Software Aplikasi Sistem Informasi Akuntansi Harga Pokok Produksi (Studi Kasus Pada PT Cakra Analysis And Design Of Application The Cost Of Production Accounting Information System," *Indonesian Accounting Literacy Journal*, vol. 02, no. 01, hal. 132–146, 2021.

[18] S. F. Putri dan S. N. Aisah, "Perancangan Dan Implementasi Sistem Informasi Akuntansi Biaya Produksi Pesanan Menggunakan Visual Studio 2015 Dan Mysql …," *TEDC*, vol. 14, no. 3, hal. 291–304, 2020.

[19] S. Febryani dan D. W. Firdaus, "Perancangan Sistem Informasi Akuntansi Harga Pokok Produksi Pada Distro Viking Cimahi Dengan Menggunakan Software Microsoft Visual Basic 2008 Dan Database MySQL," *Accounting Information Systems and Information Technology Business Enterprise*, vol. 4, no. 1, hal. 366–380, 2019, doi: 10.34010/aisthebest.v4i1.1826.

[20] Sugiyono, *Metode Penelitian Bisnis*, 3 ed. Bandung: Penerbit Alfabeta, 2017.