

Development reference model to build management reporter using dynamics great plain aggregated

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ABSTRACT

The digital technology transformation impacts changes in business patterns that require companies to innovate to act appropriately in making strategic decisions quickly, precisely, and accurately to increase efficiency, be practical company performance, and impacts changes in business patterns that require companies to innovate to act appropriately in making strategic decisions quickly to improve the performance. An enterprise resource planning (ERP) system is one step toward achieving performance. ERP system is one step to achieving performance. ERP system is essential for companies to automate the efficiency of business processes. The decisions from management in implementing the ERP system are necessary for ERP implementation to be successful. However, in practice, companies still experience complexity. For that, it needs to be considered related a business process reference model is essential to enhance efficiency in implementing the ERP used. This research discusses the business process reference model based on the ERP dynamics great plain (GP) application aggregated using management reporter (MR) to help users better understand the practical overview. The methodology utilizes a reference model based on Microsoft Dynamics GP guidelines with a business process redesign approach. This contributes to developing business processes to help users understand using the ERP dynamics GP application.

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1. INTRODUCTION

The transformation of digitization of technology has affected significant changes to business patterns. Digital technology transformation changes business patterns for companies to make strategic decisions quickly, precisely, and accurately to increase efficiency, be practical and achieve maximum company performance. The use of information technology in companies to business processes improve is a very valuable asset [1]. This certainly requires management companies to make breakthroughs to enhance work efficiency and competitive advantage. The enterprise resource planning (ERP) system use is an essential thing that the management company must consider to achieve agility in making decisions quickly and precisely. But in fact, the companies still need to work on adjusting the ERP business processes, resulting in the investment value of procurement of an ERP system being expensive and having a high potential risk of failure [2]. Organizational support in maintaining performance and ensuring continuity ERP usage becomes very important [3]. Besides that, needed to evaluate of user experience of the ERP system to determine user

impressions the performance for business needs [4]. ERP systems can give contribute to making decision and determine the strategy business and organization performance [5]. In actually, most companies still maintain the old way of working before using the ERP system, thus demanding that the ERP system follow the old way of working. Besides that, it is difficult for users to follow the business processes of a standardized ERP system. The organizational dimensions can develop a business strategy based on empirical evidence to address ERP implementation problems [6]. The structured analysis and design is one approach to solving business activity problems in ERP system implementation [7]. This needs to be provided so that there is no need to make adjustments to modify business processes from the ERP system. It should be noted that adjusting the business processes of the ERP system will result in the way the ERP system works becoming unstable and having a high risk of failure in implementing the ERP system. Top management's decision to select the ERP system used must consider the synchronization and alignment of the company's strategy that focuses on business needs and the capabilities of the ERP system. Technical understanding related to the ERP business processes it will be easier to make adjustments to current business processes. If the current business process matches the standard ERP business processes, the company's project management must adapt to the ERP business processes.

The reference business process model shows that the comparing and finding differences in decision of management based on business requirements and ERP system capacity. This becomes the basis for deciding on the selection of alternatives for adapting of an ERP system, adapting of business processes, and combining ERP with other solutions [8]. The reference business process model can be seen in Figure 1.

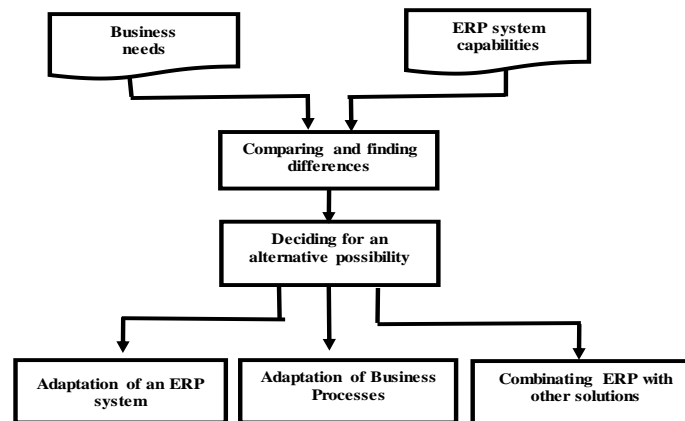


Figure 1. Reference business process model

Customize current business processes by following the ERP business processes. This requires a reference model for mapping current business processes to adopt the ERP business processes [9]. The ERP business process adapts to the current business process. If the current business process has a different ERP system business processes used, then this requires significant to customize the ERP business process. This can cause the ERP system to become unstable and have a potential risk of failure in implementing ERP. Combine the ERP system business processes used and carry out business process engineering to adapt to the business processes of the ERP system as a business process reference model according to the needs of company management. An effective business strategy to determine the company's whereabouts is to integrate the company's internal analysis to identify the company's strengths and weaknesses [10]. Business process reengineering is one of the critical factors for ERP implementation success according to the needs of top management to enhance work effectively and efficiently [11]. The business processes change that affect ERP implementation, so it is necessary to provide the ability to adapt and agility to support the evolution of the organizational environment [12]. For this reason, it is necessary to standardize ERP business processes, provide guides for users in carrying out the ERP business processes, and provide training materials for users, which can also be coordinated by an ERP consultant to assist users in running the ERP system used. Based on these choices becomes the basis for consideration for company management in selecting an ERP system, namely mapping according to the characteristics of the company's current business processes by designing an existing business process reference model. Most of the ERP implementation results in companies have yet to significantly affect the running process. The use of an ERP system will impact business process changes, such as reducing waiting time in completing work, helping managerial levels share information for strategic

decision-making, and creating an agile work environment with fast response [13]. For this reason, it needs to consider the challenges in implementing ERP and ensure the results of ERP implementation can be successful. The challenges in implementing ERP systems are how to get the various benefits of using an ERP system realistically, considering the following factors [14]. Technology selection is an essential consideration of enterprise management decisions to invest in project management such as ERP. In addition, the company's management support affects the performance of the ERP system by making changes to running business processes to follow the business processes of the ERP system used. Change management is changing business processes, people, and technology and is fundamental to management decisions to carry out change management processes to achieve success in implementing ERP. The management of knowledge management evidences knowledge management improved company performance. Managing knowledge as a means of sharing ability can increase flexibility and innovation in ERP use. Emerging technology is used to enhance processes, legitimize, and accelerate the speed of the process in making decisions that are precise, accurate, and up to date with the availability of information needed by managerial levels in decision-making strategies.

The use ERP application of the dynamics great plain (GP) is one of the ERP applications that can be made easy with a user guide so that it helps users understand business processes more efficiently. In the ERP application of the dynamics GP there is a facility for developing reports known as the management reporter (MR). MR is an analytical tool that corporate users can use to find various information related to business performance in several areas of business units and companies for strategic decision-making, monitoring business growth based on real-time indicators, and as business automation software [15]. This MR can produce various dynamic financial information and has a professional format. MR can make flexible arrangements to design financial information in report layout settings, columns, and rows. MR can present drafts of various financial information that can group and/or consolidate several accounts in financial statements by reducing financial information from several business units and companies. MR can also take one format and create separate financial information for each division, department, or profit center. Besides that, MR can generate real-time reports based on transactions that have been input into the Microsoft Dynamics GP application, which is an advantage of using MR for users. MR can perform the function of arithmetic formulas in presenting various advanced reports to help strategic decision-making. MR has an attractive appearance with logos and subtitles of different designs. MR can collaborate with colleagues, auditors, and other parties to create, distribute, and present various financial information. MR can produce interactive reports to assist decision-making from real-time financial information. MR can integrate interoperability and track data with the Microsoft Dynamics ERP application. MR can present various reports relatively quickly and the layout of reports can be converted into external files as support in Microsoft Office spreadsheet formats excel or pdf. MR can help make decisions rapidly and accurately for company management in determining the company's strategic business direction in the future, with the following points: MR can group information into groups to automate and combine reports from several business units of the company. MR can group reports into groups to automate and consolidate reports from several company business units. MR can schedule the presentation information on a daily, weekly, or monthly basis automatically and flexibly. MR can produce various reports based on the order of the withdrawal process in presenting financial information so that MR can assist users in conducting strategic analysis and decision-making.

2. METHOD

This research uses a descriptive qualitative approach and the method of developing the system development life circle with a workflow model. Descriptive in question is a problem-solving procedure that is investigated by describing the state of the research object based on reality to accurately produce a systematic description of the object of research [16], [17]. In addition, this research adopts the systematic literature review prisma to survey previous literature as a theoretical basis [18], [19]. The workflow model is based on guidelines from the sales reference business process model from the dynamics great plain (GP) application [20]–[22]. One of the important factors in a company that will implement an ERP system is assessing the ERP vendor by considering budget, time, and resources. Microsoft Dynamics is an ERP vendor that needs to be considered in implementing an ERP system using the right methodology according to the company's business characteristics. Choosing an ERP methodology is important to determine successful ERP system implementation [23]–[25]. Based on the figure workflow of sales reference business process shows that business processes are more effective and paperless and reduce the repetition of business processes between departments. Even business process collaboration occurs so managerial levels can monitor order status and outstanding accounts receivable (AR) in real-time. The workflow of the sales reference business process started after admin sales created sales order (SO), so the production department prepared production

planning and checked the material available. If material is available, so the production planning makes a work order. After the production department creates goods issues and the warehouse makes delivery order (DO) to send to the customer. After the customer receipt goods, so admin warehouse posts DO, and admin finance creates an invoice for account receivable collection from the customer. Based on the sales setup reference business process model of Microsoft Dynamics GP, it shows that the activity in general setup makes a customer master and complete all customer information needs. The action in customer management is managing customers with the payment feature and credit limits. The activity in posting setup is setting up ledger accounts that will be formed automatically in every transaction using the customer. This description can be explained in the hierarchical workflow of the sales reference business process can be seen in Figure 2.

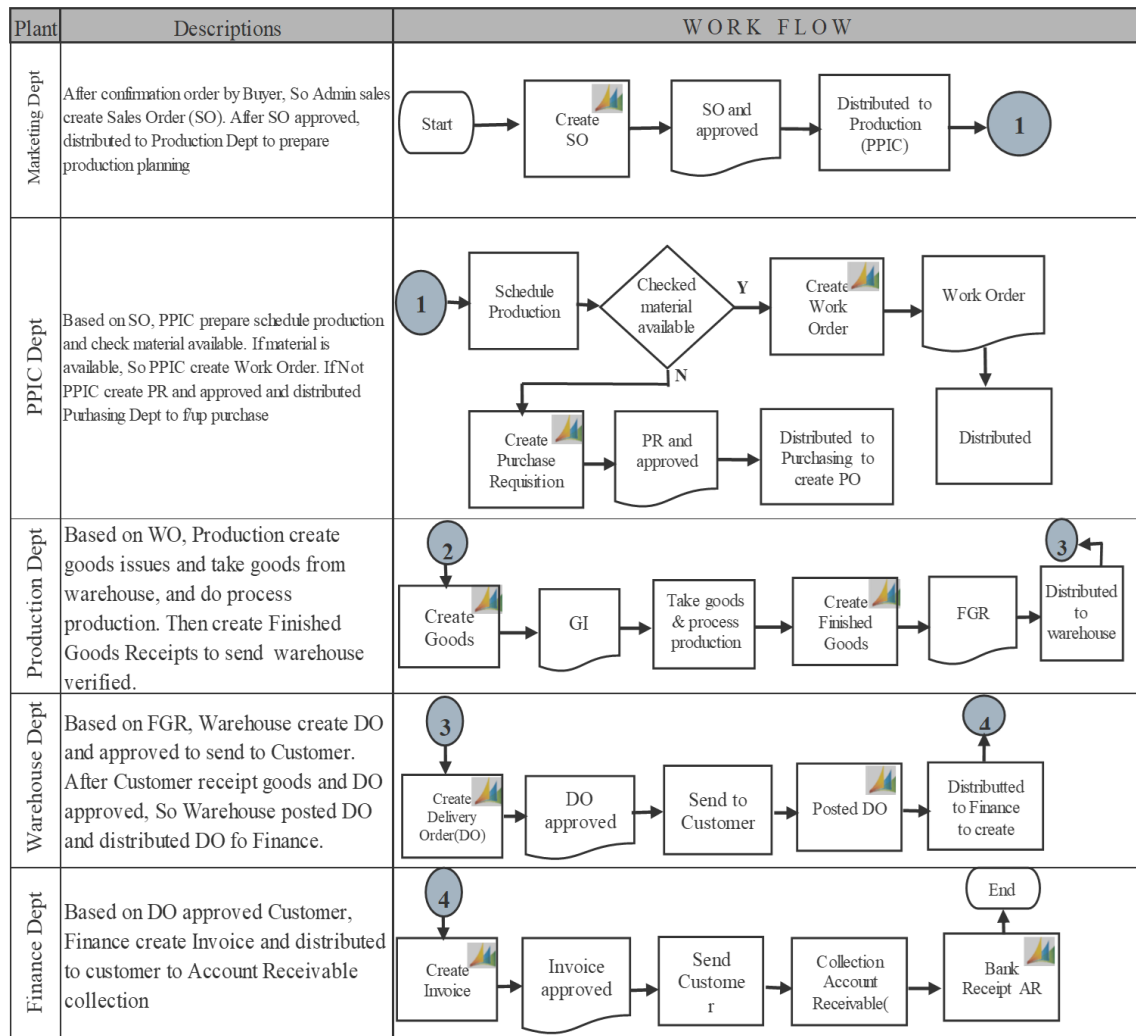


Figure 2. Workflow of sales reference business process

Based on figure of sales references business process model of Microsoft Dynamics GP which shows that the action in blanket order is a feature in making bookings done by marketing in projecting sales based on booking orders. The activity in sales quote is an offer made by marketing to customers in carrying out the product sales process. The activity in SO is creating a SO based on the final sales quote that has been agreed upon by the customer. The activity in the DO is to schedule the delivery of goods and delivery of goods based on SOs. The activity in an invoice posting is to create sales transactions for goods sent to customers. The activity in AR aging is an activity to monitor customer bills. The activity of the sales reference business process model of Microsoft Dynamics GP is described in Figure 3.

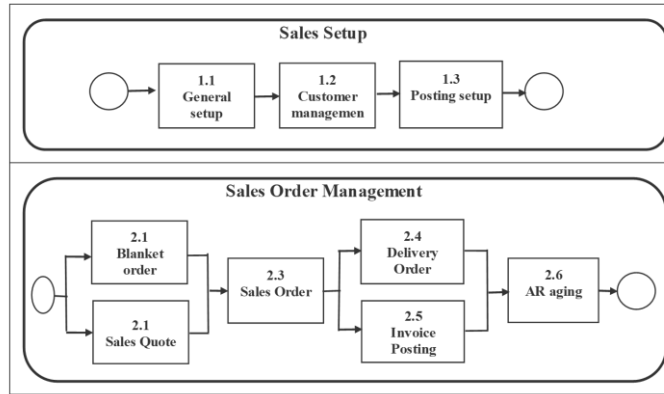


Figure 3. Sales reference business process model

3. RESULTS AND DISCUSSION

In this section, this part of the research explains the results of input transactions from the Microsoft Dynamics GP application. The Microsoft Dynamics GP application can crosscheck all transactions that have been input through the smart-list facility. This research will explain one of the essential reports that every company needs, the cash flow report. Based on this cash flow report, the company's management can make strategic decisions related to the company's financial policy, and also from this cash flow report, can find out the company's financial health, which can be known in real-time, up-to-date, and informative related to the sales business process on the cash flow report is the receipt from the customer. Based on the Microsoft Dynamics GP application, you can trace transactions that have been inputted into the GP application, so you can check transaction journals in an up-to-date and real-time manner. Based on the journal inquiry report from the Microsoft Dynamic GP application, which will become a data source to create the financial information using MR. The smart-list data is operational transaction data consisting of accounts needed by MRs. Withdrawals, the smart list allows users to browse journals on accounts, making it easier to make corrections if errors occur before carrying out the reporting process to MR. The smart-list Microsoft dynamic GP application that described in Figure 4.

In Figure 5, it is a display of the MR, it can be said that the show is user-friendly and makes it easy for the users to design various reports, including financial information that can assist management levels in making strategic decisions that are useful for increasing competitive advantage for the company. Besides that, reports generated from the MR can be in digital form, which can be presented in the form of a screen on the computer screen, so that it is paperless, and this will increase the effective and efficient way of working for users who use the MR. The MR provides a standard layout of financial reports that are used. MR creates custom reporting layouts by creating custom rows and columns. The MR described in Figure 5.

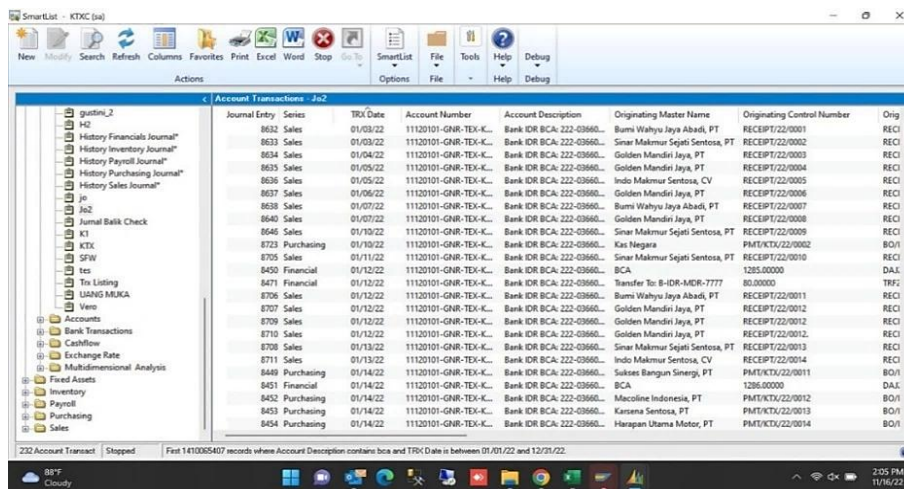


Figure 4. Smart list from dynamic GP application

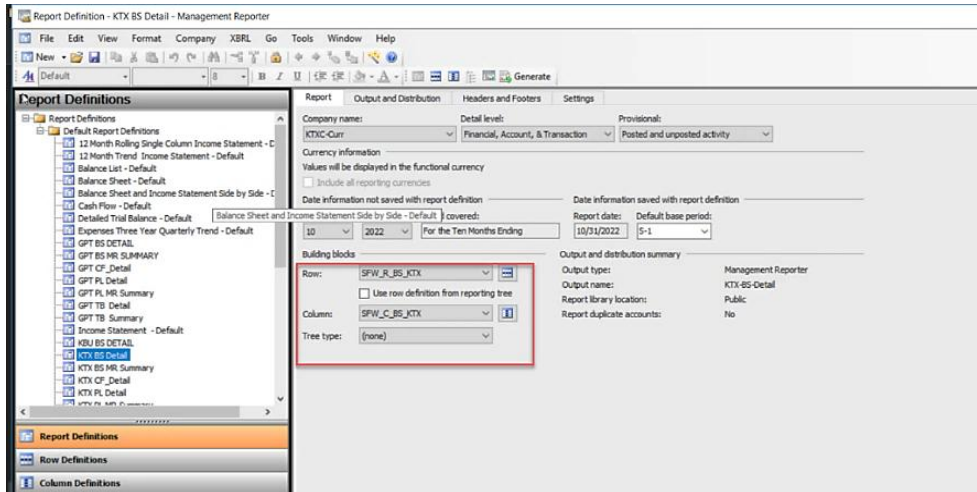


Figure 5. MR GP application

This is a sampling for withdrawing data based on bank transactions. When creating a row modifier, selecting an attribute distribution reference as a filter for data to be retrieved from the Microsoft Dynamics GP application is necessary. This proves the data integration from the Microsoft Dynamics GP application with the MR. MR row definition is described in Figure 6.

Based on the previous explanation, continuing to prove the integration of data from the Microsoft Dynamics GP application with the MR, the formula for getting the beginning balance from the general ledger is done in a way lookup row modifier account modifier: /BB begbal (beginning balance). The procedure of the beginning balance is described in Figure 7. After doing the row definition, it is necessary to determine the column definition so that it can present the financial report as needed. The column definition can specify the required report period, for example, periodic reports on a weekly, monthly, quarter, semester, and annual basis. After defining the rows and defining the columns in the Microsoft Dynamic GP application, it is necessary to make choices about the report to be presented such as displaying negative numbers, displaying digit separators, displaying currency symbols on the first line, displaying blanks for zero amounts, displaying rows without amounts, displaying report without an active row, show report ingrid view.

The users can tick each option to present information as needed. Based on the previous explanation, the user can then click the notification button to present information as needed. Based on this information, management can make further decisions. The management acquisition report is described in Table 1.

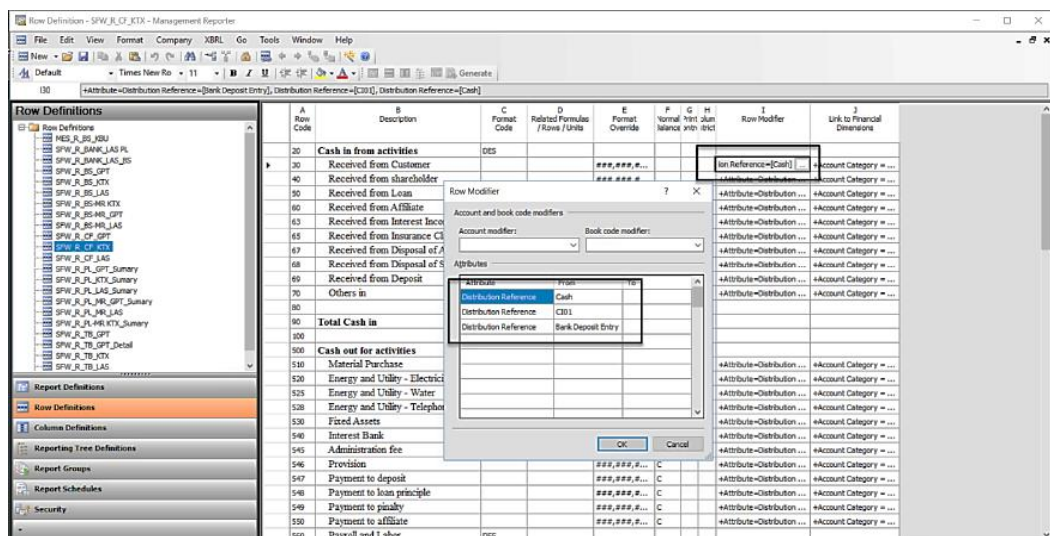


Figure 6. MR row definition

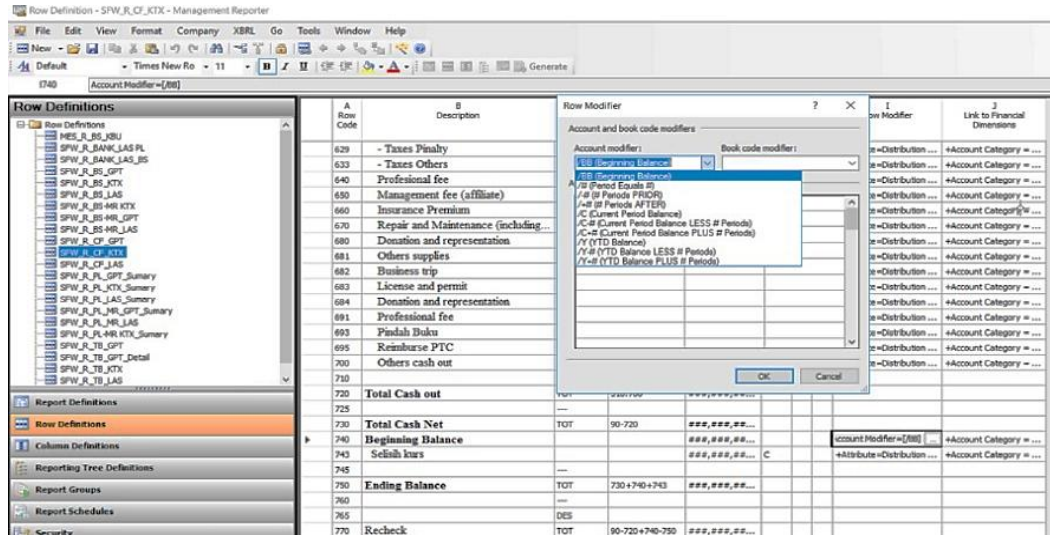


Figure 7. The procedure of the beginning balance

Table 1. MR acquisition report 2

Description	Total	Period 1	Period 2	Period 3
Cash in from activities				
Received from customer	30,109,005	10,768,200	1,107,045	8,270,350
Received from loan	30,000,000	30,000,000	-	-
Received from interest income	15,110	530	14,535	45
Others in	1,484,756	13,021	1,471,765	-
Total cash in	61,608,900	40,781,751	12,556,754	8,270,395
Cash out for activities				
Material purchase	755,617	57,750	226,909	470,958
Energy and utility	8,254,956	2,688,957	2,785,768	2,780,231
Interest, admin bank	1,767,134	1,034,450	447,873	284,811
Payment to loan principle	32,965,391	31,261,191	1,704,200	-
Payroll and labor	3,070,475	1,413,847	317,848	1,338,780
Tax	3,356,063	1,038,240	1,386,161	931,662
Management fee (affiliate)	108,891	36,297	36,297	36,297
Insurance premium	198,844	198,844	-	-
Repair and maintenance	1,957,511	209,538	1,478,214	269,759
Others supplies	12,972	2,306	1,500	9,166
Others cash out	1,782,144	612,984	796,667	372,493
Total cash out	54,229,998	38,554,404	9,181,437	6,494,157
Total cash net	7,378,902	2,227,347	3,375,317	1,776,238
Beginning balance	10,361,785	10,361,785	12,589,132	15,964,449
Ending balance	17,740,687	12,589,132	15,964,449	17,740,687

4. CONCLUSION

Based on the result and discussion of this research, this research shows that the business process reference model is one of the critical factors for business process engineering to adopt the ERP business processes. Understanding the business process reference model comprehensively can help users adjust the current business process model so that the ERP use becomes more effective and reduces the failure rate in implementing the ERP system. Besides that, it is necessary to pay attention to the managerial level of readiness of the company in making changes to the way it works by following the workings of the selected ERP system. Management support for change management is urgently needed. This matter considers the company's readiness level to make change management, so the company should follow the business processes of the selected ERP. This will reduce the failure rate in implementing ERP. Based on the dynamics GP sales business process reference model, the users can adjust their current business processes by adopting the business process model from the dynamics GP ERP application. Using MRs to present various information can increase effectiveness and assist users in producing multiple reports needed for strategic decision-making in a fast, precise, and informative manner. In addition, reporter management can be flexible in changing the layout of information required by company management, which can ultimately help company management make decisions to improve company performance further. Due to the limitations in this

research, these researchers can continue this research by developing business process reference models in other modules to assist users in finding the overall business process reference model for all modules of the ERP system. Besides that, this research can be continued by developing an online platform application of the ERP business process reference that users can use to assess the company's readiness to adopt business processes from the ERP system used. From a computer science perspective, this research can be continued by developing an integration of business process reference models from ERP systems with comparisons of ERP applications which are the object of further research.

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REFERENCES

- [1] A. P. Agustian and M. I. Fianty, "The governance measurement of information system using framework COBIT 5 in state-owned enterprises insurance company," *International Journal of Science, Technology and Management*, vol. 4, no. 4, pp. 724-730, Jul. 2023, doi: 10.46729/ijstm.v4i4.859.
- [2] M. Kirmizi and B. Kocaoglu, "The key for success in enterprise information systems projects: development of a novel ERP readiness assessment method and a case study," *Enterprise Information Systems*, vol. 14, no. 1, pp. 1-37, Jan. 2020, doi: 10.1080/17517575.2019.1686656.
- [3] A. Lutfi *et al.*, "Antecedents and impacts of enterprise resource planning system adoption among Jordanian SMEs," *Sustainability*, vol. 14, no. 6, Mar. 2022, doi: 10.3390/su14063508.
- [4] Ananda and J. Wiratama, "Evaluation of enterprise resource planning (ERP) and Open-source ERP modification for performance improvement," in *2022 Seventh International Conference on Informatics and Computing (ICIC)*, Dec. 2022, pp. 1-9, doi: 10.1109/ICIC56845.2022.10006926.
- [5] S. F. Wijaya, H. Prabowo, R. R. Kosala, and M. Sicad, "Development of an Agile ERP framework for implementation: a systematic literature review," *International Journal of Control and Automation*, vol. 12, no. 5, pp. 1-12, May 2019, doi: 10.33832/ijca.2019.12.5.01.
- [6] M. O. Malik and N. Khan, "Analysis of ERP implementation to develop a strategy for its success in developing countries," *Production Planning and Control*, vol. 32, no. 12, pp. 1020-1035, Sep. 2021, doi: 10.1080/09537287.2020.1784481.
- [7] J. Wiratama and R. I. Desanti, "Analysis and design of web-based information system for church congregations case study: church BNKP Pewarta," *Ultima InfoSys: Jurnal Ilmu Sistem Informasi*, vol. 12, no. 2, pp. 115-120, Apr. 2022, doi: 10.31937/si.v12i2.2403.
- [8] M. I. Štemberger and A. Kovacic, "The role of business process modelling in ERP implementation projects," in *Tenth International Conference on Computer Modeling and Simulation (uksim 2008)*, 2008, pp. 260-265, doi: 10.1109/UKSIM.2008.25.
- [9] S. Bagheri, R. J. Kusters, J. J. M. Trienekens, and P. W. P. J. Grefen, "A reference model-based user requirements elicitation process: toward operational business-IT alignment in a co-creation value network," *Information and Software Technology*, vol. 111, pp. 72-85, Jul. 2019, doi: 10.1016/j.infsof.2019.03.012.
- [10] D. Kusbandono, "Swot analysis as an effort to develop and strengthen business strategies (case study at UD. Gudang Budi, Kec. Lamongan) (in Indonesian)," *Jurnal Manajemen*, vol. 4, no. 2, pp. 921-932, Jun. 2019, doi: 10.30736/jpim.v4i2.250.
- [11] F. Sanchez-Puchol, J. A. Pastor-Collado, and B. Borrell, "Towards a unified information systems reference model for higher education institutions," *Procedia Computer Science*, vol. 121, pp. 542-553, 2017, doi: 10.1016/j.procs.2017.11.072.
- [12] F. Bento and C. J. Costa, "ERP measure success model; a new perspective," in *Proceedings of the 2013 International Conference on Information Systems and Design of Communication*, Jul. 2013, pp. 16-26, doi: 10.1145/2503859.2503863.
- [13] H. L. Carvalho and F. M. Guerrini, "Reference model for implementing ERP systems: an analytical innovation networks perspective," *Production Planning and Control*, vol. 28, no. 4, pp. 281-294, Mar. 2017, doi: 10.1080/09537287.2016.1273409.
- [14] S. Bobek, S. Rohadia, and S. Sternad, "ERP solutions acceptance in different business environments," *International Journal of Innovative Research and Development*, vol. 5, no. 2, pp. 103-108, 2016.
- [15] N. M. Alsharari, M. Al-Shboul, and S. Alteneiji, "Implementation of cloud ERP in the SME: evidence from UAE," *Journal of Small Business and Enterprise Development*, vol. 27, no. 2, pp. 299-327, 2020, doi: 10.1108/JSBED-01-2019-0007.
- [16] R. Valverde and M. R. Talla, *Information systems reengineering for modern business systems*. IGI Global, 2012.
- [17] V. Renjith, R. Yesodharan, J. A. Noronha, E. Ladd, and A. George, "Qualitative methods in health care research," *International journal of preventive medicine*, vol. 12, pp. 1-7, 2021, doi: 10.4103/ijpvm.IJPVM_321_19.
- [18] O. Zawacki-Richter, M. Kerres, S. Bedenlier, M. Bond, and K. Buntins, *Systematic reviews in educational research*. Wiesbaden: Springer Fachmedien Wiesbaden, 2020.
- [19] M. Patel and N. Patel, "Exploring research methodology: review article," *International Journal of Research and Review Keywords: Research, Methodology, Research Methodology*, vol. 6, no. 3, pp. 48-55, 2019.
- [20] M. L. Rethlefsen *et al.*, "PRISMA-S: an extension to the PRISMA statement for reporting literature searches in systematic reviews," *Systematic Reviews*, vol. 10, no. 1, pp. 1-19, Jan. 2021, doi: 10.1186/s13643-020-01542-z.
- [21] D. Pajk, "Microsoft Dynamics NAV reference model," *The Proceedings of Worldwide Microsoft Dynamics Academic Preconference*, vol. 3, no. 1, pp. 13-21, 2012.
- [22] A. H. Zadeh, H. M. Zolbanin, A. Sengupta, and T. Schultz, "Enhancing ERP learning outcomes through Microsoft Dynamics," *Journal of Information Systems Education*, vol. 31, no. 2, pp. 83-95, 2020.
- [23] A. A. Rizqy, W. Puspitasari, and M. Saputra, "An empirical evaluation of IT adoption for Microsoft Dynamics 365: a case study manufacture industry," in *2022 International Conference Advancement in Data Science, E-learning and Information Systems (ICADEIS)*, Nov. 2022, pp. 1-4, doi: 10.1109/ICADEIS56544.2022.10037501.





- [24] M. Archana, D. V. Varadarajan, and S. S. Medicherla, "Study on the ERP implementation methodologies on SAP, Oracle NetSuite, and Microsoft Dynamics 365: a review," arXiv:2205.02584, May 2022.
- [25] F. M. Elbahri, O. I. Al-Sanjary, M. A. M. Ali, Z. A. Naif, O. A. Ibrahim, and M. N. Mohammed, "Difference comparison of SAP, Oracle, and Microsoft solutions based on cloud ERP systems: a review," in *2019 IEEE 15th International Colloquium on Signal Processing and Its Applications (CSPA)*, Mar. 2019, pp. 65–70, doi: 10.1109/CSPA.2019.8695976.

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