ENHANCING INNOVATIONS IN e-LEARNING FOR FUTURE PREPARATION

Volume 5, 2023
e-ISBN : 978-967-25608-8-3

SIG CS@e-Learning
Unit Penerbitan
Kolej Pengajian Pengkomputeran, Informatik & Media
Universiti Teknologi MARA Cawangan Pulau Pinang

e-ISBN: 978-967-25608-8-3
SIG: e-Learning@CS
https://appspenang.uitm.edu.my/sigcs/
Publication Date: 04-Apr-2023

DESIGN FOR BUSINESS ANALYSIS OF PRODUCT SALES DATA

Muhamad Sayfiq Bin Mohamad Suzuki[1], *Azlina Binti Mohd Mydin[2], Syarifah Adilah Binti Mohamed Yusoff[3], Wan Anisha Binti Wan Mohammad[4], Elly Johana Binti Johan[5]
*2020821934@student.uitm.edu.my, *azlin143@uitm.edu.my[2], syarifah.adilah@uitm.edu.my[3], wannan122@uitm.edu.my[4], ellyjohana@uitm.edu.my[5]*

[1]Kolej Pengajian Pengkomputeran, Informatik dan Media,
UiTM Kampus Kuala Terengganu, Chedering,21080 Kuala Terengganu, Malaysia

[2,3,4,5]Jabatan Sains Komputer & Matematik (JSKM),
Kolej Pengajian Pengkomputeran, Informatik dan Media,
Universiti Teknologi MARA Cawangan Pulau Pinang, Malaysia

**Corresponding Author*

ABSTRACT

Design for Business Analysis of Product Sales Data is a combination of theory and real-world experience to educate on how to choose a dynamic mix of procedures and techniques to do business successfully and efficiently. This study focuses on local retail company named Syarikat Daya Maju Bintang (DMB). The main issue that this retailer face is that some items are not sold out. In other words, some products are purchased less frequently by customers. So overcome these issues, business analysis approach is suggested. The main aim of this analysis is to identify the categories of products and sales for DMB. Besides that, a prediction model using product sales data technique and to visualize the result based on the proposed model. Cross Industry Standard Process for Data Mining, or CRISP-DM, is an industry-recognized method of directing data mining activities. These CRISP-DM include modeling, evaluation, and deployment as well as business understanding, data preparation, and data understanding in solving those issues. As a result, with is design business analysis, DMB may can improve its company performance and compete with other retail stores.

Keywords: business analysis, business intelligence, AI, dashboards, data mining

Introductions

Faisal Mohamed Sahid runs Syarikat Daya Maju Bintang (DMB), a retail company that sells a variety of everyday necessities. It was established in the Bukit Minyak SME industry in Bukit Mertajam, Penang, in 2019. Encik Faizal starts with a '*belacan'* factory before expanding into a retail business due to his high profits. Because of its success in selling *'belacan,'* DMB made a large profit. As a result, Mr. Faizal wishes to expand his business by opening a retail store. Mr. Faizal completely relied on his wife, Puan Rahayu Azura Binti Ibrahim, to run the form shop and retail business. As a result, the retail shop has been open for more than three years and is still growing and flourishing. DMB has spent money on a POS system to record sales results and provide sales receipts to customers in order to manage sales. DMB can only afford to purchase a POS system with limited use due to its limited capital. This POS system aids Puan Rahayu in analyzing the sales results of goods in her shop. Every item sold in the shop

on a daily basis is recorded in the POS system, but the data cannot be stored in other apps, such as Microsoft Excel, as in other businesses.

DMB continues to grow its business, but there are still problems it faces. The owner of a grocery store found that when it came time to stock items every month, there were items that met the sales target and items that did not reach the sales target. To provide a clearer picture, the store's wares are separated into two classes: dry products and wet items. Dry goods, such as canned food, mineral water, rice, sugar, salt, soy sauce, toothpaste, face wash, oyster sauce, cookies, and countless other items, are durable supplies. Wet commodities, such as seafood, poultry, red meat, seafood, vegetables, eggs, and seafood, are non-durable materials. The shop owner is concerned that he may have to discard unsold perishable items due to spoilage and the inability to sell any unsold wet items. This is how the shop loses money if its stock of perishable items doesn't move quickly enough.

To help the DMB shop owner, a business intelligent approach will be approached to identify product categories and sales for DMB using sales data analysis techniques. These research objectives have been established as to identify DMB's current problem and product sales demand besides to develop a predictive model using a predictive technique and finally to visualize the outcome based on the DMB prediction model. The expected outcome of this research is to build a dashboard that will show which product categories do well in DMB. The findings of this study have the potential to guide and implement changes that will increase sales and marketing at DMB

The Wikipedia describe the term "business intelligence" which also known as BI, refers to the collection of data, computation, and analytical functions used within the context of business operations. It is a broad term that refers to the procedures and techniques for gathering, storing, and analyzing data obtained from operations or business activities to improve performance. BI was introduced by Howard Dresner (later a Gartner analyst) in the mid-1990s. Business intelligence helps companies plan for a brighter future. Organizations can improve their ability to predict market trends and customer purchasing habits by investing in superior business intelligence software and equally trained employees to manage these technologies. It is an all-encompassing phrase that refers to the procedures and techniques for gathering, storing, and evaluating data acquired from operations or business activities to enhance performance (Pratt, 2019).Following in the footsteps of practitioners, research into the adoption, utilization, and success of BI systems has expanded significantly over the last two decades (NoorUl Ain, October 2019,).

Contextual information BI can be evaluated to obtain real data that can help organizations and product owners make decisions. A collection of facts and statistics used for analysis or research is referred to as data. They can be stored and transmitted as electrical signals after being recorded on magnetic, optical, or mechanical storage media. Data mining (DM) is a method for analyzing and discovering meaningful information about various features of various components. DM is the process

of deriving actionable intelligence from vast stores of previously collected data (Fayyad, 1996). Data mining is a powerful technique for extracting meaningful information from massive data sets, but it must be used responsibly.

There is few similar existing research that been referred as guidance while developing this approach for DMB shop. Oryza Wises and friend in their papers titled Prediction Analysis Sales for Corporate Services Telecommunications Company using Gradient Boost Algorithm had discussed about Sales Predictive Analysis that helps to achieve the results of this analysis are expected to generate reliable, accurate and effective forecasting data, a valuable resource for sales predictions.

Predictive Analysis for Big Mart Sales Using Machine Learning Algorithms is a paper written by Ranjitha and Spandana that explain about how to do predicting sales and creating a sales strategy may assist in preventing unexpected cash flow and managing production, staffing, and finance requirements more efficiently. Meanwhile, Raden and Andry teach how to identify the patterns of the market and predict the potential of the region in the national market commodities. in their paper Sales Prediction Model Using Classification Decision Tree Approach for Small Medium Enterprise Based on Indonesian E –Commerce Data. Based on those papers dan other further studies, dashboard for DMB has been approached.

Methodology

A Gantt chart is useful for project planning and scheduling because it allows to track how long the project will take, determine the resources needed, and plan the order in which tasks will be completed. To complete the project, six phases must be highlighted and followed as a guideline. Preliminary research, data collection, data pre-processing, analysis, dashboard design, and documentation are the stages. Each phase of the activity must be completed in order to monitor the project's progress and set priorities.

The CRISP-DM methodology will be applied for this project. The phases consist of business understanding, data understanding, data preparation, modelling, evaluation, and deployment. Data mining initiatives may be carried out according to a disciplined and well-defined approach thanks to the widely utilized technique known as Crisp DM. As for now, this study is still in a level of phase two which is data collections. Figure 1 below show the activities in CRISP-DM meanwhile in table 1shows the detail description about the activities is being discuss.

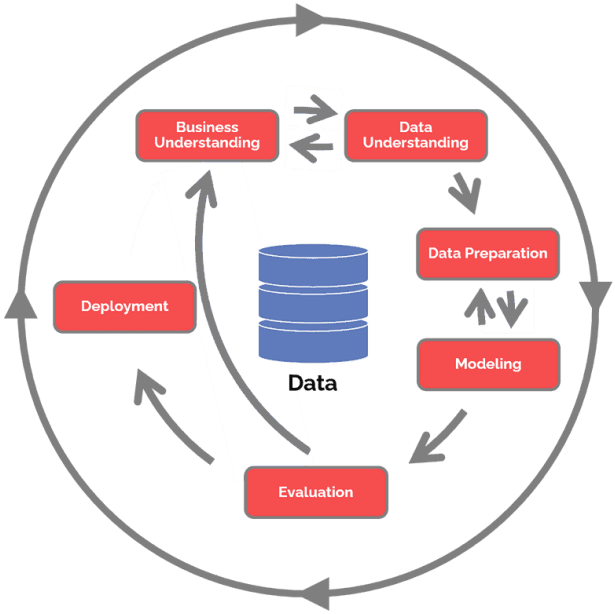

Figure 1: Phases of CRISP-DM

Table 1: Description for activities in CRISP-DM

Phase	**Activity**
Business Understanding	i. Identify processes and goals. ii. Assess situation. iii. Identify problem. iv. Define data mining goals.
Data understanding	i. Data collection. ii. Data exploration. iii. Data description.
Data Preparation	i. Select data. ii. Clean data. iii. Construct data. iv. Integrate data. v. Format data.

Modeling	i. Select modeling techniques. ii. Predicting. iii. Build model. iv. Assess model.
Evaluation	i. Evaluate result. ii. Review process. iii. Determine the next step.
Deployment	i. Method deployment. ii. Develop dashboard. iii. Expert evaluation iv. Produce a final report. v. Review project

Conclusion

As a conclusion the small business has benefited from the research by analysing product sales data in its day-to-day operations. As a result, DMB may improve its company performance and compete with other retail stores on occasion. The CRISP-DM strategy is critical for precisely identifying the study's objective as well as fully presenting the project. It is a method of approaching a research problem methodically in order to generate a research work plan as a result. Instruction is given on how to select the processes, resources, scientific instruments, and methodologies that will produce the desired results while adhering to the framework. The dashboard will be created based on the analysing that will be done soon. As in a hole with is design business analysis, DMB may can improve its company performance and compete with other retail stores.

References:

Fayyad, U. P.-S. (1996). From data mining to knowledge discovery in databases. *AI magazine*, 37-54.

Pratt, J. F. (16 October, 2019). *What is business intelligence? Transforming data into business insights*. Retrieved from https://www.cio.com/article/272364/business-intelligence-definition-and-solutions.html

NoorUl Ain, G. V. (October 2019,). Two decades of research on business intelligence system adoption, utilization and success – A systematic literature review. *Decision Support Systems*.

O. Wisesa, A. Adriansyah and O. I. Khalaf, "Prediction Analysis Sales for Corporate Services Telecommunications Company using Gradient Boost Algorithm," 2020 2nd International Conference on Broadband Communications, Wireless Sensors and Powering (BCWSP), Yogyakarta, Indonesia, 2020, pp. 101-106, doi: 10.1109/BCWSP50066.2020.9249397.

P, Ranjitha & M, Spandana. (2021). Predictive Analysis for Big Mart Sales Using Machine Learning Algorithms. 1416-1421. 10.1109/ICICCS51141.2021.9432109.

Johannes, Raden & Alamsyah, Andry. (2021). Sales Prediction Model Using Classification Decision Tree Approach For Small Medium Enterprise Based on Indonesian E-Commerce Data.
Wikipedia. https://en.wikipedia.org/wiki/Business_intelligence