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THE USAGE OF DATA ANALYTICS FOR IMPROVING OPEN –TO – BUY DECISION IN RETAIL

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ABSTRACT

Retail is part of a supply chain that is responsible for delivering goods from manufacturing to end consumers. In carrying out its role as a retailer, retailers carry out several activities including conducting merchandise planning and budgeting. In this activity, a retail performs an activity that is called as Open - to - Buy decision. This decision is related to determine how much, what, and when a product must be available. In the era of advanced development of information technology, it is easier for a retail especially modern retail to record its transaction data. Therefore, there is a need for the retail to perform data analytics in order to explore its transaction data to be used for supporting Open-to-Buy decision. This paper proposes the approach for data analytics in retail to explore how transaction data in retail can be used to improve the Open-to- Buy Decision.

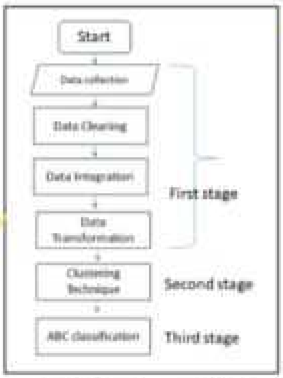
Keywords— *retail, data analytics, transaction data, Open-toBuy decision*

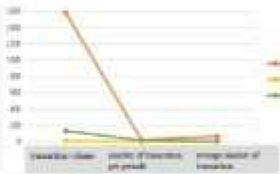
PURPOSE

The research presented in this paper tries to focus on providing an approach for analyzing the demand data from the transaction data. The approach is purposed to explore the characteristics of demand data by using clustering technique. As the problem related to assortment planning is about deciding what item and the quantity of item to be purchased, therefore, the approach will give an information about characteristics of item sold by retailer according to its contribution to sales value of the retailer.

PROPOSED METHODOLOGY

Proposed methodology for data analytics for improving open-to-buy in retail is divided into three stages as it is shown in Fig. 1. The first step is data preparation. The second step is clustering technique to group the product in to three categories. The third step is ABC classification based on the result from the second stage. Data preparations used in this research is following Knowledge Data Discovery (KDD) according to [1] which are data cleaning, data integration, data selection and data transformation.





CASE STUDY TO ILLUSTRATE THE APPLICABILITY OF THE PROPOSED METHOD

To illustrate the applicability of the proposed method, a transaction data from a grocery store from January 2017 to December 2018 were taken

RAW DATA

01/08/2017 – 31/08/2017

Item code	Item Name	Price	Quantity	Total
[illegible]	[illegible]	4.500,00	3,00	13.500,00
3805	[illegible]	1.000,00	1,00	1.000,00
3813	[illegible]	3.000,00	1,00	3.000,00
3813	Nachi Tape 1/2x25	1.500,00	3,00	4.500,00
3814	Nachi Tape 1/2x50	1.000,00	1,00	1.000,00
3817	[illegible]	3.500,00	3,00	10.500,00
3818	[illegible]	10.000,00	1,00	10.000,00
3820	[illegible]	2.000,00	1,00	2.000,00
3825	[illegible]	2.500,00	4,00	10.000,00
3826	[illegible]	22.500,00	1,00	22.500,00

DATA INTEGRATION

ItemCode	Item Name	transaction volume	the number of period transaction	average number of transaction
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The analysis of cluster k-means in this study was run using SPSS software with inputs using z score-data. The iteration process is done on 7999 items. From the clustering technique the item can be grouped into three cluster

Number of Cases in each Cluster			
Cluster	1	67	0,84%
	2	5796	72,46%
	3	2136	26,70%
Total		7999	100,00%

Advanced analysis needs to be done to find out what items need to get priority to be terminated for sales by using information in the slow-moving cluster. In addition, further analysis is required for fast-moving cluster items to provide information about what items need to get priority corresponding to investment and control of goods. The following is ABC analysis that can provide solutions to the problems.

CONCLUSION

Based on the case study to illustrated the applicability of the proposed method, it can be seen that clustering technique and ABC classification can be applied in order to understand the characteristics of the transaction data in a retail.

While ABC classification technique can process transaction data by utilizing two dimensions of data which are "sales volume" and " item price", the clustering technique proposed in this paper are able to process the data by exploring more not only based on "sales volume" and "item price" but also other dimension of data such as" average transaction per period".

REFERENCE

[1] HAN, J.W., KAMBER, M. AND PEI, J. DATA MINING CONCEPTS AND TECHNIQUES. 3RD EDITION. MORGAN KAUFMANN PUBLISHERS, WALTHAM, 2012.