

Identifying Purchasing Patterns of Arab and Malaysian Students Using Data Mining Technique

A thesis submitted to the Faculty of Information Technology in partial
fulfillment of the requirement for the degree



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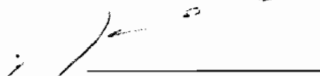
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ABSTRACT

Currently, Universiti Utara Malaysia (UUM) has a significant number of international students. Since they are from various background and cultures, their preferences towards purchasing products are different. This study intends to identify purchasing patterns of 2 groups of students: Arab and Malaysian. The 2 groups have been chosen because they represent the major groups of the postgraduate students. A questionnaire has been constructed and used to collect data. The sample of data consists of postgraduate students from Arab and Malaysia. The total number of postgraduate students is 2122 and the total number of the sample data is 547 (30% of the population). Apriori Algorithmn, which is a popular data mining technique, has been used to identify the purchasing patterns. The study discovered that items such as Fruits, Vegetables, Drinks, and Pickled Food are frequently purchased by the Arabs. The Malaysians, however, prefer items such as Pickled Foods, Snack Foods, and Other Stuff. A more comprehensive work in the future is suggested so that results obtained can be generalized. The study has been successful in achieving all objectives. It is hoped that the results could be useful to UUM as the patterns identified could be used to strategize UUM's retailing businesses and at the same time provide adequate facilities in terms of selling preferred products to its consumers.

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TABLE OF CONTENTS

1	CHAPTER 1 INTRODUCTION.....	1
1.1	Background.....	1
1.2	Problem Statement.....	3
1.3	Research Objective.....	3
1.4	Significance of the Study.....	4
1.5	Scope of the study.....	4
1.6	Organization of Report	4
2	CHAPTER 2 LITERATURE REVIEW	5
2.1	Data Mining.....	5
2.2	Applications of data mining.....	7
2.2.1	Accounting and Finance.....	7
2.2.2	Medical	9
2.2.3	Engineering	10
2.2.4	Education	11
2.2.5	Business and Management	12
2.3	Data Mining And Market Basket Analysis	14
2.4	Apriori Algorithm	15
2.5	Summary	19
3	CHAPTER 3 RESEARCH METHODOLOGY.....	20
3.1	Selection.....	20
3.2	Data cleaning and integration.....	21
3.3	Data Transformation.....	21
3.4	Data mining.....	21

3.4.1 Steps to find the association patterns.....	22
3.5 Patterns Evaluation & Presentation.....	22
3.6 Summary.....	23
4 CHAPTER 4 RESULTS AND DISCUSSION.....	24
4.1 Selection.....	24
4.2 Data cleaning & integration.....	25
4.3 Data Transformation.....	25
4.4 Data Mining.....	25
4.4.1 The steps to find the association patterns.....	26
(i) Separate data into 4 partitions.....	26
(ii) Generate rules for Data-ID.....	26
(iii) Generate rules for Data-IS.....	30
(iv) Generate rules for Data-PT.....	34
(v) Generate rules for Data-PC.....	37
4.5 Patterns Evaluation & Presentation.....	45
5 CHAPTER 5 CONCLUSION AND RECOMMENDATIONS.....	56
REFERENCES	58
APPENDICES.....	62
Appendix A	62

LIST OF FIGURE

Figure 2.1. Data Mining Models and Tasks.....	6
Figure 3.1. The KDD process and its phases.....	20
Figure 4.1. An example of rules from Bogerlt.....	26
Figure 4.2. Arab Selecting Fruit in UUM.....	46
Figure 4.3. Malaysian Selecting Fruit in UUM.....	46
Figure 4.4. Arab Selecting Vegetables in UUM.....	47
Figure 4.5. Malaysian Selecting Vegetables in UUM.....	47
Figure 4.6. Arab Selecting Soft Spreads in UUM	47
Figure 4.7. Malaysian Selecting Soft Spreads in UUM.....	48
Figure 4.8. Arab Selecting Drink in UUM.....	48
Figure 4.9. Malaysian Selecting Drink in UUM.....	48
Figure 4.10. Arab Selecting Pickled Foods in UUM.....	49
Figure 4.11. Malaysian Selecting Pickled Foods in UUM.....	49
Figure 4.12. Arab Selecting Snack Foods in UUM.....	49
Figure 4.13. Malaysian Selecting Snack Foods in UUM.....	50
Figure 4.14. Arab Selecting Other Stuff in UUM.....	50
Figure 4.15. Malaysian Selecting Other Stuff in UUM.....	50
Figure 4.16. Arab Student Factor in UUM.....	51
Figure 4.17. Malaysian Student Factor in UUM.....	52
Figure 4.18. Arab and Malaysian with All Factor.....	54
Figure 4.19. Arab and Malaysian Purchasing Patterns with Same Factor.....	54
Figure 4.20. Percentage summary of the finding.....	55

LIST OF TABLE

Table 2.1. Data mining in Accounting/Finance.....	8
Table 2.2. Data mining in Medical.....	10
Table 2.3. Data mining in Engineering.....	11
Table 2.4. Data mining in Education.....	12
Table 2.5. Data mining in Business and Information Retrieval.....	13
Table 2.6. Data mining in Purchasing.....	14
Table 2.7. Applications of Apriori algorithm.....	18
Table 4.1. Describe how the data collect.....	24
Table 4.2. Support, confidence and number of rules.....	26
Table 4.3. Rules for Data-ID.....	27
Table 4.4. The Influencing factors.....	29
Table 4.5. Rules for Data-IS (Arab)	30
Table 4.6. Significant items for Data-IS (Arab).....	32
Table 4.7. Rules for Data-IS (Malaysian)	33
Table 4.8. Significant items for Data-IS (Malaysian)	33
Table 4.9. Rules for Data-IPT (Arab)	34
Table 4.10. Significant items for Data-IPT (Arab)	35
Table 4.11. Rules for Data-IPT (Malaysian)	36
Table 4.12. Significant items for Data-IPT (Malaysian)	36
Table 4.13. Rules for Data-PC (Arab)	37
Table 4.14. Significant items for Data-PC (Arab)	39
Table 4.15. Rules for Data-PC (Malaysian data)	42
Table 4.16. Significant items for Data-PC (Malaysian).....	44
Table 4.17. Important factor for Arab.....	51
Table 4.18. Describe the important factor for Malaysian.....	52
Table 4.19. Percentages Purchased.....	53
Table 4.20. Common purchasing factor for Arab and Malaysians.....	54
Table 4.21. Summary of important factor.....	55

CHAPTER 1

INTRODUCTION

1.1 Background

In Universiti Utara Malaysia (UUM), the number of postgraduate has increased significantly since 2001. Currently, most of the postgraduate's students are international students with the majority of them coming from the Arab countries. The second highest number of students is from Malaysia. Thus, it can be seen that the postgraduate students come from many different background and cultures and due to this fact, the needs and preferences of these students vary. In terms of purchasing, their patterns also differ. The Arabs prefer bread and take less rice, while other group of students may prefer rice more than bread. Some studies on purchasing patterns have been done in the past. However, not many studies have been done on purchasing patterns using data mining techniques.

What is data mining? Data Mining, as written in literatures are defined in many ways. Data mining as described by (Scifert, 2004) is the use of sophisticated data analysis tools to discover previously unknown, valid patterns and relationships in large data sets. These tools can include statistical models, mathematical algorithms, and machine learning methods (algorithms that improve their performance automatically through experience, such as neural networks or decision trees). With the advance in technology, data mining tools have incorporated new features. Thus, data mining tasks is not just collecting and managing data, it also includes analysis and prediction.

Data mining techniques have been widely applied to solve problems in the industry. Lau and Gao (2005) proposed a data mining approach for performance management in the banking industry. Meanwhile, in science Shi and Jaja (2002) considered the problem of organizing large scale earth science raster data to efficiently handle queries for identifying regions whose parameters fall within certain range values specified by the queries. Banks *et al.* (2004) have developed an undergraduate data

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