الآية

ٹ ٹ ڃ ڃ ڃ چ ڃ چ ڃ ڃ ڃ ڍ ڍ ڌ ڌ ڎ ڎ ڈ ڈ

ژ ژ ڑ ڑ ڑ چ البقرة

ژ ژ □

Dedications

With much pleasure I wish to dedicate this research to my beloved

,Parents

,Brothers

,Sisters

And Friends

ACKNOWLEDGMENTS

I wish to express my thanks and gratitude to my supervisor **Dr. Howida Ali Abd Elgader** for her help and guidance through several stages of this work. I am also grateful for the staff of College of Computer Science and Information Technology who supplied me with all the resources and needs.

And then grateful thanks to the staff of Sudanese Company for Electricity Distribution Ltd for their great help in gathering the data, and a sincere thanks to anyone who me in accomplishing this research.

ABSTRACT

Electrical failure in the management companies is one of the most difficult administrative work, This is because the imbalance which leads to poor service, customer mump and the increase in the volume of data without the benefit of it; is one of the disadvantages of the use of computers, one of the modern techniques in data mining to extract knowledge, and new relationships with the assistance of decision-makers in corporate .management

The objective of this research is to use the failures dataset of the following areas (Khartoum, Khartoum North, and Omdurman) and one of the mining techniques is applied on it; it's association rules with two different .algorithms

The research results have shown that there is a set of relationships .which is important, and linked between time, station and the type of failure

مستخلص البحث

إدارة الأعطال الكهربائية في الشركات مـن أصـعب الأعمـال الإداريـة ؛ وذلك لأنَّ الخلل فيها يؤدي إلى سوء الخدمة وتزمر الزبون والزيادة في حجـم البيانـات دون الإسـتفادة منهـا يعـد مـن عيـوب اسـتخدام الحاسـوب ، فمـن التقنيات الحديثة التنقيب فـي البيانـات لاسـتخراج معـارف ، وعلاقـات جديـدة بمساعدة متخذي القرار في إدارة الشركات.

هدف هذا البحـث إلـى الاسـتفادة مـن البيانـات الخاصـة بالأعطـال فـي محطات المناطق التالية (الخرطـوم ، الخرطـوم بحـري ، أم درمـان) وإجـراء عليها واحدة من تقنيات التنقيب ، وهي قواعد الارتباط بخوارزميتين مختلفتين .

توصل البحث إلى نتائج أظهرت أنَّ هنالك مجموعـة مـن العلاقـات ذات أهمية والتي ربطت بين الزمن والمحطة ونوع العطل .

Table of content

Page No

الآية..... I

Dedications..... II

Acknowledgment..... III

Abstract..... IV

مستخلص البحث..... V

Index of content VI

Introduction .1

Motivation..... 2 1.1

Statement of problem..... 2 1.2

Research questions..... 2 1.3

Objectives..... 3 1.4

Methodology..... 3 1.5

Research Origination..... 3 1.6

Previous studies..... 3 1.7

Literature Review .2

Data mining definition..... 6 2.1

Data Mining role in management..... 6 2.2

Data Mining Project Cycle..... 7 2.3

Statistical Analysis..... 7 2.3.1

Data Cleaning and Transformation..... 7 2.3.2
Model Building..... 9 2.3.3
Model Assessment..... 9 2.3.4
Reporting..... 9 2.3.5
Prediction (Scoring)..... 10 2.3.6
Application Integration..... 10 2.3.7
Model Management..... 10 2.3.8
Data mining task..... 11 2.4
Classification..... 11 2.4.1
Clustering 11 2.4.2
Association 11 2.4.3
Regression 11 2.4.4
Forecasting 12 2.4.5
Association rule..... 12 2.5
Apriori Algorithm..... 13 2.5.1
Pridictive Apriori Algorithm..... 15 2.5.2
Experiments, Results, and Discussions .3
Case Study..... 18 3.1
Source of Dataset..... 18 3.2
Alarm Dataset Description..... 18 3.3
Statistical analysis of alarm Dataset..... 19 3.4
Data Preprocessing..... 20 3.5
Selected Attribute..... 20 3.5.1
Missing Value..... 21 3.5.2
Data Transformation..... 21 3.5.3
Weka Software..... 21 3.6

The Result..... 22 3.7
Experiment 1..... 22 3.7.1
Experiment 2..... 31 3.7.2
Discussion..... 33 3.8

Conclusion, Recommendations and future work .4

Conclusion..... 36 4.1
Recommendations..... 37 4.2
Future work..... 38 4.3
References..... 39
Appendixes..... 41

List of table

Page No

Table (3-1): alarm dataset attribute …… 18 -1

Table (3-2): number of tuple in each month …….. 19 -2

Table (3-3) Number of failure in each month……..….. 20 -3

Table (3-4): selected attributes ……... 20 -4

Table (3-5): number of CB problem in each area and season…. 34 -5