De La Salle University - Dasmariñas

MAXIMIZATION OF THE COVERAGE OF WI-FI ACCESSIBILITY IN DE LA SALLE UNIVERSITY – DASMARIÑAS

An Undergraduate Research Presented to
the Mathematics and Statistics Department
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ABSTRACT

This research study was conducted in De La Salle University – Dasmariñas from the 2nd Semester A.Y. 2013 – 2014 until the 1st Semester A.Y. 2014 – 2015. The primary purpose of this study was to find the best strategic locations of the APs/routers to maximize the Wi-Fi coverage within the university, using the least possible number of these devices.

The data gathered in this study were the number and the brands of the APs/routers which were obtained from the ICTC. The current model employed by the university uses 60 APs/routers and costs about Php 317, 634.26. The costs and specifications of each device were obtained by the researchers from the market as provided by the companies' websites.

From the data gathered, the researchers first assessed the existing condition of the Wi-Fi system through plotting the APs/routers to the regions in the map. The basis for the dimension of each region is the average length of the range of the 60 devices used in the existing model. The researchers applied the principles of Set Covering and Integer Programming in formulating their proposed strategic locations of the Wi-Fi devices. The goal of Set Covering was to cover an entire area with several regions satisfying the constraints provided which was the primary objective of this study – to maximize the coverage of Wi-Fi accessibility within the campus.

The objective function subject to certain constraints formulated was solved using MS Excel Solver. The result from this formulation was also plotted in the map. The researchers were able to reduce the number of APs/routers to 22 with their proposed model. With these 22 Wi-Fi devices the university will able to maximize Wi-Fi connectivity, except for those places which were not considered, with the estimated cost for putting up the proposed model amounting to Php 33,000.

TABLE OF CONTENTS

	PAGE
TITILE PAGE	
APPROVAL SHEET	i
ACKNOWLEDGEMENTS	ii
ABSTRACT	iv
CONTENTS	v
LIST OF FIGURES AND TABLES	vi
LIST OF TABLES	vii
CHAPTER 1: INTRODUCTION	
1.1 Background of the Study	1
1.2 Conceptual Framework	5
1.3 Statement of the Problem	6
1.4 Significance of the Study	7
1.5 Scope and Limitations	8
1.6 Definition of Term	9
CHAPTER 2: REVIEW OF RELATED LITERATURE	
2.1 Theoretical Literature	11
2.2 Conceptual Literature	19
CHAPTER 3: METHODOLOGY	
3.1 Research Method and Procedure	27
3.1.1 Research Design	27

3.1.2 Data Gathering Procedures 27

3.1.3 Model Formulation 28

3.1.4 Data Analysis Tool 32

3.2 Time and Place of the Study 33

CHAPTER 4: PRESENTATION, INTERPRETATION AND ANALYSIS OF DATA

4.1 Presentation of Data 34

4.2 Data Analysis 45

4.3 Proposed Location of Wi-Fi APs 47

CHAPTER 5: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Summary 58

5.2 Conclusions 59

5.3 Recommendations 60

BIBLIOGRAPHY

APPENDIX

A Approval Letter

B VCFAS Approval Letter

C Letter Of Request

D Pre – survey Questionnaire

E Survey Results

F Interview with Mr. Michael Jimenez – ICTC Network Administrator

G DLSU – D Campus Map

H Summary of the Adjacent APs/routers to Each Region – Proposed Model

I Formulation in Microsoft Excel

J Results from Microsoft Excel Solver

K Certification from the Language Editor

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LIST OF FIGURES

		PAGE
Figure 1.1	Research Paradigm	6
Figure 2.1	Areas Considering Building a Cultural Centre	17
Figure 2.2	Areas that Benefit from the Reduced Price	19
Figure 4.1	Existing Location of the Wi – Fi APs	37
Figure 4.2	Assumptions for the Proposed Model	46
Figure 4.3	Proposed Locations of Wi-Fi APs/Routers	52

LIST OF TABLES

		PAGE
Table 2.1	Area and Its Adjacent Areas	17
Table 4.1	APs/Routers in the East Campus of DLSU – D	35
Table 4.2	APs/Routers in the West Campus of DLSU – D	36
Table 4.3	Regions and Existing APs/Routers Covering Each Region	38
Table 4.4	Location of each Region	42
Table 4.5	Results using Microsoft Excel Solver	47
Table 4.6	Regions and APs/Routers Covering Each Region	54