MODEL OF MARINE FISH LANDING IN TERENGGANU USING CUBIC B-SPLINE, DISCRETE LEAST SQUARE AND EXPONENTIAL SMOOTHING

ALVANIE DILYAZIE AJIS NOOR FITHRIYAH BINTI BURHANUDDIN

BACHELOR OF SCIENCE (HONS.) COMPUTATIONAL MATHEMATICS UNIVERSITY TEKNOLOGI MARA.

2019

DECLARATION BY CANDIDATE

We certify that this report and the project to which it refers is the product of our work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledge in accordance with the standard referring practices of the discipline.

.

ALVANIE DILYAZIE AJIS 2016299238 9 JUNE 2019

NFB

NOOR FITHRIYAH BINTI BURHANUDDIN 2016284366

9 JUNE 2019

ABSTRACT

This paper explains the best method to predict the number of fish landings using comparison between cubic B-splines, cubic least square method and exponential smoothing. Data of fish landings from the year 2015 to 2017 is obtained from the official website of Malaysia Fishery Department. By using all three methods, the data from 2015 until 2017 is calculated and the result is compared to the actual data. The error of all methods is determined using relative error. The method with the least error is chosen as the best method.

TABLE OF CONTENTS

DECLARATION OF SUPERVISOR	i
DECLARATION OF CANDIDATE	ii
ABSTRACT	iii
ACKNOWLEDGEMENT	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix

CHAPTER 1: INTRODUCTION OF RESEARCH

1.1 Introduction	1
1.2 Background of Study	2
1.3 Problem Statement	5
1.4 Objectives	5
1.5 Significances of the Project	6
1.6 Scope of the Project	6
1.7 Project Benefit	7

CHAPTER 2: LITERATURE REVIEW AND METHODOLOGY

2.1 Introduction	8
2.2 Literature Review	8
2.3 Methodology	10

2.3.1 B-spline method	10
2.3.1.1 Cubic B-spline	13
2.3.2 Cubic Least Square	14
2.3.3 Exponential Smoothing Method	19
2.3.3.1 Single Exponential Smoothing	20
2.4 Research Step	21
2.5 Conclusion	23

CHAPTER 3: IMPLEMENTATION

3.1 Introduction	24
3.2 Research Data	24
3.3 Calculation of Cubic B-spline	25
3.4 Calculation of Cubic Least Square	31
3.5 Calculation of Smoothing Exponential	36
3.6 Error Calculation	38
3.7 Conclusion	40

CHAPTER 4: RESULT AND DISCUSSION

4.1 Introduction	41
4.2 Results for Cubic B-spline Method	41
4.3 Results for Smoothing Exponential Method	45
4.4 Results for Cubic Least Square	48
4.5 Error Analysis	52
4.6 Conclusion	53