Decision Supporting System for Enhancing Upcountry Vegetable Cultivation in Sri Lanka

U. R. Samaratunge

Index Number : 129168 K

Dissertation submitted to the Faculty of Information Technology,
University of Moratuwa, Sri Lanka for the partial fulfillment of the requirements of the M. Sc. in Information Technology.

March 2015

Declaration

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

U.R. Samaratunge
Name of Student Signature of Student

Date:

Supervised by:

Mr. S.C. Premaratne
Name of Supervisor Signature of Supervisor

Date:

Acknowledgements

From the initiation there were many people behind me to support and encourage the research, development and the evaluation of this project. This research on agro based data mining and content search and the implemented tool for upcountry vegetables was not an isolated achievement of just me but an outcome of many people who helped me in many other ways and means.

First and foremost the Dean of the faculty of Information Technology, Department Heads, the kind and friendly Lecturers and Instructors were a big help for me to successfully complete this project. I must also thank my Supervisor for being very helpful and inspective throughout the project and helping me every time I was in trouble. Also there were many friends and batch mates and friends who helped me to complete this project both from their knowledge and encouragement.

.

Last but not least I also thank the editors of the various contents I used to gain knowledge to complete this project. Without their knowledge and generous thoughts I would have found it much difficult to find knowledge this easy and complete this task this much comprehensively. So, all in all I would like to thank all the people who helped this attempt become fruitful in many ways and means.

Abstract

Agriculture is considered to be the most widely spread and most commonly practiced form of employment in Sri Lanka. The Sri Lankan society has been dependent on agriculture since the beginning of its early civilization. Agriculture is the most important sector of the economy which fulfills the basic food needs of the citizens. This project considers upcountry vegetables; particularly selected four crops of which the information related to these are so important for development of this sector. The areas where upcountry vegetables have been cultivated fall into different agro-ecological zones varying from rain fall, elevation, land type, height of the top soil, slope of the land and soil erosion etc. The potential of information technology (IT) can be assessed as a tool for direct contribution to agricultural productivity and as an indirect tool for empowering farmers to take informed and quality decisions which will have positive impact on the agricultural activities. In this project, it is attempted to build an indirect tool for all interested parties including farmers aiming to develop an information system to that facilitates accurate and reliable forecasting through data mining to enhance upcountry vegetable cultivation in Sri Lanka. This information system going to use two sets of data; particularly one from Data Bank of Hector Kobbekaduwa Agrarian Research and Training Institute and the other from a sample survey conducted by this tools web interface developed using a content management system and using the sample data that recorded harvest will be forecast through data mining and creating appropriate modules and finally these modules will be incorporated in to the information system. The final phase of the project is the evaluation of the web-based information system with several different data mining algorithms. The Project has successfully implemented dynamic filtering, classification and prediction of data using the latest technologies and tools available in the field of IT to uplift the agricultural field in Sri Lanka and the evaluation of its performance looks promising for practical implementation.

Contents

List of Figures

List of Tables