MANAGING SOFTWARE PROJECT RISKS USING STEPWISE AND FUZZY REGRESSION ANALYSIS MODELLING TECHNIQUES

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ABDELRAFE M. S. ELZAMLY

A thesis submitted
in fulfillment of the requirements for the degree of Doctor of Philosophy in
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2016
DECLARATION

I declare that the study entitled "Managing Software Project Risks Using Stepwise and Fuzzy Regression Analysis Modelling Techniques" is the result of my own study except as cited in the references. The study has not been accepted for any degree and is not concurrently submitted in the candidature of any other degree.

Signature: ……………………………

Name: Abdelrafe M. S. Elzamly

Date: ……………………………
APPROVAL

I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of Doctor of Philosophy.

Signature: .............................

Name: Prof. Dr. Burairah Bin Hussin

Date: .................................
DEDICATION

I dedicate this humble study to my lovely wife Eman who has supported me throughout the preparation of this study. You have indeed exerted a remarkable effort towards the completion of my study.

I would also like to external my dedication to my beloved mother, late father, my wife Martyr Shaheed, brothers and sisters as well as to my precious kids Nour, Mohammed, Ahmed, Yousef, Sana, Mariam and Adam may Allah bless them.

Special thanks to the Deans of Al-Aqsa University for granting me the scholarship to complete this study.

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Lastly, a million thanks to all of you for support and guidance that you have rendered towards the successful completion of my study.
ABSTRACT

Despite much research and progress in the area of software project management, many software projects have a very high failure rate. This risk of failure is not always avoidable, but it is controllable. Thus, the aim of this study is to present the stepwise and fuzzy multiple regression analysis modelling, which studies the impact of different risk management techniques and different software risk factors on software development projects. Furthermore, there are 5 main phases in risk management approach such as risk identification, risk analysis and evaluation, risk treatment, risk controlling, risk communication and documentation for software development life cycle. The model incorporates risk management approach and SDLC methodology to mitigate software project failure based on quantitative and intelligent risk techniques. This study provides empirical evidence for the identification of risk factors in model identify and model software risk factors and risk management techniques that effect on successful software projects. Fifty software risk factors and thirty risk management techniques were obtained from the literature to respondents. The results show that all risks in software projects are very important in the perspective of a software project manager, and all risk management techniques are the most commonly used. The study indicates that forty nine software risk factors can be mitigated by risk management techniques according to the stepwise and fuzzy multiple regression analysis modelling techniques. The model’s predictive accuracy slightly improves in fuzzy multiple regression rather than stepwise multiple regression technique. The study has been conducted on a group of software project/IT managers in Palestine. This study will guide software managers to apply software risk management practices with the real world of software development organizations. The effectiveness of the new techniques and approaches on a software project has also been verified.
ABSTRAK

ACKNOWLEDGEMENTS

In the Name of Allah, Most Gracious, Most Merciful, Praise be to Allah, the Cherisher and Sustainer of the Worlds, and Peace and Prayer be upon the Final Prophet and Messenger.

Praise be to Allah, whose gracious help has brought about the accomplishment of my study. The prophet Mohammed encourages us as Moslems to seek for knowledge on science and technology wherever it can be found. In the name of Allah, the Beneficent, and the Merciful: 

{And remember! Your Lord caused to be declared:” if you are grateful, I will add more (favors) unto you”} Surah Ibrahim, verse (7).

I would like to express my sincere thanks to my supervisors, Professor Dr. Burairah Bin Hussin and Associate Professor Norhaziah Binti MD Salleh for their guidance, encouragement, and support. In addition, I wish to express my gratefulness to Associate Professor Dr. Mohd. Khanapi Abd. Ghani, Dean of the Faculty of Information and Communication Technology, for his official and personal support and encouragement. Besides, my gratefulness goes to Prof. Dr. Shahrin Bin Sahib, Vice Chancellor UTeM. May Allah bless their sincere efforts in the service of science and islam. My thanks is also to the acting dean of post-graduate studies in UTeM for his helps as well as the members of the discussion committee for accepting to discuss this study. In conclusion, I thank everyone who has helped and contributed to the completion of this study, and I hope that this study contributes to new knowledge in field of information technology sciences. May Allah reward everyone the best of rewards.
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