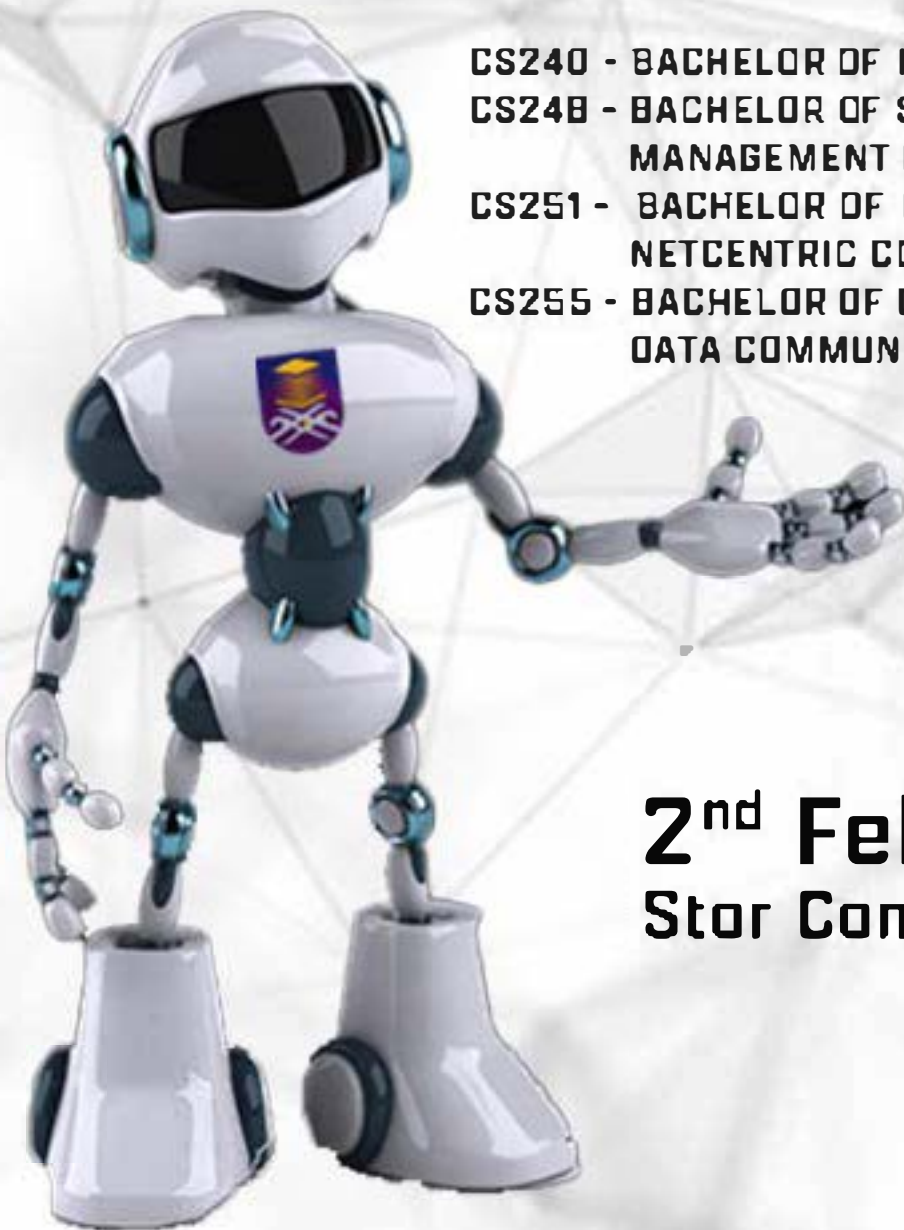

RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES

REMACS 5.0



CS240 - BACHELOR OF INFORMATION TECHNOLOGY [HONS.]
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2nd February 2023
Stor Complex, UiTM Perlis

Organized by:
College of Computing, Informatics and Media
Universiti Teknologi MARA Perlis Branch

**Research Exhibition in Mathematics and Computer Sciences
(REMACS 5.0)**

Research Exhibition in Mathematics and Computer Sciences (REMACS 5.0)

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Editors

Rafiza Ruslan, Mohamad Najib Mohamad Fadzil, Noorfaizalfaird Mohd Nor, Mohammad Hafiz bin Ismail

e ISBN: 978-629-97934-0-3



Perpustakaan Negara Malaysia

Published by

MOHAMMAD HAFIZ BIN ISMAIL
Universiti Teknologi MARA
02600 Arau, Perlis
Tel: +604 988 2028

<https://fskmpерlis.uitm.edu.my/remacs50/>

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Preface

It is with great pleasure that we present this extended abstract book, titled "The 5th Research Exhibition in Mathematics and Computer Sciences (REMACS 5.0)". This book is a collection of research work in the fields of Computer Science and Mathematics, contributed by the final year students from Universiti Teknologi MARA, Perlis Branch. The aim of this book is to showcase the diversity and depth of research in these two interrelated fields.

Mathematics and Computer Science are two fields that have seen tremendous growth and advancement in recent years. With the rise of new technologies and the increasing demand for data-driven solutions, researchers in these fields have been working hard to develop new theories, algorithms, and models that can help solve some of the most pressing problems of our time. This book is a testament to their hard work and dedication.

The abstracts in this book cover a wide range of topics, including algebra, analysis, logic, computer architecture, algorithms, artificial intelligence, machine learning, computer network, netcentric computing and many more. The work presented here is both theoretical and practical, and has the potential to impact many areas of society, from finance and healthcare to education and security.

We hope that this book will serve as a valuable resource for future students in the fields of Mathematics and Computer Science. We also hope that it will inspire more students to pursue innovative and groundbreaking research in these two fields. Finally, we would like to express our gratitude to all the contributors for their hard work and dedication, without which this book would not have been possible.



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REMACS 5.0

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EVENT SCHEDULE

8:00 – 8:30 am

- Registration

8:00 am – 12:00 pm

- FYP Project Presentation

12:00 - 2:00pm

- Lunch Break

2:15 – 2:35 pm

- National & Wawasan Setia Anthems
- Doa Recitation

2:35 – 2:45 pm

- Welcoming Address by Director of REMACS 5.0

2:45 – 2:55 pm

- Officiating & Closing Remarks from Rector of UiTM Perlis

2:55 – 3:00 pm

- REMACS 5.0 Montage

3:00 – 4:00 pm

- Awarding of Winners:
 - Best Poster
 - Best Project Award

- Photo Session

- End of Ceremony

Dress Code: Formal / Corporate

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EXTENDED ABSTRACTS

RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES
REMACS 5.0

ANALYZING FACTORS AFFECTING TO E-LEARNING SUCCESS BY FUZZY ANALYTIC HIERARCHY PROCESS (FAHP)

Nor Syahazlin Mohd Zaki and Jasmani Bidin

College of Computing, Informatics and Media, Universiti Teknologi MARA Perlis Branch, Malaysia

Abstract

Over the past few years, virtual education institutions have adopted some form of online education. The Analytic Hierarchy Process (AHP) has been used in previous research to establish critical success factors. However, the AHP approach leads to a less-than-optimal result since it cannot account for the fuzziness. Several researchers have proposed the fuzzy sets theory as a way to improve AHP's ability to cope with problems involving uncertainty and fuzziness. The purpose of this study is to use Fuzzy Analytic Hierarchy Process to rank the various factors and sub-factors that affect the success of e-learning. This research will look at four main factors, each of which has three sub-factors. Regarding the choice criteria for successful e-learning, this study focuses solely on the student's and lecturer's opinions. At the end of this research, both objectives were accomplished. The results of this study show that the quality of the infrastructure and system is the most important factor on the success of e-learning from the lecturer's perspective. For the most important sub-factors affecting e-learning success from the lecturer's perspective, students' attitudes toward e-learning ranked first. Besides, according to student's perspectives, the most important factor in e-learning success is the characteristics of students toward e-learning, and the sub-factor that ranked first is students' attitudes toward e-learning.

Keywords: Fuzzy Analytic Hierarchy Process, E-learning success, lecturer, student.

1. Introduction

This research aims to identify the most important factor and sub-factor influencing the success of e-learning from lecturer's and student's perspectives. The advent of the COVID-19 disease has had a massive impact on people's daily lives. Therefore, the world of education had been caught off guard by e-learning. Hence, it is important to analyse the many aspects that affect the implementation of e-learning (Anggrainingsih et al., 2018). Even if educational institutions have already returned to normal face-to-face learning system by the middle of 2022, the research of e-learning should still be emphasised as people cannot predict the future. In addition, at the beginning of 2023, a new virus from China, the Langya Virus, shook the world and could lead to the same bad situation as COVID-19.

2. Methodology

The data on factors and sub-factors affecting to e-learning success are collected by providing questionnaires to the expertise of e-learning which are lecturer and excellent student of the calculus subject at UiTM Perlis Branch Arau Campus. The factors and sub-factors are graded on a scale from 1 to 9. This study is analyzed by using the method of Fuzzy Analytic Hierarchy Process which consists of six steps. The six steps include choosing expert group for the process of decision making, calculate the fuzzy triangular number, calculate the geometry mean of fuzzy comparison value, compute fuzzy weights, defuzzification and normalise the defuzzification results. The criterion with the highest score will be considered as the most important factor and sub-factor based on the results.

3. Results and Discussion

There are four factors to be studied in this research along with three sub-factors under each respectively. The factors are quality of infrastructure and system, quality of design and courses, characteristics of students and lecturers toward e-learning. For the sub-factors, level of product reliability, understanding

the used of infrastructure, design and user interface system, course quality, relevance and completeness of content, expertise in using computer and internet, students' attitudes toward e-learning, lecturers' attitudes toward students and e-learning, and lecturers' timely response, were considered. According to the result and analysis, the quality of the infrastructure and system has the greatest influence on the success of e-learning from the perspective of the lecturer. For the most important sub-factors affecting to e-learning success from the lecturer's perspective, students' attitudes toward e-learning came in the first ranking. Meanwhile, according to student's perspective, the most important factor in e-learning success is characteristics of students toward e-learning, and the sub-factor that ranks first is students' attitudes toward e-learning. At the end of this research, both objectives were accomplished to determine most influential factors and sub-factors of e-learning success. E-learning process will be successful with excellent result by considering the factors and sub-factors affecting the process of e-learning.

4. Novelty of Research / Product

Researchers in the past have conducted studies to analyse the factors that affects the success of e-learning, but there have not been many such studies conducted in Malaysia, particularly using the Fuzzy Analytic Hierarchy Process (FAHP) method. For example, a research was conducted at Sebelas Maret University in Indonesia utilising the Fuzzy AHP technique to analyse the relative importance of several factors that affect the success of e-learning. The implementation of the learning system in each country is different (Wierstra et al., 1999). Factors that affect the effectiveness of e-learning abroad cannot be compared to Malaysia because of the different learning environment. If there is any research related to the topic of examining the factors that affect the success of e-learning in Malaysia by Fuzzy AHP method, the analysis is conducted based on opinions in general, not splitting the focus between lecturers and students. Therefore, the primary goal of this study is to analyse the elements that affect the success of e-learning from two different opinions, lecturer and student in Malaysia as both have extensive expertise in organising e-learning classes and have experience in such e-learning systems.

5. Conclusion

Globally, educational institutions use e-learning platforms extensively for the purposes of teaching and learning. Consequently, it is critical to look into the factors that contribute to the success of an e-learning. This research examines four factors, each of which has three sub-factors. Using the Fuzzy Analytic Hierarchy Process, the purpose of this study is to identify the most influential factors on the success of e-learning and to determine the ranking of e-learning success sub-factors. Also, this study examines previous research on e-learning, including its benefits and the factors that contribute to its level of success. In addition, this study gives an explanation of related relevant literature in the usage of Fuzzy AHP as well as specific applications of this method used in a variety of fields.

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Research Exhibition in Mathematics and Computer Sciences: REMACS 5.0
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e ISBN 978-629-97934-0-3

