THE RELATIONSHIP BETWEEN THE DIFFUSION OF INNOVATION AND E-LEARNING TOWARDS STUDENTS DEVELOPMENT.

FKP

HAFIZUDIEN BIN MOHD NOR (A20A1353)
LIM JIA YEE (A20A2140)
NOORYASMIN EMALIN BINTI AZHAR (A20B1607)
NURUL AIN IZZATI BINTI JUSOH (A20A1847)
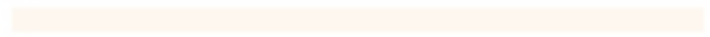
UNIVERSITI
MALAYSIA
KELANTAN

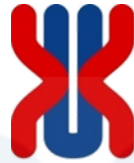BACHELOR OF ENTREPRENEURSHIP (COMMERCE) WITH HONOURS
2024

UNIVERSITI
MALAYSIA
KELANTAN

THE RELATIONSHIP BETWEEN THE DIFFUSION OF INNOVATION AND E-LEARNING TOWARDS STUDENTS DEVELOPMENT.

by

HAFIZUDIEN BIN MOHD NOR (A20A1353)
LIM JIA YEE (A20A2140)
NOORYASMIN EMALIN BINTI AZHAR (A20B1607)
NURUL AIN IZZATI BINTI JUSOH (A20A1847)

A thesis submitted in fulfillment of the requirements for the degree of bachelor entrepreneurship (commerce) with honour

Faculty of Entrepreneurship and Business
UNIVERSITI MALAYSIA KELANTAN

FACULTY OF ENTREPRENEURSHIP AND BUSINESS

PROPOSAL OF FINAL YEAR RESEARCH PROJECT

RESEARCH TITLE:

The Relationship between the Diffusion of Innovation and e-learning towards students development.

Programme	SAK
Name of Supervisor	DR. NOOR RAIHANI BINTI ZAINOL
Name of Examiner	DR. WAN MOHD NAZDROL BIN WAN MOHD NASIR
Name of Students	HAFIZUDIEN BIN MOHD NOR (A20A1353) LIM JIA YEE (A20A2140) NOORYASMIN EMALIN BINTI AZHAR (A20B1607) NURUL AIN IZZATI BINTI JUSOH (A20A1847)
Date	26/10/2023

THESIS DECLARATION

I hereby certify that the work embodied in this thesis is the result of the original research and has not been submitted for a higher degree to any other University or Institution.
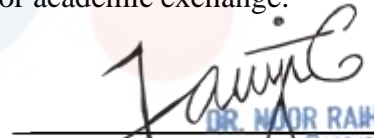
☐	**OPEN ACCESS**	I agree that my thesis is to be made immediately available as hardcopy or on-line open access (full text).
☐	**EMBARGOES**	I agree that my thesis is to be made available as hardcopy or on-line (full text) for a period approved by the Post Graduate Committee. Dated from_____until_____.
☐	**CONFIDENTIAL**	(Contain confidential information under the Official Secret Act 1972)*
☐	**RESTRICTED**	(Contains restricted information as specified by the organization where research was done)*

I acknowledge that Universiti Malaysia Kelantan reserves the right as follows:
1   The thesis is the property of Universiti Malaysia Kelantan.
2   The library of Universiti Malaysia Kelantan has the right to make copies for the purpose of research only.
3   The library has the right to make copies of the thesis for academic exchange.

_____
SIGNATURE
NAME: HAFIZUDIEN BIN MOHD NOR

_____
SIGNATURE
NAME: LIM JIA YEE

_____
SIGNATURE
NAME: NOORYASMIN EMALIN BINTI AZHAR

_____
SIGNATURE
NAME:
NURUL AIN IZZATI BINTI JUSOH

Date:20 JANUARY 2024

_____
SIGNATURE OF SUPERVISOR
NAME: DR   NOOR   RAIHANI
BINTI ZAINOL

Date:18 JANUARY 2024

ASSESSMENT FORM FOR RESEARCH PROJECT I

Student's Name:_____**Matric No.** _____

Name of Supervisor:_____**Name of Programme: SAK/SAL/SAR**

Research

Topic:_____

ASSESSMENT RUBRICS FOR RESEARCH PROJECT I: REFLECTIVE NOTE (Weight 20%)

NO.	CRITERIA	PERFORMANCE LEVELS				Weight	TOTAL
		POOR (1 MARK)	FAIR (2 MARKS)	GOOD (3 MARKS)	EXCELLENT (4 MARKS)		
1.	Determination (CLO1; C1, A3: CS/CT/TS)	Is not determined and does not put in any effort in completing the research report in group	Is determined but puts in little effort in completing the research report in group	Is determined and puts in reasonable effort in completing the research report in group	Is very determined and puts in maximum effort in completing the research report in group	____ x 1 (Max: 4)	
2.	Commitment (CLO1; C1, A3: CS/CT/TS)	Is not committed and does not aim to complete on time and/ or according to the requirements	Is committed but makes little effort to complete according to the requirements	Is committed and makes reasonable effort in fulfilling some of the requirements	Is very committed and makes very good effort in fulfilling all the requirements, without fail.	____ x 1 (Max: 4)	
3.	Frequency in meeting supervisor (CLO1; C1, A3: CS/CT/TS)	Has not met the supervisor at all	Has met the supervisor but less than five times	Has met the supervisor for at least five times	Has met the supervisor for more than five times	____ x 1 (Max: 4)	
4.	Take corrective measures according to supervisor's advice (CLO1; C1, A3: CS/CT/TS)	Has not taken any corrective action according to supervisor's advice	Has taken some corrective actions but not according to supervisor's advice, or with many mistakes	Has taken some corrective actions and most are according to supervisor's advice, with some mistakes	Has taken corrective actions all according to supervisor's advice with few mistakes	____ x 1 (Max: 4)	
5.	Initiative (CLO1; C1, A3: CS/CT/TS)	Does not make any initiative to work in group	Makes the initiative to work in group but requires consistent monitoring	Makes the initiative to work in group with minimal monitoring required	Makes very good initiative to work in group with very little monitoring required	____ x 1 (Max: 4)	

NO.	CRITERIA	PERFORMANCE LEVELS				Weight	TOTAL
		POOR (1 MARK)	FAIR (2 MARKS)	GOOD (3 MARKS)	EXCELLENT (4 MARKS)		
		TOTAL					/20

Student's Name:_____Matric No. _____

Research

Topic:_____

ASSESSMENT RUBRICS FOR RESEARCH PROJECT I: PRESENTATION (Weight 20%)

NO.	CRITERIA	PERFORMANCE LEVEL				Weight	TOTAL
		POOR (1 MARK)	FAIR (2 MARKS)	GOOD (3 MARKS)	EXCELLENT (4 MARKS)		
1.	Teamwork (CLO2; A3/TS)	Is not committed to work in a group	Is committed but make little effort to complete the research report in group	Is committed and make reasonable effort in completing the research report	Is very committed and make very good effort in completing the research report	_____ x 1 (Max: 4)	
2.	Non-verbal Communication (CLO2; A3/CS)	Exhibits very poor body language. Does not have any eye contact with the audience and appears to avoid the audience.	Makes eye contact with the audience at times. But the behavior is not consistent.	Makes good eye contact with the audience. The body language is good.	Makes excellent eye contact with the audience. The body language is pleasing. .	_____ x 1 (Max: 4)	
3.	Appropriate use of visual aid (CLO2; A3/CS)	Uses visual aids very poorly and the use interferes with the presentation	Uses visual aids but not very effective in aiding the presentation. The	Uses visual aids effectively. The usage of technology	Uses visual aids very effectively. The usage enhances the	_____ x 1 (Max: 4)	

NO.	CRITERIA					Weight	TOTAL
		usage distorts the presentation at times.	flows with the presentation.	quality of presentation.			
4.	Appearance (CLO2; A3/CS)	Has a very poor sense of attire and appearance does not reflect a "business appearance".	Is well groomed and the appearance is acceptable for research report presentations.	Is well groomed and has a good "business appearance.	Is very well groomed and has a very pleasing and professional appearance.	____ x 1 (Max: 4)	
5.	Confidence and Ability to Answer Questions (CLO2; A3/CT)	Exhibits a very low level of confidence and appears visibly 'shaky'. Finds it difficult to answer questions.	Exhibits low level of confidence at times. Does not appear to be confident in answering questions	Exhibits a high level confidence. Does a good job in answering questions.	Exhibits a very high level of confidence. Is perfectly at ease while answering questions.	____ x 1 (Max: 4)	
	TOTAL						**/20**

Student's Name:_____**Matric No.** _____

Research Topic:_____

ASSESSMENT RUBRICS FOR RESEARCH PROJECT I: RESEARCH REPORT (Weight 60%)

NO.	CRITERIA	PERFORMANCE LEVEL				Weight	TOTAL
		POOR **(1 MARK)**	**FAIR** **(2 MARKS)**	**GOOD** **(3 MARKS)**	**EXCELLENT** **(4 MARKS)**		
1.	Introduction (CLO1; C1, A3)	Background of study, Problem Statement, Research Objective and Research Question is lack of clarity and focus	Background of study, Problem Statement, Research Objective and Research Question is written but with inconsistent focus.	Clearly written of Background of study, Problem Statement, Research Objective and Research Question with good facts.	Very clear of Background of study, Problem Statement, Research Objective and Research Question with very good facts.	____ x 2.5 (Max: 10)	

			Background of study, Problem Statement, Research Objective and Research Question is written unsystematic and unscientific. Scientific refers to researchable topic	Background of study, Problem Statement, Research Objective and Research Question is written less systematic and less scientific. Scientific refers to researchable topic	Background of study, Problem Statement, Research Objective and Research Question is written systematic and scientific. Scientific refers to researchable topic	Background of study, Problem Statement, Research Objective and Research Question is written very systematic and scientific. Scientific refers to researchable topic	_____ x 1.25 (Max: 5)	
2.	Overall Proposal Format (CLO2; C2, A3)	Submit according to the deadline and adhere to the required format	The research proposal is not produced according to the specified time and/ or according to the format.	The research proposal is produced according to the specified time but fails to adhere to the format.	The research proposal is produced on time, adheres to the format but with few weaknesses.	The research proposal is produced on time, adheres to the format without any weaknesses.	_____ x 0.25 (Max: 1)	
		Writing style (clarity, expression of ideas and coherence)	The proposal is poorly written and difficult to read. Many points are not explained well. Flow of ideas is incoherent.	The proposal is adequately written. Some points lack clarity. Flow of ideas is less coherent.	The proposal is well written and easy to read; Majority of the points are well explained and flow of ideas is coherent.	The proposal is written in an excellent manner and easy to read. All of the points made are crystal clear with coherent argument.	_____ x 0.25 (Max: 1)	
		Technicality (Grammar, theory, logic and reasoning)	The report is grammatically, theoretically, technically and logically incorrect.	There are many errors in the report, grammatically, theoretically, technically and logically.	The report is grammatically, theoretically, technically and logically correct in most of the chapters with few weaknesses.	The report is grammatically, theoretically, technically, and logically perfect in all chapters without any weaknesses.	_____ x 0.25 (Max: 1)	
	Overall Proposal Format (CLO2; C2, A3)	Reference list (APA Format)	No or incomplete reference list	Incomplete reference list and/ or is not according to the format	Complete reference list with few mistakes in format adherence	Complete reference list according to format	_____ x 0.25 (Max: 1)	
		Format organizing (cover page, spacing, alignment, format structure, etc.)	Writing is disorganized and underdeveloped with no transitions or closure.	Writing is confused and loosely organized. Transitions are weak and closure is ineffective.	Uses correct writing format. Incorporates a coherent closure.	Writing includes a strong, beginning, middle, and end with clear transitions and a focused closure.	_____ x 0.25 (Max: 1)	

3.	Literature review (CLO2; C2, A3)	• Does a poor job in summarizing the relevant literature review	• Weak in summarizing the literature review	• Critically analyzes but does not summarize effectively	• Critically analyzes and summarizes effectively	____ x 1 (Max: 4)	
		• Does not provide adequate reference of literature review	• Provide some reference of literature review	• Provide adequate reference of literature review	• Provide strong reference of literature review	____ x 1 (Max: 4)	
		• Weak research framework	• Adequate research framework	• Feasible research framework	• Sound research framework	____x 0.75 (Max: 3)	
		• Framework is not link with the literature and the research issues	• Framework has a weak link with the literature and the research issues but some major weaknesses exist	• Framework has a good link with the literature and the research issues but some minor weaknesses exist	• Framework has a strong link with the literature and the research issues	____ x 1 (Max: 4)	
4.	Research method (CLO3; C3, P3, A3)	• Research methodology is designed poorly	• Research methodology is adequately designed	• Research methodology is good and can address most of the research issues	• The methodology is sound and can address all of the research issues	____x 1.75 (Max: 7)	
		• Unable to clearly identify the type of research (Quantitative/ Qualitative)	• Able to identify the type of research (Quantitative/ Qualitative)	• Clearly identify the type of research (Quantitative/ Qualitative)	• Clearly identify the type of research with good support (Quantitative/ Qualitative)	____x 1.5 (Max: 6)	
		• There is no data collection method specified	• Data collection method used are not appropriate	• Data collection method used are appropriate with some explanations	• Data collection method used are appropriate with good explanations	____x 1.5 (Max: 6)	
		• Wrong interpretation of Research Tools and Analysis	• Lack interpretation of Research Tools and Analysis	• Good interpretation of Research Tools and Analysis	• Very good and clear interpretation of Research Tools and Analysis	____x 1.5 (Max: 6)	
TOTAL						**/60**	

TOTAL MARKING SCHEME

Assessment	Marks Given By Supervisor	Marks Given By Examiner	Total
(A) Reflective Note (20%)			
(B) Oral Presentation (20%)			/ 2 =
(C) Research Report (60%)			/ 2 =
Grand Total			

Name of Supervisor/ Examiner:_____Signature:_____Date: _____

Student's Name: _____ Matric No.

Name of Supervisor: _____ Name of Programme:

Research _____ Topic:

NO.	CRITERIA	PERFORMANCE LEVEL				WEIGHT	TOTAL
		POOR (1 MARK)	FAIR (2 MARKS)	GOOD (3 MARKS)	EXCELLENT (4 MARKS)		
1.	**Content (10 MARKS)** (Research objective and Research Methodology in accordance to comprehensive literature review) Content of report is systematic and scientific (Systematic includes Background of study, Problem Statement, Research Objective, Research Question) (Scientific refers to researchable topic)	Poorly clarified and not focused on Research objective and Research Methodology in accordance to comprehensive literature review.	Fairly defined and fairly focused on Research objective and Research Methodology in accordance to comprehensive literature review.	Good and clear of Research objective and Research Methodology in accordance to comprehensive literature review with good facts.	Strong and very clear of Research objective and Research Methodology in accordance to comprehensive literature review with very good facts.	____x 1.25 (Max: 5)	
		Content of report is written unsystematic that not include Background of study, Problem Statement, Research Objective, Research Question and unscientific with unsearchable topic.	Content of report is written less systematic with include fairly Background of study, Problem Statement, Research Objective, Research Question and less scientific with fairly researchable topic.	Content of report is written systematic with include good Background of study, Problem Statement, Research Objective, Research Question and scientific with good	Content of report is written very systematic with excellent Background of study, Problem Statement, Research Objective, Research Question and scientific with very good researchable topic.	____x 1.25 (Max: 5)	

						researchable topic.	
2.	Overall report format (5 MARKS)	Submit according to acquired format	The report is not produced according to the specified time and/ or according to the format	The report is produced according to the specified time but fails to adhere to the format.	The report is produced on time, adheres to the format but with few weaknesses.	The report is produced on time, adheres to the format without any weaknesses.	____ x 0.25 (Max: 1)
		Writing styles (clarity, expression of ideas and coherence)	The report is poorly written and difficult to read. Many points are not explained well. Flow of ideas is incoherent.	The report is adequately written; Some points lack clarity. Flow of ideas is less coherent.	The report is well written and easy to read; Majority of the points is well explained, and flow of ideas is coherent.	The report is written in an excellent manner and easy to read. All of the points made are crystal clear with coherent argument.	____ x 0.25 (Max: 1)
		Technicality (Grammar, theory, logic and reasoning)	The report is grammatically, theoretically, technically and logically incorrect.	There are many errors in the report, grammatically, theoretically, technically and logically.	The report is grammatically, theoretically, technically and logically correct in most of the chapters with few weaknesses.	The report is grammatically, theoretically, technically, and logically perfect in all chapters without any weaknesses.	____ x 0.25 (Max: 1)
		Reference list (APA Format)	No or incomplete reference list.	Incomplete reference list and/ or is not according to the format.	Complete reference list with few mistakes in format adherence.	Complete reference list according to format.	____ x 0.25 (Max: 1)
		Format organizing (cover page, spacing, alignment,	Writing is disorganized and underdeveloped with no transitions or closure.	Writing is confused and loosely organized. Transitions are	Uses correct writing format. Incorporates a coherent closure.	Writing include a strong beginning, middle, and end with clear	____ x 0.25

No.	Criteria					Marks
	format structure, etc.)		weak and closure is ineffective.		transitions and a focused closure.	(Max: 1)
3.	**Research Findings and Discussion (20 MARKS)**	Data is not adequate and irrelevant.	Data is fairly adequate and irrelevant.	Data is adequate and relevant.	Data is adequate and very relevant.	____x 1 (Max: 4)
		Measurement is wrong and irrelevant	Measurement is suitable and relevant but need major adjustment.	Measurement is suitable and relevant but need minor adjustment.	Measurement is excellent and very relevant.	____x 1 (Max: 4)
		Data analysis is inaccurate	Data analysis is fairly done but needs major modification.	Data analysis is satisfactory but needs minor modification.	Data analysis is correct and accurate.	____x 1 (Max: 4)
		Data analysis is not supported with relevant output/figures/tables and etc.	Data analysis is fairly supported with relevant output/figures/tables and etc.	Data analysis is adequately supported with relevant output/figures/table and etc.	Data analysis is strongly supported with relevant output/figures/table and etc.	____x 1 (Max: 4)
		Interpretation on analyzed data is wrong.	Interpretation on analyzed data is weak.	Interpretation on analyzed data is satisfactory.	Interpretation on analyzed data is excellent	____x 1 (Max: 4)
4.	**Conclusion and Recommendations (15 MARKS)**	Implication of study is not stated.	Implication of study is weak.	Implication of study is good.	Implication of study is excellent	____x 1.25 (Max: 5)
		Conclusion is not stated	Conclusion is weakly explained.	Conclusion is satisfactorily explained.	Conclusion is well explained.	____x 1.25 (Max:5)
		Recommendation is not adequate and irrelevant.	Recommendation is fairly adequate and irrelevant.	Recommendation is adequate and relevant.	Recommendation is adequate and very relevant.	____x 1.25

					(Max:5)	
					TOTAL (50 MARKS)	

Acknowledgement

TABLE OF CONTENT

CHAPTER 5

LIST OF FIGURES

Abstrak:

Proses pengajaran dan pembelajaran secara konvensional atau secara bersemuka telah bertukar kepada pembelajaran maya atau berasaskan internet atau pembelajaran elektronik berikutan kehadiran wabak COVID-19. Kajian ini adalah untuk mengetahui hubungan resapan inovasi dan penggunaan e-pembelajaran dalam kalangan pelajar prasiswazah di peringkat pengajian tinggi. Kajian ini diwujudkan untuk mengenal pasti tahap inovasi dalam penggunaan e-pembelajaran dalam kalangan pelajar prasiswazah di peringkat pengajian tinggi. Secara khusus, ia akan menyiasat hubungan antara kelebihan relatif, keserasian, kerumitan dan kebolehmerhatian dan kualiti maklumat untuk pelajar yang berkaitan secara langsung dengan tujuan berikut. Analisis dijalankan menggunakan kaedah kajian kuantitatif yang dikongsikan di google form melalui pautan untuk mengumpul data daripada 371 responden di UMK. Pelajar UMK akan menjadi responden kerana mereka menggunakan platform e-pembelajaran dalam pengajian mereka. Mengikut dapatan kajian ini, kelebihan relatif, keserasian, kerumitan dan kebolehmerhatian serta kualiti maklumat semuanya mempunyai hubungan yang positif dengan penggunaan e-pembelajaran. Dapatan kajian akan berguna kepada semua pelajar agar mereka dimaklumkan tentang inovasi pelajar UMK dalam menggunakan aplikasi e-capsule sepanjang berada di kolej. Daripada keputusan tersebut, 35.6% daripada responden telah menggunakan penggunaan e-capsule untuk menyemak jadual kuliah. Akhir sekali, memeriksa pendidik dan perspektif institusi melibatkan penyiasatan cara pendidik dan institusi pendidikan melihat dan mendekati integrasi pembelajaran digital. Bidang penyelidikan ini meneroka sikap, kepercayaan dan pengalaman pendidik mengenai penggunaan alat e-capsule, serta strategi dan dasar institusi yang lebih luas untuk menyokong atau menghalang penerimaan tersebut. Dengan meneroka pendidik dan perspektif institusi, penyelidik boleh mendapatkan pandangan tentang dinamik yang membentuk penerimaan dan pelaksanaan e-capsule.

Kata kunci: Inovasi e-kapsul, tahap inovasi, hubungan positif, penyelidikan kuantitatif, pembelajaran maya

Abstract:

The conventional or face-to-face teaching and learning process has changed to virtual or internet-based learning or electronic learning due to the presence of the COVID-19 epidemic. This study is to determine the relationship of diffusion of innovation and e-learning adoption among undergraduate students in higher education.This study was created to identify the level of innovation in the use of e-learning among undergraduate students in higher education. Specifically, it will investigate the relationships among relative advantage, compatibility, complexity and observability and information quality for students who are directly related to the following purpose. The analysis was conducted using quantitative research methods which were shared on the google form via link to collect data from 371 respondents in UMK. The UMK students will be the respondents because they are using the e-learning platform in their studies. According to the findings of this study, relative advantage, compatibility, complexity and observalibity and information quality all have a positive relationship with e-learning adoption. The study's findings will be useful to all students so that they are informed about the innovation of UMK students in using the application of e-capsule during their time in college. From the result, 35.6% of the respondents have used the e-capsule adoption to check the lecture schedule. Lastly, examining educators and institutional perspectives involves investigating how educators and educational institutions perceive and approach the integration of digital learning. This area of research explores the attitudes, beliefs, and experiences of educators regarding the adoption of e-capsule tools, as well as the broader institutional strategies and policies in place to support or hinder such adoption. By exploring educators and institutional perspectives, researchers can gain insights into the dynamics that shape the adoption and implementation of e-capsule.

Keywords: E-capsule innovation, level of innovation, positive relationship, quantitative research, virtual learning

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

The presence of the COVID-19 epidemic has changed from normal life to a new form of norm; all aspects have been affected by the presence of this pandemic in terms of economy, politics, social, and not forgetting the aspect of education. This has caused changes in the teaching and learning system in every higher education institution and has also influenced the way educators and students communicate. As a result, the entire university has been instructed to conduct online learning activities. In some countries, online learning does not provide encouraging results, causing less active involvement and various distractions during learning activities Adam & Anuar, (2020; Hill & Fitzgerald, (2020). In Malaysia, all educational institutions, whether at the primary, secondary, or higher education levels, had to be closed. The traditional, face-to-face method of teaching and learning process has changed to virtual or internet-based learning or electronic learning (e-learning) Ilmi Zajuli Ichsan et al., (2020).

The Ministry of Education (KPM) has enacted a digital education policy to produce a digitally literate and competitive generation. According to Datuk Dr Radzi Jidin, who was the Senior Minister of Education at the time, the policy that was enacted would should be reinforced by a comprehensive action plan that includes strategies and strategic objectives, particularly in the teaching and learning areas. He also said that the focus will be on improving the mastery of quality students, empowering the competence of teachers, and facilitating the use of digital technology among education leaders. Universiti Malaysia Kelantan (UMK) also obeyed the directive and carried out teaching and learning activities through online applications such as Microsoft Teams, Zoom, Google Meet, Telegram, and Whatsapp (Sinar Harian, 2021)

1

Following the spread of this epidemic, the Malaysian Ministry of Education (KPM) has taken the initiative to oblige educators and students to continue teaching and learning using technology, that is, through online or home-based learning, to ensure students continue to have access to education (Nurul Hamimi Awang Japilan and Jahidih Saili, 2021). Online learning is a hybrid of in-person instruction and computer-based learning (Ministry of Education Malaysia, 2015). This situation has completely changed the previously one-way learning by Chalk and Talk by using ICT-based learning that has been used in delivering teaching and learning. In other words, when teaching professionals are encouraged to integrate and employ all multimedia aspects in providing learning to children, students, and even students at higher education institutions, their style, technique, and learning methods change.

In accordance with the directive to shut all institutes of higher education, Universiti Malaysia Kelantan (UMK) has implemented online teaching and learning activities and also created an online system called e-capsule, which helps students and teaching staff access all information related to learning throughout the period. This improves student access to information such as class schedules, professor names, exam dates, and results. This not only makes it easy for students, but also for lecturers to deliver tasks and provide associated comments to them. Therefore, this research was conducted. to identify the level of innovation in the use of e-learning among undergraduate students in higher education, especially for UMK students.

1.2   Problem Statement

E-learning systems have their problems, just like any new system. Among these challenges include learning styles and cultures, technological advancements, pedagogical e-learning, technical training, and time management problems. (Islam et al., 2015; Maatuk et al., 2021). Students do not completely exploit e-capsule because of their limited access to their studies and lack of prior digital skills. Students may struggle to access and use the internet for information if they are unable to operate basic devices like a computer, tablet, or smartphone. This will cause the students lack of information on webinars that are posted in the e-capsule application if the students are not familiar with the use of the e-capsule application.

In an effort to prevent the COVID-19 pandemic, governments and educational institutions have jointly closed colleges and universities. As a result, colleges and universities are now using online and distance learning, which has brought back the need to take advantage of e-learning adoption opportunities, (Almaiah et al.,2020). Due to the COVID-19 pandemic's effects, all instruction is now conducted online, evaluating students' will and commitment to finishing the e-capsule application structure. But, the student encountered problems related to low participation, insufficient socialization and contact, and insufficient hands-on activities, discovery, and play during the COVID-19 epidemic. Unfamiliar digital platforms, slow internet access, and technical issues can all be frustrating and interfere with learning. Students may come to identify online learning with stress and disappointment as a result of their ongoing struggles with technology, overshadowing the educational material.

Social distancing has compelled educational institutions to adapt by moving to online instruction using learning management systems (LMS) and digital communication technologies. According to Samsudeen and Mohamed (2019), there is a growing need for e-learning due to the paradigm shift towards digitalization of education. Thus, we desire innovative diffusion between them. Due to the fact that the e-capsule students use is an academic application. Besides, we chose an e-capsule application because it has a problem with the fact that all students use it, whether they want to or not, and that they must learn how to use it. It also has a problem with the fact that although the e-capsule has many functions, students are too busy using it for their classes despite exploring other options in the e-capsule. This is stated later because, although we have set up systems and other resources to help students be innovative, they are not using them to their full potential.

1.3 Research Question

- What is the level of innovation towards e-learning adoption among UMK undergraduate students?

- What is the relationship between the relative advantages and E-learning adoption among UMK undergraduate students?

- What is the relationship between the compatibility and E-learning adoption among UMK undergraduate students?

- What is the relationship between complexity and E-learning adoption among UMK undergraduate students?

- What is the relationship between observability and E-learning adoption among UMK undergraduate students?

- What is the relationship between the information quality and E-learning adoption among UMK undergraduate students?

1.4 Research Objectives

- To identify the level of innovation towards e-learning adoption among UMK undergraduate students.

- To determine the relationship between the relative advantages and E-learning adoption among UMK undergraduate students.

- To determine the relationship between the compatibility and E-learning adoption among UMK undergraduate students.

- To examine the relationship between complexity and E-learning adoption among UMK undergraduate students.

- To examine the relationship between observability and E-learning adoption among UMK undergraduate students.

- To examine the relationship between the information quality and E-learning adoption among UMK undergraduate students.

1.5   Scope of the Study

This study was conducted to determine the relationship of diffusion of innovation and e-learning adoption among undergraduate students in higher education. To make our research successful, we have distributed a questionnaire to all students of Universiti Malaysia Kelantan (UMK) Campus Kota, Bachok and Jeli through a google form distributed, mainly using quantitative methodology. We have chosen UMK students to do this research because we are final-year students at UMK, and this will make it easier for us to get the necessary data. In addition, with the research done here, we will make it easier for the superiors to improve the e-capsule system that was introduced in accordance with the wishes of the students through the survey form that was distributed.

1.6   Significance of Study

The purpose of this study is to ascertain the viewpoint of UMK students regarding the innovative learning via e-capsule. Specifically, it will investigate the relationships among relative advantage, compatibility, complexity and observation for students who are directly related to the following purpose. The institution of Higher Learning Education, the governments, researchers and academicians will all gain from this research. The study's findings will be useful to all students so that they are informed about the innovation of UMK students in using the application of e-capsule during their time in college.

a)   The institution of Higher Learning Education

When implementing online learning during a pandemic, educators should plan it to help both students and teachers learn until the process can be completed successfully (Rahayu et al., 2020). To do that, a system that serves as an administrator for learning is required to plan out all

7

of the activities that instructors and students engage in while learning. This study will benefit higher education by assisting in creating a systematic learning system and students with advanced skills, like digital skills, can be earned from universities.

b)   The government

The government can gain the benefit from e-learning by using data analytics to make decisions. E-learning systems produce data that can be used to monitor growth, comprehend how students behave, and pinpoint areas in need of improvement. Governments can utilise this information to make well-informed decisions on how to allocate funds and implement educational programmes. Furthermore, cost efficiency can be preserved by the government. When in comparison to traditional classroom-based learning, e-learning can be more affordable. Governments can reduce the cost of transportation, infrastructure, and other related expenses. This can be especially helpful for nations with little resources.

c)   Researchers and academicians

This research can be used by academicians to explore more broadly the effects of innovation on students based on the e-learning application. E-capsule application has given academics such as lecturers and academicians to allow them to embrace the current reality of hypothesis utilization through the use of media, video, talk, and accessibility. This gives them access to the field of continuous learning. Educators can use everyday creativity to their advantage to successfully integrate stimulating conversations into their homerooms. In this research, it will be helpful for the researchers and academicians to know how the students' satisfaction motivates nnovation with the e-capsule application.

8

1.7   Definition of Term

1.7.1   Relative Advantage

When researching weather forecasters' opinions of cutting edge computer-based training, Surry (1993) discovered that relative advantage, complexity, and compatibility were crucial factors in adoption. In order for an innovation to be effectively adopted, Drucker (1994) underlined simplicity and noted that it must be straightforward and focus on a single topic; alternatively, the intended audience will become confused.

1.7.2   Compatibility

Compatibility is the degree to which an invention is thought to be compatible with the background, values, and needs of possible users (Tanye, 2016). It combines the existing system with the objects that are appropriate for the users' work environments Compatibility is the degree to which an innovation fits with the needs, values, and beliefs of its adopters today. All innovations, regardless of whether they have a significant relative advantage, must be compatible. If the concept appears to be morally incompatible, it won't be accepted. An innovation needs to be deemed socially acceptable in order to be put into practice (Rogers, 1995).

1.7.3   Complexity

The concept of "complexity" refers to how adopters characterise the degree of challenge associated with understanding and using an invention. An innovation's rate of adoption is typically negatively correlated with its perceived complexity. Certain innovations are simple enough for the majority of people in a social system to understand,

and they will be embraced faster than others that might be more complex and take longer to catch on (Rogers, 1995). According to Rogers (2003), complexity is "the extent to which the innovation is viewed as challenging to comprehend and use." The level of innovation complexity is closely correlated with the abilities and work required by an adopter to locate, utilize, and adapt.

1.7.4 Observability

An innovation that provides observable outcomes is called observability. People are more inclined to accept an innovation if they are able to comprehend its benefits. Adoption rate and perceived observability have a positive relationship (Rogers, 1995). The level to which the innovation's effects are apparent to other people is known as observability (Rogers Everett, 1995). Therefore, innovation gets utilized more when it is more apparent to other users.

1.8   Organization of Proposal

Organizing a research proposal is essential to effectively communicating the purpose, methodology, and importance of the research.

Chapter 1: Introduction

This chapter addresses the degree of creativity that undergraduate students in higher education, particularly those at UMK, exhibit when it comes to using e-learning. The background, problem statement, research questions, research objectives, scope of the study, significance, definitions of terms, and proposal structure are all included in this study and will be addressed in this part.

Chapter 2: Literature Review

This chapter will analyze the relationship between variables and will also provide hypothesis statements. This section will conclude with a discussion of the link between the independent and dependent variables.

Chapter 3: Research Methods

The introduction, study design, data collection, and study population will all be covered in this chapter. Next, create tools for the study, sample size, and sampling procedures. This chapter also covers measurement variables, data analysis, and a summary and conclusion. In order for this research to be successful, emphasis needs to be placed on questionnaire preparation and student engagement.

CHAPTER 2: LITERATURE REVIEW

2.1   Introduction

Firstly, the content of this section will cover underpinning theory which is the diffusion of innovation theory on how this research comprehends how innovative ideas, products, or innovations permeate a community or social structure. The process by which new ideas, products, or technological advancements gradually permeate a populace is known as diffusion of innovation This can assist researchers and experts in determining what elements support or impede the adoption of innovations and creating plans to ensure their effective execution. In the case of e-capsule innovation, studying its diffusion among UMK students can provide insights into their understanding and acceptance of this technology Additionally, previous studies will be covered in this chapter, which can aid in presenting a literature review to set the scene for the research, point out knowledge gaps, and show how the study will improve the field's understanding. This enables the researcher to discuss their conclusions and findings in the context of preceding studies and serves to reinforce the arguments, research questions, and aims presented in earlier parts of the research. Lastly, this chapter also discusses the hypothesis statement and conceptual framework. A conceptual framework in research is an essential component that shows the expected relationship between variables and defines the pertinent objectives for the research process. A hypothesis statement, on the other hand, forecasts the relationship between two or more variables based on the proposed research.

2.2   Underpinning Theory

Diffusion of Innovations Theory

The distribution of Innovations (DOI) model is a widely used framework for researching the distribution of new knowledge within networks by (Rogers, 2003). Post-adoption innovation determinants were the primary focus of the study. The process by which a new idea gradually permeates particular social networks over time is known as diffusion. (Rogers, 2003). To put it another way, the diffusion of innovation looks into how, why, and how fast a new thought or technology spreads through a society. Rogers (2003) classifies these aspects of inventions into the following five categories: relative advantage, compatibility, complexity, trialability, and observability. In this study, we used relative advantage, compatibility, observability and information quality as our independent variables.

Diffusion of innovation theory explains how people who use open tools in higher education form their opinions about them (Almohtadi and Aldarabah, 2021). According to Essmiller (2021) the way faculty act and why they are against open educational resources (OER) are subjective and depend on the group and institution they work in. In addition, Roger's innovation theory is typically applied to particular kinds of open resources, such as digital textbooks, MOCC, online databases, Facebook contents, etc. Therefore, the DOI theory was applied to fill in this research gap.

Rogers (2003defines relative advantage as the degree to which a new concept is thought to be better than the one it replaces. An innovation's potential to improve users' efficiency at work is a major factor in deciding whether or not they will adopt it. According to previous research by Kaine et al. (2022), students' intention to use the learning management system (LMS) is significantly

influenced by perceived relative advantages. This implies students think they can accomplish better academically by utilising an online learning platform. Relative advantage is the degree to which people believe the new, innovative solution is superior to the old, traditional one (Jones, 2022). The majority of students at UMK receive their education through the usage of e- learning. The relative advantages can serve as a controlling variable in research of this nature. E- capsule, which was one of the systems for education at UMK, is equipped with all of the features, such as personal information, timetables, and a great deal more. Additionally, E-capsule is much more user-friendly, especially for iphone users, who will have trouble logging in especially for the first time.

According to Jones (2022), compatibility refers to how well learners believe an innovation will fit into their standards, past experiences, and future adopters' preferences. In earlier information system adoption studies, perceived compatibility has often been used as a behavioural intention to use indicator for students (Kaine et al., 2022). This study suggests that since an LMS could enhance their chances for online learning, it is possible to convince students to utilise one. High compatibility facilitates a smoother integration of the innovation into daily routines, reducing resistance and increasing the likelihood of acceptance. This alignment with existing frameworks becomes a critical factor influencing the rate and success of innovation diffusion, as innovations that harmonize with the prevailing social context tend to experience higher adoption rates. Compatibility, therefore, plays a pivotal role in shaping the dynamics of innovation adoption within a undergraduate student in higher education. Even inventions with a significant relative benefit rely heavily on compatibility. If people have trouble reconciling with the concept, they are less likely to adopt the new method. Following the COVID-19 pandemic, students will be required to have a mobile phone or any accessible device in order to access any related educational content from institutions as part of a new online learning system that will be provided to them. One of the

most crucial things to look for is a device that is compatible with the software that will allow the student to access the e-capsule.

Trialability is a critical factor in the diffusion of innovation theory, as it refers to the degree to which an innovation can be tested before adoption (Sridharan, 2023). Individuals that are thinking about implementing the trailable innovation typically see it as having less ambiguity and believe they will benefit from the experience. This concept relates to how a student views the effect of utilising an e-learning system on their capacity to learn in the context of the current study. This study found that when students see their friends utilising and demonstrating interest in an LMS, they are more likely to decide to use the technology themselves (Nkomo et al., 2021). According to earlier research, end users are more likely to use an LMS if they are aware of its functionality (Nguyen, 2021).

Complexity, as defined within Everett Rogers' framework, refers to how challenging or complex an innovation is thought to be to understand and use.. The theory posits that innovations perceived as simpler or less complex are more likely to be adopted by individuals or groups within a social system. High complexity can act as a barrier to adoption, creating hesitation and resistance among potential users. In a research paper exploring this relationship, one might delve into how the level of complexity associated with an innovation impacts its acceptance, emphasizing that innovations designed to be user-friendly and easily understood are more likely to diffuse successfully. Understanding and addressing complexity are crucial components of effective innovation strategies, as simplifying the adoption process can contribute to quick. According to previous studies, end users who think an LMS is complex are less likely to use it. This is due to the fact that the e-capsule has an excessive amount of features and a complex method for accessing

the information. The fact that the system stores every piece of information on the student will make it difficult to use. For instance, if we want to find the results of the exam, the student will first need to travel through the profile, then the exam, and many other steps before leading to the information that the student requires. Because students do not always recall the steps that are required to fulfil any specific information, this will take some time to adapt to the student's needs. UMK needs to provide users with comprehensive instructions for using the e-capsule so that users can have a sense of relief while doing so.

The degree to which "the outcome of the innovation is noticeably by others" is referred to as observability in the definition. It's believed that an adopter's neighbours and acquaintances frequently inquire about their opinions. It is believed that visibility promotes peer discussion of fresh notions. Observability platforms can be of assistance in establishing visibility for software applications and their environments. The theory posits that innovations with clear and observable outcomes facilitate word-of-mouth communication, contributing to the dissemination of positive experiences and, consequently, accelerating the diffusion process. Comprehending the function of observability in the I nnovation adoption framework offers significant perspectives for professionals and policymakeers seeking to encourage the broad adoption of new innovations or methodologies in particular social environments. This can be accomplished through the facilitation of the centralization, enrichment, and data analysis in a way that gives UMK the knowledge required to quickly identify and address issues. This can help to improve the overall quality of the digital educational experience while also lowering the amount of downtime that occurs.

2.3   Previous Studies

In this study, we use relative advantage, compatibility, complexity, observability and information technology as our independent variables while e-learning adoption as our dependent variable. We delve into the intricate relationships among these variables, specifically examining how relative advantage, compatibility, complexity, observability and information technology influence the adoption of innovations within a defined context. Through a comprehensive analysis, we aim to contribute valuable insights that can inform strategies for promoting successful innovation adoption in diverse social and organizational settings

2.3.1   E-learning adoption.

E-learning can take many forms, including digital readers and tablets, educational apps, multimedia presentations, online courses, and video conferencing (Fulton, 2022). A sort of software called an e-learning platform allows instructors to design and deliver online courses (Bachofner, 2022). When it comes to online learning environments, students are more likely to engage if they believe the platform provides benefits over more conventional teaching techniques (Hanafi et al., 2021). The COVID-19 era's adoption of mobile learning in teacher education has also been conceptualised using the diffusion of innovation theory (Fulton, 2022).

The majority of students at UMK made use of the e-learning which is e-capsule to access information regarding their classes, the registration of their subjects, the results of their exams, their own personal information, and more. It was easy to comprehend for the majority of the students and could be utilised for a variety of purposes. The e-capsule is where users may find information such as memos and any announcements that may be

17

made. In addition to this, the e-capsule online platform gives students the ability to see their class schedule from any location.

2.3.2   Relative Advantage.

Relative advantage is one of the five main factors that influence the adoption of an innovation, according to the Diffusion of Innovation Theory. A relative advantage is the extent to which an innovation is viewed as superior to the one it replaces (Ferster, 2021). Profitability, social status, usability, convenience, and customer satisfaction are the measures by which it is evaluated (Bhasin, 2019).

The idea of relative advantage refers to how much an innovation is thought to be superior to the concept it replaces (Bhasin, 2019). By emphasising the new innovation's characteristics and benefits, reducing its cost, enhancing its usability, and guaranteeing that it is compatible with current systems, they can increase the relative advantage of their new inventions. (Faster et al., 2023). Although relative advantages alone cannot ensure rapid spread, it is vital since new products almost always have alternatives. (Wayne et al, 2023).

If potential consumers perceive any benefit from a new technology's relative advantage, they are more likely to embrace it. (Ferster, 2021). Users will stop utilising technology if they have a negative experience with it. Ensuring user interface usability and providing users with the necessary resources to achieve success are crucial aspects to consider. (Jones, 2022). Employees may find it difficult to adjust to change in the beginning if they don't understand the big picture or receive any kind of immediate benefit. To encourage people to embrace new technology, it is crucial to highlight its advantages

18

(Admin, 2023).

2.3.3 Compatibility.

Compatibility is one of the five main factors that influence the adoption of an innovation according to the Diffusion of Innovation (Sridharan, 2023). According to Rogers (2003), The degree to which an innovation aligns with the needs, experiences, and values of its potential customers is referred to as innovation compatibility. To improve compatibility in the diffusion of innovation it's critical to comprehend the traits of the intended audience that either facilitate or impede the innovation's adoption. (Wayne, 2022).

Hanafi et al. (2021) suggest splitting compatibility into technological, organisational, and individual dimensions. Technical difficulties can lead to frustration and disengagement from the online platform (Willard, 2022). This can negatively impact student engagement as students may become disengaged due to the difficulties they face in accessing and using the platform (Liu et al., 2023). A study by Mensah et al. (2022) indicated the level of compatibility and readiness of students and teachers was determined on the deployment of e-learning at higher education institutions. as factors that motivate and hinder e-learning adoption.

To encourage student adoption of online platforms, it is necessary to ensure that the platform is compatible with the students' cultural norms, attitudes, and beliefs, and that it is viewed as valuable and easy to use (Vos and Boonstra, 2022). Over time, the use of intelligent digital tools in the classroom has increased dramatically, opening up new avenues for enhancing instruction. (Mhlongo et al., 2023).

19

2.3.4 Complexity.

The complexity of an innovation is measured by how challenging it is thought to be to learn and apply (Rogers, 2003). Complexity is a key factor that affects the adoption of an innovation (Call and Herber, 2022). The impact of complexity can reverse the impact of extension on the rate of adoption (Kaine and Wright, 2022) .

The level of complexity inherent in e-learning systems significantly influences students' willingness to adopt these technologies. If e-learning tools are perceived as too intricate or challenging to use, students may exhibit resistance to their adoption. Factors such as the ease of access to course materials, navigation within the e-learning platform, and the overall user interface contribute to the perceived complexity of e-learning systems. Complexity can be overwhelming and paralysing, as it may lead to conflicting goals, trade-offs, and constraints (Leadership, 2023).

Simplifying a company's organisation, information technology, products, procedures, and strategy all benefit from less complexity. (Bain, 2023). Reducing the complexity in innovation can also help to reduce distractions and lack of attention, which can be a disadvantage of digitalization (Telefónica, 2023).

2.3.5 Observability.

Observability refers to the degree to which the innovation or its results can be seen by others likely to adopt (Ferster, 2021). Innovations that have high observability are more likely to succeed (Wayne, 2022). Making an innovation more observable can increase its chances of success by allowing potential adopters to see its benefits and encouraging them

to try it out for themselves (Sridharan, 2023).

Adoption rates are lower if potential adopters are not made aware of the invention or do not observe widespread use (Ferster, 2021). According to Hanafi et al (2021) high-observability innovations have a better chance of being adopted. According to Menzli et al (2022) observability is a critical aspect influencing the spread of innovations on digital platforms. Innovations with a higher degree of observability, which is the degree to which potential adopters can see the advantages or effects of utilising an innovation, have a greater chance of being accepted by prospects (Sridharan, 2023).

Observability can increase the chances of innovation adoption because It defines the degree to which potential adopters can see the outcomes or advantages of utilising an innovation (Ferster, 2021). However, organizations may struggle with the adoption of observability due to issues such as lack of expertise and difficulty integrating with existing tools (Korolov, 2022). In the context of this study, observability focuses on how readily students can witness and comprehend the positive outcomes associated with online education. When the benefits of e-learning are easily observable, such as improvements in academic performance, enhanced access to resources, or increased flexibility in learning, it tends to create a positive influence on adoption (Sahin et al., 2022).

2.4   Hypotheses Statement

In this study, we will apply relative advantage, compatibility, complexity, observability and information quality as our independent variables while e-learning adoption as dependent variable. The design of the research hypothesis is based on the work of previous researchers. The hypotheses are:

H1: Relative advantage has a positive relationship on e-learning adoption among undergraduate students in Higher Learning Education.

H2: Compatibility has a positive relationship on e-learning adoption among undergraduate students in Higher Learning Education.

H3: Complexity has a positive relationship on e-learning adoption among undergraduate students in Higher Learning Education.

H4: Observability has a positive relationship on e-learning adoption among undergraduate students in Higher Learning Education.

H5: Information quality has a positive relationship on e-learning adoption among undergraduate students in Higher Learning Education.

22

2.5   Conceptual Framework
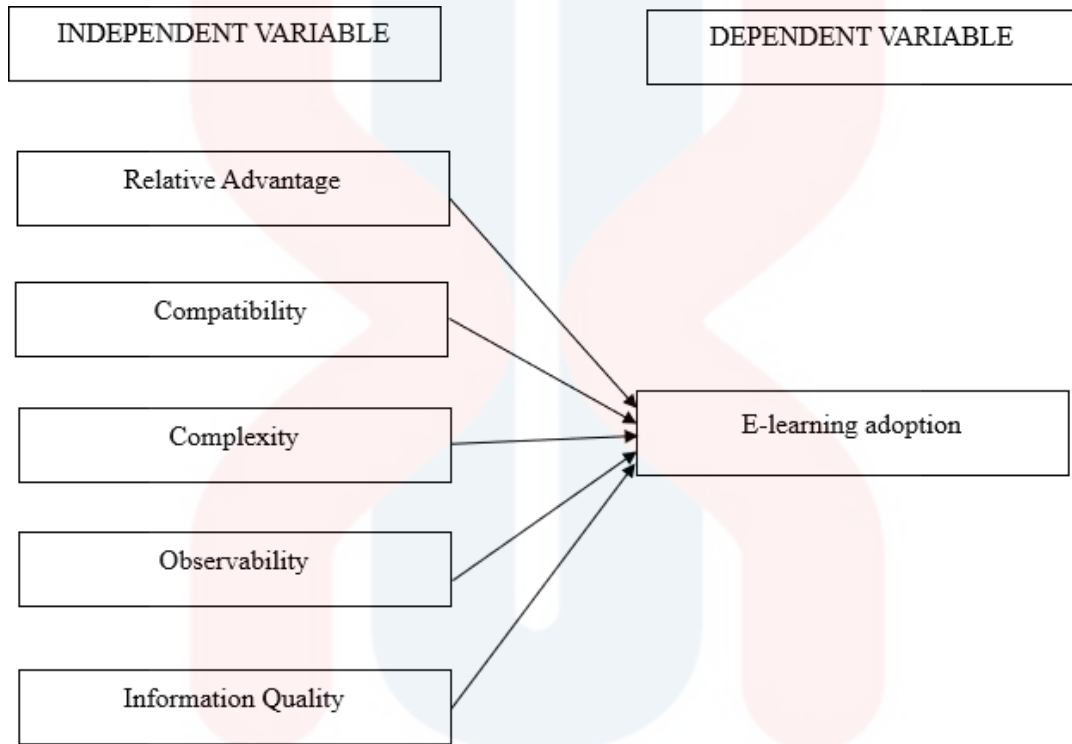
Figure 1: framework for The relationship between the diffusion innovation and e-learning
towards students development.

2.6   Summary/Conclusions.

In summary, this chapter discussed the variables like relative advantage, compatibility, complexity, observability, and information quality in the context of e-learning adoption among undergraduates student in higher education. It uses the Diffusion of Innovations Theory to understand how new ideas, such as e-learning, spread through society. The study establishes hypotheses based on these variables and highlights their positive relationship with e-learning adoption in Higher Education. The theory is also be applied to mobile-learning adoption during the COVID-19 era. The majority of students at UMK made use of the e-capsule to access information regarding their classes, the registration of their subjects, the results of their exams, and their own personal information. A number of criteria, including relative advantage, compatibility, complexity, observability, and information quality, have a beneficial impact on the adoption of e-learning among university students. Overall, the review underscores how these elements influence students' intention to use e-learning systems, improving the digital educational experience in higher education.

CHAPTER 3: RESEARCH METHODS

3.1 Introduction

This chapter provides an overview of the steps from the research perspective of UMK students' understanding of e-capsule platform. It delves into the research methodology, elucidating the data collection and analysis methodologies, aligning with the study's objectives. It includes details regarding the study population, sample size, sampling methodology, measurement of the variables, research equipment development, data collection method, sample size, and data analysis procedure.

3.2 Research Design

This study used descriptive research to investigate UMK students. This research employs a quantitative study design to see the correlation between the independent variable (relative advantage, compatibility, complexity, observability and information quality) and the dependent variable (e-learning adoption) to address interconnected issues by collecting data through questionnaires. The questionnaire is used to collect data since it is a relatively fast and practical approach to getting quick information from UMK students. In addition, large-scale surveys using questionnaires help in statistic generation and data collection (zhang, Y., Long 2022).

3.3 Research Instrument Development

This study collected data using a questionnaire consisting of multiple questions and activities specifically designed to gather information from UMK Students. The study encompasses three parts denoted A, B, and C. Part A includes demographic questions. Part B focuses on independent variables related to barriers, utilizing a four-point scale to assess respondents' agreement or disagreement. Part C is dedicated to the dependent variable, E-learning adoption.

The questionnaire was chosen as the data source for this study over primary data since it could be formed effectively and quickly. Furthermore, the Likert scale will be used in this study, with five possible responses provided by respondents in the specified categories, starting from 'strongly disagree' to 'strongly agree'. The respondent's possible response is represented by a number such as strongly disagree = 1, disagree = 2, neutral = 3, agree = 4 and strongly agree =5.

Table 3.3 Research Instrument

Part	Variable	Items	Author
A	Demographic	5	(Leila Jamel Menzli et al., 2022)
B	Relative Advance	4	(Nazari et al., 2013; Schuwer and Janssen, 2018; Wang and Wang, 2016; Leila Jamel Menzli et al., 2022)
	Compatibility	4	(Nazari et al., 2013; Schuwer and Janssen, 2018; Wang and Wang, 2016;Leila Jamel Menzli et al., 2022)
	Complexity	4	(Nazari et al., 2013; Schuwer and Janssen, 2018; Wang and Wang, 2016;Leila Jamel Menzli et al., 2022)

	Observability	4	((Nazari et al., 2013; Schuwer and Janssen, 2018; Leila Jamel Menzli et al., 2022)
	Information Quality	4	(Azni Suhaily Samsur et el., 2022)
C	E-capsule innovative student	4	(Azni Suhaily Samsur et el., 2022)

3.4 Data Collection Methods

A questionnaire was utilised in this study's quantitative data collection procedure.. A Google Forms questionnaire shared the survey to collect data from University Malaysia Kelantan (UMK) students. The Google forms are spread to students using social media platforms such as WhatsApp. Respondents can answer the questionnaire using an e-capsule platform in their study life. It is to ensure that the data collected is authentic and to the original purpose of the research, which is to study the relationship between diffusion innovation and e-learning toward student development.

3.5 Study Population

This study targets students from three UMK branches: Kota, Bachok and Jeli. The respondents consisted of UMK students, but the demographic background consisted of students from various states in Malaysia. We target UMK students because we study the e-capsule platform that is only used by UMK students. According to the UMK administration, the number of UMK students is currently around 12,699.

3.6   Sample Size

In this study, we calculated the sample size used on the number of students at Universiti Malaysia Kelantan. Therefore, according to Krejcie & Morgan's (1970), if population above 10,000 the sample saiz will be around 370. Therefore, this study's target group is 371 individuals who will participate in the survey. Each of those 371 respondents was given a questionnaire to fill out as the data we wish to collect to obtain information. This will allow us to streamline and simplify the questionnaire distribution process.

Figure 3.6: Krejcie & Morgon 1970

Table 3.1

Table for Determining Sample Size of a Known Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Note: N is Population Size; S is Sample Size   Source: Krejcie & Morgan, 1970

3.7 Sampling Techniques

In this study, convenience sampling from non-probability sampling was used. We select a convenience sample because each individual has their own opinion. Convenience sampling is often used when time and resources are limited and obtaining a random or representative sample is not feasible (Emerson, 2018). Using convenience sampling allows for quick and easy data collection, as participants are selected based on availability and accessibility.

3.8 Measurement Of The Variables

3.8.1 Nomical Scale

The nominal scale represents the fundamental level of measurement, which involves classifying variables into distinct categories or groups, with each variable exclusively belonging to one category. For example, in a race question, respondents might choose from categories like "Malay," "Chinese," "Indian," and so on. The variable "race" is considered nominal because these categories are named options without any inherent numerical value or order. Data obtained at the nominal scale can be analyzed using frequency distributions, identifying the mode, and conducting chi-square tests.

3.8.2 Interval scale

The interval scale of measurement represents a more advanced size that not only categorizes variables but also assigns numerical values to indicate the magnitude or intervals between categories. The Likert scale, which is frequently used in surveys to rate opinions, serves as an example. On a scale that normally goes from "Strongly Disagree" to "Strongly Agree," respondents are asked to indicate how much they agree or disagree with the assertions. This scale employs numerical values such as 1, 2, 3, 4, and 5 to quantify the different levels of agreement.

Interval scale data can be analyzed using metrics like the mean, standard deviation, and parametric statistical methods such as t-tests and ANOVA.

3.9 Procedure For Data Analysis

3.9.1 Data Processes and Data Analysis

Upon data collection, the information was processed using the Statistical Package for Social Sciences (SPSS 29), a software program widely adopted by researchers to conduct complex quantitative analyses. SPSS features a user-friendly interface that accommodates a wide array of statistical procedures. It is equipped to handle numerical and categorical data, offering diverse graphical and tabular outputs to aid data comprehension. SPSS is instrumental in performing analysis and hypothesis testing on the collected data, utilizing methods such as descriptive statistics and standard statistical analyses, including reliability tests, and spearman correlation coefficients.

3.9.2 Descriptive analysis

Descriptive analysis entails presenting and summarizing the fundamental data obtained in a survey. This study will employ univariate analysis for illustrative purposes, focusing on distribution, central tendency, and dispersion. The distribution provides a summary of individual values or ranges for various variables. For example, the data will encompass variables such as age, gender, and race, and collecting this data will enable us to calculate the frequency for each variable. These frequencies will be presented and summarized as percentage values. Central tendency estimates the midpoint of a value distribution with three primary measures: mean, median, and mode. Lastly, dispersion refers to the spread of values around the central tendency. To obtain a more precise and detailed assessment of dispersion, we will use the standard deviation, which is

30

particularly useful for identifying outliers that can significantly impact the range.

3.9.3 Normality Test

Researchers use Kolmogorov Smirnov and Shapiro-Wilk to test normality in this research. Kolmogorov Smirnov and Shapiro-Wilk refer focused on the obtained p-values and sample size. According to Yang and Berdine (2021), the Kolmogorov-Smirnov test is employed for (N>50), the Shapiro-Wilk test is a more suitable procedure for smaller sample sizes (N<50), while it can also handle higher sample sizes. The results of the two tests listed above guarantee that the data are from a regularly distributed population. The null hypothesis is accepted, and the data are referred to as normally distributed when $P > 0.05$. Therefore, by analysing the Kolmogorov Smirnov and Shapiro-Wilk values, The validity and accuracy of the inferential can only be guaranteed if researchers can ascertain if the data has a normal distribution or not.

3.9.4   Reliability test

Reliability tests involve statistical analyses that assess the consistency and stability of a measurement or instrument over various time frames or conditions. These tests aim to evaluate the accuracy of a measuring tool. The reliability of a measurement refers to its consistency and dependability, and a reliable measurement should yield similar results when replicated. Reliability is crucial in research and assessment to ensure data accuracy and consistency. In the context of our study, we designed a questionnaire to gauge UMK students' perspectives on e-learning adoption. To determine whether the items in this questionnaire effectively measure the same underlying variable and support the use of a Likert scale, we computed Cronbach's alpha using a sample of responses . Cronbach's Alpha, for example, is a reliability coefficient that examines how well items are related. Cronbach's alpha is considered good between 0.7 and 0.8 and excellent if it is between

0.8 and 0.9 (Mumtaz & Sabir, 2022).

Table 3.9.4: Scale of Cronbach's Alpha

Cronbach's alpha	Internal Consistency
a ≥ 0.9	Excellent
0.9 ≥ a ≥ 0.8	Good
0.8 ≥ a ≥ 0.7	Acceptable
0.7 ≥ a ≥ 0.6	Questionable
0.6 ≥ a ≥ 0.5	Poor
0.5 ≥ a	Unacceptable

3.9.5 Spearman Correlation

Table 3.9.5: Correlation Coefficient

Size of Correlation	Strength of correlation
0.90 to 1.00 / - 0.90 to - 1.00	Very high positive / negative correlation
0.70 to 0.90 / - 0.70 to - 0.90	High positive / negative correlation
0.50 to 0.70 / - 0.50 to - 0.70	Moderate positive / negative correlation
0.30 to 0.50 / - 0.30 to - 0.50	Low positive / negative correlation
0.00 to 0.30 / - 0.00 to - 0.30	Little if any correlation

Researchers used Spearman's correlation analysis to find out how the dependent and independent factors were connected. Spearman's similarity can be found with the normalcy test (Wang et al., 2023). The purpose of this analysis is to help the researcher decide which hypothesis is accepted and which is rejected. For example, the Spearman correlation is used to test four variables. Therefore, the dependent variable in this study is e-learning adoption (DV). On the other hand, relative advantage, compatibility, complexity, observability and information quality are all independent variables (IV). Consequently, the researcher used Spearman's correlation analysis to investigate the many correlations and important relationships among the variables in this study.

3.10 Summary / Conclusion

In summary, this chapter discussed the research method for e-learning adoption. The quantitative analysis approach employed for this inquiry is discussed in this chapter. The study's purpose, sample identification, instruments (questionnaires), and data analysis procedure were all part of the research on this topic. The quantitative method of data collection, including questionnaires, was thoroughly studied. Convenience sampling can enable the search for responses from various sectors of respondents and provide a broad perspective on the UMK students' understanding of e-capsule innovation and its relationship with the independent variable. The research question contributes to the definition of the problem statement, which emerges throughout the study. This conclusion is based on the study question and the data obtained.

CHAPTER 4

DATA ANALYSIS AND FINDINGS

4.1   Introduction

We have discussed the part of preliminary analysis which is the pilot test in this chapter. 30 students' data were used in the pilot test. This study's data analysis focuses on examining e-capsule innovative students at UMK. The purpose of the study is to ascertain how UMK students perceive and comprehend e capsule innovation. Researchers completed questionnaires, which were shared on the google form via link to every UMK student. The questionnaire was completed by 371 students in total, and the results provided the foundation for this study's data analysis. Numerous analyses, including demographic analysis, descriptive analysis, frequencies analysis, reliability analysis, normality analysis, R-square analysis and correlation test, will be performed on those 371 data values. To ascertain if the hypothesis is accepted or rejected, this chapter also includes hypothesis testing.

4.2   Preliminary Analysis (Pilot Test)

A pilot experiment, study, test, or project is a small-scale preliminary examination that is conducted prior to a larger-scale research project in order to evaluate its viability, budget, timeliness, potential negative results, and study design. Our ability to detect questionnaire problems that can lead to skewed answers or questions that participants find unclear is enhanced by pretesting and piloting. In this study, the reliability test was conducted with 30 target respondents before being allocated to 371 target respondents.

4.3   Demographic profile of respondent

Researchers have analyzed frequency data to determine the respondents' demographic profile. There are a total 7 items in the demographic part, which are gender, age, race, campus, years of study, frequency of using e-capsule application and functions of always used in e-capsule.

4.3.1   Gender

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	168	45.3	45.3	45.3
	Male	203	54.7	54.7	100.0
	Total	371	100.0	100.0	

Table 4.3.1 Frequency output for gender

1. Gender (Jantina)
371 responses
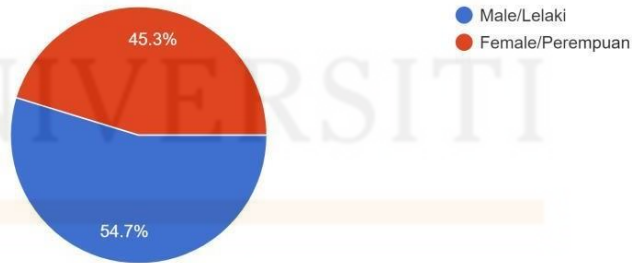
Figure 4.3.1: Percentage of respondents according to gender

Figure above shows the analysis of respondents in terms of gender. Out of 371 respondents of the study, there are 54.7% (203 people) of male students and 45.3% (168

36

people) female students involved in this study. It means that the male respondent is 9.4% more compared to the female respondent. Based on the data we gain, the mostly students who help the research to fill in the google form is male.

4.3.2 Age

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 - 22 Years	135	36.4	36.4	36.4
	23 - 27 Years	211	56.9	56.9	93.3
	28 - 32Years	24	6.5	6.5	99.7
	33 Years and Above	1	.3	.3	100.0
	Total	371	100.0	100.0	

Table 4.3.2 Frequency output for age
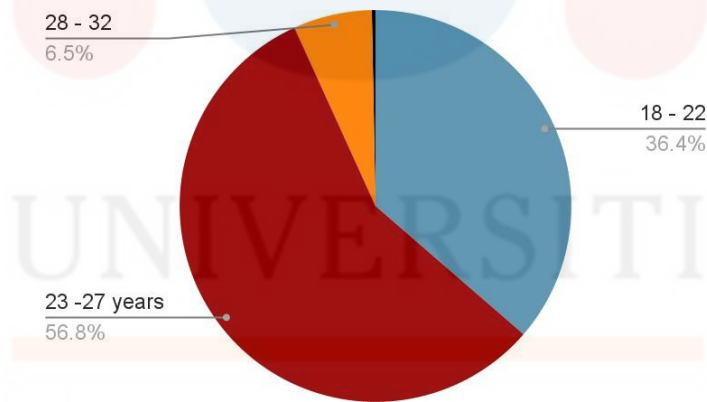
Figure 4.3.2: Percentage of respondents according to age

The table 4.3 above shows the analysis of respondents in terms of age. It has been divided into four groups, which are 18 - 22 years, 23 - 27 years, 28 - 32 years and 33 years

and above. Since most Universiti Malaysia Kelantan undergraduate students enroll at the age of 20 and graduate at the age of 24, the researcher assigned age groups based on the standard of 20 to 24 years old. From the output of the table, 56.9% (211 people) of respondents are in the age group of 23 - 27 years. This age group get the highest percentage is because this main social media group in this researcher is in group of year 4. Most of the students in the age of 23 - 27 years are in year 4 students. The following age group is in the age of 18 - 22 years, which is 36.4% of 371 respondents, which is 135 people. Only 24 people (6.5 %) of students who are 28 - 32 years have become respondents to this research. The table shows none of the people in the age of 33 years and above.

4.3.3 Races

Race

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chinese	107	28.8	28.8	28.8
	Indian	65	17.5	17.5	46.4
	Malay	175	47.2	47.2	93.5
	Others	24	6.5	6.5	100.0
	Total	371	100.0	100.0	

Table 4.3.3 Frequency output for races

3. Race (Bangsa)
371 responses

- Malay/Melayu
- Chinese/Cina
- Indian/India
- Others/Lain-lain

47.2%
28.8%
17.5%
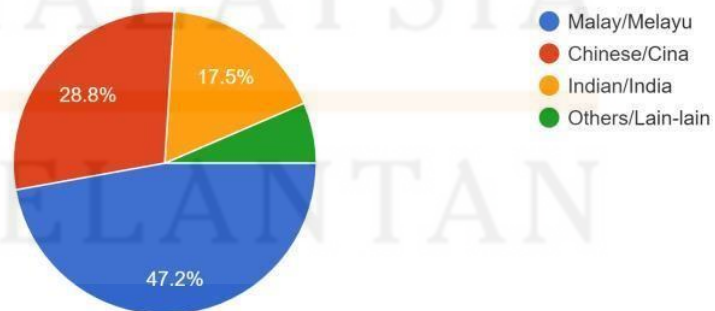
Figure 4.3.3: Percentage of respondents according to races

There are a variety of racial backgrounds, religions, and races represented in Malaysia's population. The Malays, Chinese, and Indians make up the three main racial groups in Malaysia. Based on the figure above, most of the respondents are Malay, it accounted for 47.2%, which is 175 people from overall 371 respondents. The second main race is Chinese, which is 107 people (28.8%), followed by Indians, 17.5% (65 people). This is because most of the community in UMK is Malay, the second highest community is Chinese whereas the least community is Indian groups. For a group of others in terms of race it is 6.5% which is 24 people.

4.3.4 Campus

Campus

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Campus Bachok	104	28.0	28.0	28.0
	Campus Jeli	85	22.9	22.9	50.9
	Campus Kota	182	49.1	49.1	100.0
	Total	371	100.0	100.0	

Table 4.3.4 Frequency output for campus
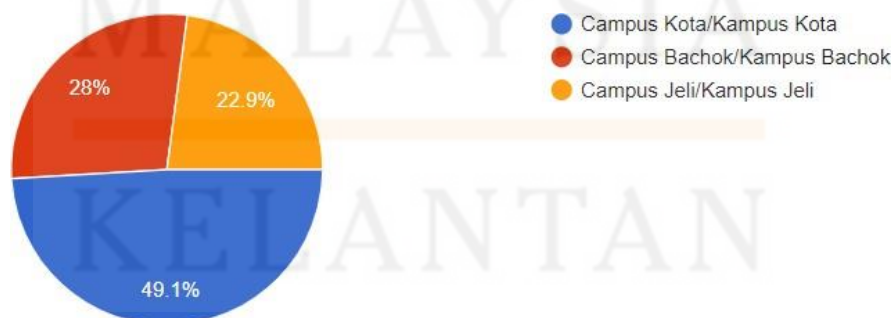
Figure 4.3.4: Percentage of respondents according to campus

39

UMK has three campuses which are its main campus located in Bachok, a second campus situated in Jeli and its first campus situated in Pengkalan Chepa, Kota Bharu. Based on the figure above, most of the respondents are in Campus Kota, which is it accounted for 49.1%, which is 182 people from overall 371 respondents. The second main campus is in Campus Bachok which is 104 people (28%), followed by Campus Jeli which is 22.9% (85 people). This is because the researchers are mostly in 35 Campus Kota, therefore the respondents which has the highest number of respondents involve in this survey are the respondents in Campus Kota

4.3.5 Years of study

Years of study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Year 1	68	18.3	18.3	18.3
	Year 2	87	23.5	23.5	41.8
	Year 3	85	22.9	22.9	64.7
	Year 4	131	35.3	35.3	100.0
	Total	371	100.0	100.0	

Table 4.3.5 Frequency output for years of study

- Year 1/Tahun 1
- Year 2/Tahun 2
- Year 3/Tahun 3
- Year 4/ Tahun 4
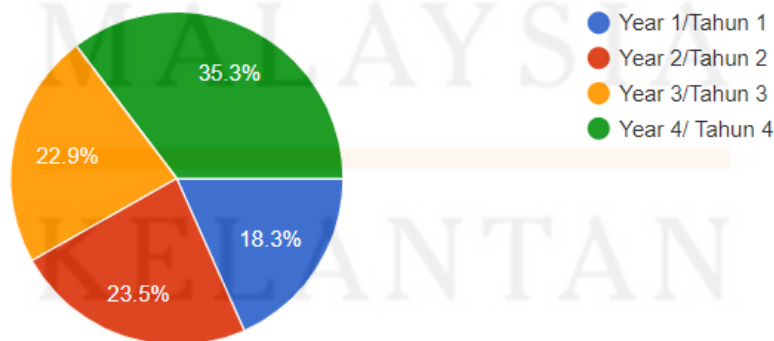
Figure 4.3.5: Percentage of respondents according to years of study

The figure above shows the percentage of years of study among the respondents. The highest percentage for years of study in this figure is year 4 which is 36 35.3% (131 people) followed by year 2 which is 87 people out of 371 respondents at 23.5%. It showed that year 4 students are more active in answering the questionnaire that the researcher assigned. The third least percentage of respondents according to years of study is year 3 which is 22.9% (85 people) whereas the least percentage is year 1 which is only 68 people out of 371 respondents at 18.3%.

4.3.6   Frequency of using e-capsule application

Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 - 3 times per month	80	21.6	21.6	21.6
	4 - 5 times per month	128	34.5	34.5	56.1
	5 times and above per month	127	34.2	34.2	90.3
	Once per month	36	9.7	9.7	100.0
	Total	371	100.0	100.0	

Table 4.3.6 Frequency output for frequency of using e-capsule application
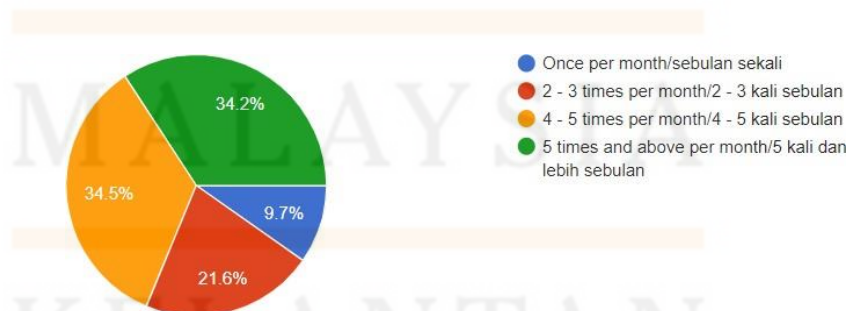
Figure 4.3.6: Percentage of respondents according to frequency of using e

capsule application

41

The table above shows the percentage of respondents according to frequency of using e-capsule applications. The results show that the most frequent respondent of using an e-capsule application is 4 - 5 times per month with 34.5% (128 people) followed by 5 times and above with 34.2% (127 people). Then, it follows by 2 - 3 times per month and once per month which are 21.6% (80 people) and 9.7% (36 people) respectively. This implies that the UMK students have utilized e-capsule applications to their fullest potential as they are frequently utilized.

4.3.7 Functions of always used in e-capsule

Function

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Check date and result exam	86	23.2	23.2	23.2
	Check financial debt	34	9.2	9.2	32.3
	Check the lecture schedule	132	35.6	35.6	67.9
	Others	47	12.7	12.7	80.6
	Register course	72	19.4	19.4	100.0
	Total	371	100.0	100.0	

Table 4.3.7 Frequency output for functions of always used in e-capsule
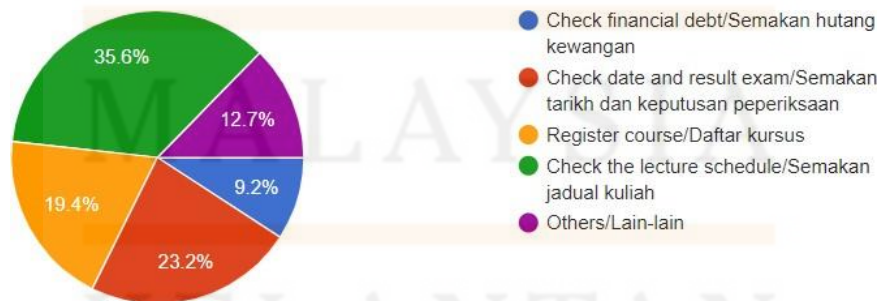
Figure 4.3.7: Percentage of respondents according to functions of always used

in e-capsule

42

The five categories of functions that are consistently utilized in e-capsule are financial debt check, exam date and result check, course registration, lecture schedule check, and others. According to the above figure, 35.6% of the 371 respondents, or 132 individuals, indicated that their primary use of the e-capsule application was to check the lecture schedule. Checking the date and exam results is the second most popular function in the e-capsule, as reported by 86 respondents (23.2%), followed by registering for a course (19.4%) (72 people). Of the 371 respondents, 47 fell into the category of others, and 34 people (9.2%) were in the category of checking financial debt. This result indicates that the majority of UMK students use the e-capsule application for their studies, as indicated by the percentage of respondents who said they always use the e-capsule to check the lecture schedule, which is the highest percentage of respondents across all five categories.

4.4   Descriptive Analysis

Table 4.4: Descriptive Statistical Analysis

Variables	Mean	Std. Deviation
Relative Advantage (IV)	4.3996	.68022
Compatibility (IV)	4.3349	.58025
Complexity (IV)	4.3302	.58455
Observability (IV)	4.2767	.55997
Information quality (IV)	4.3396	.54266
E-learning adoption (DV)	4.3396	.54933

Table 4.4 presents the mean and standard deviation for each variable, including independent and dependent variables. The mean for the dependent variable, "E-learning adoption", is reported as (4.3396). In comparison, the mean values for the independent variables are as follows: Relative advantage (4.3996), Compatibility (4.3349), Complexity (4.3302), Observability (4.2767), and Information quality (4.3396).

44

4.5 VALIDITY AND RELIABILITY TEST

Table 4.5 shows the reliability test for all variables in this study.

Table 4.5: Reliability Test

Variables	Cronbach's Alpha	No of Items	Level of Reliability
Relative Advantage (IV)	.905	4	Excellent
Compatibility (IV)	.835	4	Good
Complexity (IV)	.887	4	Good
Observability (IV)	.841	4	Good
Information quality (IV)	.881	4	Good
E-learning adoption (DV)	.843	3	Good

The value of Cronbach's alpha obtained for the variable is above 0.7, which ranged from 0.835 to 0.905. The substantial value of Cronbach's alpha for the variable is Relative advantage (0.905). Then, followed by Complexity (0.887), Information quality (0.881), E-learning adoption (0.843), Observability (0.841) and Compatibility (0.835). The Cronbach's alpha value of 0,7 and above is an indicator of the internal consistency of the scale (Sürücü, L. & Maslakçı, A. 2020). Therefore, this indicated that the measurements for all variables for the test are reliable in this study.

4.6 NORMALITY TEST

The normality tests shown by the SPSS software are the Kolmogorov-Smirnov test and the Shapiro-Wilk test. Since the total sample is 371 respondents from the innovation and e-learning toward students development, the researcher used the Kolmogorov- Smirnov data normality test. As a rule, the study concludes that the variable is not normally distributed if it is less than 0.05.

Table 4.6: Test of Normality

Raviables	Kolmogorov-Smirnov			Shapiro-Wilk		
	statistic	df	Sig.	statistic	df	Sig.
Relative Advantage (IV)	.206	371	.000	.710	371	.000
Compatibility (IV)	.153	371	.000	.851	371	.000

Complexity (IV)	.181	371	.000	.837	371	.000
Observability (IV)	.149	371	.000	.854	371	.000
Information quality (IV)	.212	371	.000	.799	371	.000
E-learning adoption (DV)	.206	371	.000	.802	371	.000

Table 4.6 shows the normality test results using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The analysis results show that the normality table test for all dependent and independent variables is significant because the p-value is 0.000. According to Yang and Berdine (2021), this means that the data does not follow a normal distribution because the value of 0.000 is smaller than 0.05 ($p<0.05$).

4.7 Hypothesis Testing

4.7.1 Spearman's correlation coefficient

Correlation Coefficient Range (r)	The Strength of the Relationship
0.90 to 1.00 / - 0.90 to - 1.00	Very high positive / negative correlation

47

0.70 to 0.90 / - 0.70 to - 0.90	High positive / negative correlation
0.50 to 0.70 / - 0.50 to - 0.70	Moderate positive / negative correlation
0.30 to 0.50 / - 0.30 to - 0.50	Low positive / negative correlation
0.00 to 0.30 / - 0.00 to - 0.30	Little if any correlation

Table 4.7.1: Rules of Thumb about Correlation Coefficient

The correlation between the independent variables (relative advantage, compatibility, complexity, observability and information quality) and the dependent variables was analysed using Spearman Correlation Analysis (e-learning adoption). The Spearman correlation coefficient lists a dataset's attributes as a descriptive statistic. It describes in detail the direction and intensity of a linear relationship between two quantitative variables (Shaun Turney, 2022). Furthermore, the test statistic that quantifies the statistical relationship, or association, between two continuous variables is Spearman's correlation coefficient. Because it is based on the method of covariance, it is regarded as the best way to measure the association between variables of interest. It provides details on the direction of the relationship as well as the strength of the association, or correlation. The analysis also serves to determine whether or not the hypothesis can be accepted.

4.7.2 The relationship between independent variable and dependent variable

Correlations

Correlations

			MEAN_IV4	MEAN_IV5	MEAN_DV
Spearman's rho	MEAN_IV1	Correlation Coefficient	.371**	.392**	.462**
		Sig. (2-tailed)	.000	.000	.000
		N	371	371	371
	MEAN_IV2	Correlation Coefficient	.642**	.547**	.631**
		Sig. (2-tailed)	.000	.000	.000
		N	371	371	371
	MEAN_IV3	Correlation Coefficient	.719**	.686**	.669**
		Sig. (2-tailed)	.000	.000	.000
		N	371	371	371
	MEAN_IV4	Correlation Coefficient	1.000	.661**	.598**
		Sig. (2-tailed)	.	.000	.000
		N	371	371	371
	MEAN_IV5	Correlation Coefficient	.661**	1.000	.682**
		Sig. (2-tailed)	.000	.	.000
		N	371	371	371
	MEAN_DV	Correlation Coefficient	.598**	.682**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	371	371	371

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.7.2: Spearman Correlation Analysis between independent and dependent variable

A full breakdown of Spearman's findings may be seen in Table 4.13. In this study, our desire is to examine the relationship between relative advantage, compatibility, complexity, observability and information quality as independent variables and dependent variables of interest as measured by correlation (e-learning adoption).

4.7.3 The relationship between relative advantage and e-learning adoption among students in Higher Learning Education

H1: There is a significant relationship between relative advantage and e-learning adoption among students in Higher Learning Education.

Correlation			
		E-learning adoption	Relative advantage
E-learning adoption	Correlation Coefficient	1	.462**
	Sig. (2-tailed)		.000
	N	371	371
Relative advantage	Correlation Coefficient	.462**	
	Sig. (2-tailed)	.000	
	N	371	371

**Correlation is significant at the 0.01 level (2-tailed).

Table 4.7.3: Correlation between relative advantage towards e-learning adoption

The table above shows the correlation between relative advantage towards e-learning adoption among students in Higher Education. A Spearman correlation coefficient was computed to assess the relationship between relative advantage towards e-learning adoption. There was a medium positive correlation between the two variables, r=0.462, n=371, p=0.001. There was a statistical correlation between relative advantage towards e-learning adoption. It was a medium and positive correlation. Therefore, the hypothesis H1 is accepted.

4.7.4 The relationship between compatibility and e-learning adoption among students in Higher Learning Education

H2: There is a significant relationship between compatibility and e-learning adoption among students in Higher Learning Education.

Correlation			
		E-learning adoption	Compatibility
E-learning adoption	Correlation Coefficient	1	.631**
	Sig. (2-tailed)		.000

	N	371	371
Compatibility	**Correlation Coefficient**	.462**	
	Sig. (2-tailed)	**.000**	
	N	371	371
**Correlation is significant at the 0.01 level (2-tailed).			

Table 4.7.4: Correlation between compatibility towards e-learning adoption

The table above shows the relationship between compatibility and e-learning adoption among students in Higher Education. The significant positive value of the correlation coefficient (r=0.631) indicates a strong connection between the two variables. Based on the result of the significant value P<0.01, this shows that there is a relationship between compatibility and e-learning adoption among students in Higher Education. As this is occurring, we can see that both variables are extremely significant at the .000level. Hence, the hypothesis H2 is accepted.

52

4.7.5 The relationship between complexity and e-learning adoption among students in Higher Learning Education

H3: There is a significant relationship between complexity and e-learning adoption among students in Higher Learning Education.

Correlation			
		E-learning adoption	**Complexity**
	Correlation Coefficient	1	**.669****

		E-learning adoption	**Complexity**
E-learning adoption	**Sig. (2-tailed)**		**.000**
	N	371	371
Complexity	**Correlation Coefficient**	**.669****	
	Sig. (2-tailed)	**.000**	
	N	371	371

**Correlation is significant at the 0.01 level (2-tailed).

Table 4.7.5: Correlation between complexity towards e-learning adoption

The table above shows the correlation between complexity towards e-learning adoption among students in Higher Education. A Spearman correlation coefficient was computed to assess the relationship between complexity towards e-learning adoption. There was a positive correlation between the two variables, r=0.669, n=371, p=0.001. There was a statically correlation between complexity towards e-learning adoption. It was a positive correlation. Therefore, the hypothesis H3 is accepted.

4.7.6 The relationship between observability and e-learning adoption among students in Higher Learning Education

H4: There is a significant relationship between observability and e-learning adoption among students in Higher Learning Education.

Correlation			
		E-learning adoption	**Observability**

54

E-learning adoption	**Correlation Coefficient**	**1**	**.598****
	Sig. (2-tailed)		**.000**
	N	**371**	**371**
Observability	**Correlation Coefficient**	**.598****	
	Sig. (2-tailed)	**.000**	
	N	**371**	**371**
**Correlation is significant at the 0.01 level (2-tailed).			

Table 4.7.6: Correlation between observability towards e-learning adoption

The table above shows the relationship between observability and e-learning adoption among students in Higher Education. The significant positive value of the correlation coefficient (r=0.598) indicates a strong connection between the two variables. Based on the result of the significant value P<0.01, this shows that there is a relationship between observability and e-learning adoption among students in Higher Education. As this is occurring, the both variables are extremely significant at the .000level. Hence, the hypothesis H4 is accepted.

4.7.7 The relationship between information quality and e-learning adoption among students in Higher Learning Education

H5: There is a significant relationship between information quality and e-learning adoption among students in Higher Learning Education.

Correlation		E-learning adoption	Information quality
E-learning adoption	Correlation Coefficient	1	.682**
	Sig. (2-tailed)		.000
	N	371	371
Information quality	Correlation Coefficient	.682**	
	Sig. (2-tailed)	.000	

	N	**371**	**371**
**Correlation is significant at the 0.01 level (2-tailed).			

Table 4.7.7: Correlation between information quality towards e-learning adoption

The table above shows the relationship between information quality and e-learning adoption among students in Higher Education. The significant positive value of the correlation coefficient (r=0.682) indicates a strong connection between the two variables. Based on the result of the significant value P<0.01, this shows that there is a relationship between information quality and e-learning adoption among students in Higher Education. As this is occurring, the both variables are extremely significant at the .000level. Hence, the hypothesis H5 is accepted.

UNIVERSITI

MALAYSIA

KELANTAN

4.8   Summary / Conclusions

The researcher provides an explanation of the specifics of data analysis and findings for subtopics such as preliminary analysis, respondent demographic profile, descriptive analysis, validity and reliability test, and hypothesis testing in this chapter. The data analysis results were carried out by the researcher after scrutinising the allocated data from the respondents' questionnaires. A pilot test was used to gather the research's initial results. Then, frequency analysis was used to explain the respondents' demographic characteristics. A set of questionnaires were shared by the researcher with 371 respondents via a link to a Google Form. Cronbach's Alpha was employed to examine the validity and reliability test in this study. The link between the independent and dependent variables was lastly determined using the Spearman coefficient correlation.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter will discuss more about the discussion and the conclusions made referring to the data analysis in Chapter 4. This chapter also discusses the results of the analysis of dependent variables (e-learning adoption) and independent variables (relative advantage, compatibility, complexity, observability, and information quality). This chapter will also state the main findings to answer the research question and research objective, which is the relationship of diffusion and e-learning to the development of students at Universiti Malaysia Kelantan. In addition, the acceptance and rejection of the hypothesis are also stated, and based on the findings of this chapter, recommendations for future research are also stated. As a result of the data analysis made, it serves as the basis for the findings achieved in this study.

5.2 Key Findings

Table 5.1 shows all the alternative hypotheses accepted in this study as well as the results. To what extent independent variables such as relative advantage, compatibility, complexity, observability and information quality have influenced the perspective of UMK students' understanding of e-capsule innovation. After conducting a survey and getting the results from it through chapter 4, the researcher can conclude that independent variables such as relative advantage, compatibility, complexity, observability and information quality have contributed to the level of awareness of innovation and innovation towards the use of e-learning among undergraduate students in Higher Education, especially to UMK students.

Table 5.1: Finding of The Result

HYPOTHESIS	RESULTS	FINDINGS OF THE DATA ANALYSIS
H1: There is a significant relationship between relative advantage and e-learning adoption among students in Higher Education.	r = 0.462 p = 0.000	H1 is accepted
H2: There is a significant relationship between compatibility and e-learning adoption among students in Higher Education	r = 0.631 p = 0.000	H2 is accepted
H3: There is a significant relationship between complexity and e-learning adoption among students in Higher Education.	r = 0.598 p = 0.000	H3 is accepted

H4: There is a significant relationship between observability and e-learning adoption among students in Higher Education.	r = 0.598 p = 0.000	H4 is accepted

H5: There is a significant relationship between information quality and e-learning adoption among students in Higher Education.	r = 0.682 p = 0.000	H5 is accepted

5.3 Discussion for Hypothesis

Table 5.3: Table of multiple linear regression after cleaning item (SPSS)

Independent Variable	Value Beta	P-Value	Significant
Relative Advantage	0.462	0.000	Supported
Compatibility	0.631	0.000	Supported
Complexity	0.669	0.000	Supported

61

			Supported
Observability	0.598	0.000	
Information Quality	0.682	0.000	Supported

The first hypothesis of this study is to identify the relationship between relative advantage and e-learning adoption. There is positive relationship between the relative advantage and e-learning adoption of the consequences and acceptable significant which beta value at 0.462, where p-value = 0.000 less than 0.05. This is because with the e-capsule, student can find hypertext and documents that are connected and can be done through the use of online databases. This study supported by Faster et al., (2023) that indicated that they can enhance the relative advantage of their new innovations by highlighting the benefits and features of the new innovation, reducing the cost of the new innovation, improving the ease of use, and ensuring compatibility with existing systems. In addition, open educational resources serve to enhance the capabilities of students. This study supported by Jones, (2022) that indicated It's important to ensure that the user interface is easy to use and that users have the resources they need to succeed. The relative advantage of e-learning for students lies in its ability to provide a more engaging, flexible, and personalized learning experience compared to traditional methods. As technology continues to advance, the potential benefits of e-learning are likely to evolve and expand. As a result, we accept this hypothesis.

Next, the second hypothesis is to find out the relationship between compatibility and e-learning adoption. From the table above, there is a positive relationship compatibility and e-

learning adoption. The table showed beta value at 0.631 where p-value =0.000 which is less than 0.05. This shows the student will be familiar with e-capsule and having the ability to use it in the same way as using another e-application. This study supported by Vos and Boonstra (2022) indicates that to encourage student adoption of online platforms, it is necessary to ensure that the platform is compatible with the students' cultural norms, attitudes, and beliefs, and that it is viewed as valuable and easy to use. This is because by using e-capsule, students interactions education system in university significantly simplified. Compatibility in e-learning is essential for creating a user-friendly, accessible, and efficient learning experience for students. This study supported by Mhlongo et al (2023) that indicated that the study of the adoption of smart digital technologies in the education system has grown exponentially over the years, creating new possibilities to improve teaching and learning. It helps remove barriers associated with technology and allows students to focus on their studies rather than dealing with technical challenges. As the result, we accept this hypothesis.

Then, the third hypothesis in this study is to identify the relationship between complexity and e-learning adoption. The table shows there is a positive relationship between complexity and e-learning adoption which the beta value shows 0.669 where the p-value = 0.000 that is less than 0.05. This is because using the e-capsule is a very simple process for students as the process of dealing with e-capsule was straightforward and easy to comprehend by the student. This study supported by Bain, (2023) that indicated that the complexity reduction helps to simplify a business's strategy, organization, products, processes, and information technology. In addition, e-capsule is incredibly user friendly as the e-capsule platform features and functionalities met student's expectations. This study supported by Telefónica (2023) that indicated to reducing complexity in innovation can also help to reduce distractions and lack of attention, which can be a

disadvantage of digitalization. For example, students easily can find their class timetables through their own student profile in the e-capsule. As a result, we accept this hypothesis.

The fourth hypothesis is to identify the relationship between observability and e-learning adoption. The table shows there is a positive relationship between observability and e-learning adoption which the beta value shows 0.598 where the p-value = 0.000 that is less than 0.05. This is because of the e-capsule can be accessed at the same time by multiple users without any issues. The e-capsule can be accessed simultaneously by multiple users without any issues due to its cloud-based architecture and observability features. This study supported by Sridharan (2023) making an innovation more observable can increase its chances of success by allowing potential adopters to see its benefits and encouraging them to try it out for themselves.

In addition, it's easier for students to potentially gain access to all of the information contained within the e-capsule. This study supported by Sahin et al (2022) when the benefits of e-learning are easily observable, such as improvements in academic performance, enhanced access to resources, or increased flexibility in learning, it tends to create a positive influence on adoption. As a result, we accept this hypothesis.

Last but not least, the fifth hypothesis is to find out the relationship between information quality and e-learning adoption. From the table above, there is no relationship between the information quality and e-learning adoption because the beta value is at 0.682 where the p-value = 0.000 which is more than 0.05. This is because the material presented by the e-capsule platform is well-organized, easy to read, and comprehensible. The e-capsule platform can achieve well-organized and easily comprehensible presentation of material through intuitive user interface

design, clear navigation, use of multimedia elements, such as videos and infographics, and interactive features. This study supported by Litmos (2023) that indicated e-learning platforms are designed to provide a complete learning experience that is interactive, engaging, and ultimately supportive of education delivery and management. These elements can enhance the user experience and facilitate the understanding of the presented material. This study supported by Chu et al. (2019) indicated the use of multimedia elements and interactive features in e-learning platforms can contribute to the effectiveness of the educational content and the overall learning experience. As a result, we accept this hypothesis.

5.4 Implication of the Study

This study aims to identify the level of acceptance of innovation in the use of e-learning among undergraduates in higher education, especially UMK students. This is because nowadays the education system is done online, and UMK itself has introduced an innovation, which is the e-capsule, which provides all the necessary information. Therefore, this study can help to determine the relationship between the diffusion of innovation and the use of e-learning among undergraduate students at the higher education level. With the production of this innovation, it can help students explore the existing system at UMK without having to go to the faculty and their respective wishes get students interested in learning new things.

Theoretical Implications

The theoretical framework of the Technology Acceptance Model (TAM) can be applied to understand how students perceive and understand e-learning technology, suggesting that perceptions of usefulness and ease of use can influence technology. In addition, the Distribution of Innovation (DOI) Model is a framework that can be widely used to model the distribution of

new knowledge in e-learning networks (Rogers, 2023). More than a thousand studies, especially in developed and developing countries, have used it to study information technology (IT) innovation. Diffusion is also a process where new ideas can spread over time through communication channels, social systems, and time. According to a study by (Fulton 2022), e-learning can be evaluated in various forms, including digital readers and tablets, educational applications, multimedia presentations, online courses, and video conferences. E-learning platforms such as Google Meet, Microsoft Teams, and WhatsApp are software that allow teachers to create and deliver online courses (Bachofner, 2022).

Practical Implication

To enable every student to be able to access lessons online, the management can provide an e-learning system that is more accessible, can overcome geographical barriers, and provides exposure to technology. Designing e-learning courses based on pedagogical principles is also important. Administrators can consider active learning strategies, interactive content, and assessments that can encourage critical thinking to enhance student development. In addition, educators should also be given exposure to training to use effective e-learning platforms by providing professional development opportunities to ensure they are equipped with all technology-related knowledge. In addition, considering investing in a complete technology infrastructure to support the e-learning platform is also important to avoid any related problems such as traffic congestion if accessed simultaneously, leakage of student information, and so on

5.5 Limitations of the Study

The study on the relationship between the diffusion of innovation and e-learning towards student development, specifically focusing on their understanding of the e-capsule platform, provides valuable insights into the dynamics of technology adoption within an academic setting. However, like any research endeavor, it is crucial to acknowledge and discuss the limitations that may affect the scope, validity, and generalizability of the findings. There was several key limitations inherent in the study, shedding light on areas that require consideration and caution.

Firstly, the reliance on self-reported data introduces the possibility of response bias. Students may provide answers that align with social desirability or their perceived expectations of the research. This can compromise the internal validity of the study, as the reported attitudes and perceptions may not authentically reflect the participants' true experiences with e-capsule platform. Example, participants may be inclined to respond in a way they believe is socially acceptable or favorable. This bias stems from a desire to present oneself in a positive light, leading individuals to provide responses they perceive as more socially desirable, even if those responses don't align with their true feelings or behaviors.

Another limitation is that the study only examines the perspective of students towards e-capsule platform, which may not reflect the views of other users, such as educators or administrators. This limitation is underscored by the fact that the adoption and integration of e-capsule innovation in educational or organizational settings involves multiple users with diverse roles and perspectives. Educators and administrators, for instance, may have distinct insights into the potential impact of e-capsule innovation on teaching methods, curriculum development, and institutional resources. Their views and concerns are integral to understanding the broader implications of e-capsule

adoption within educational institutions. Therefore, the exclusive focus on students' perspectives may lead to an incomplete understanding of the challenges, opportunities, and requirements associated with the implementation of e-capsule innovation across educational or organizational contexts.

While the study on the diffusion of innovation among UMK students offers valuable insights, it is essential to recognize and communicate its limitations transparently. Acknowledging these limitations enhances the transparency of the study, guiding future research and contributing to a more nuanced understanding of innovation diffusion among UMK students. Additionally, these limitations provide a foundation for future research endeavors that aim to address and overcome these challenges, further advancing our knowledge in this evolving field.

5.6 Recommendations/ Suggestion for Future Research

This research explores the diffusion of innovation within the context of e-capsule platform among students at UMK. The study aims to gain insights into UMK students' perceptions, towards diffusion of e-capsule innovation. The findings are expected to contribute to the existing body of knowledge on technology diffusion, specifically within educational settings, and offer practical implications for educators and technology developers.

First suggestion for future research is to conduct a longitudinal study to track the evolution of UMK students' attitudes and behaviors towards e-capsule platform over an extended period. This approach can provide a more comprehensive understanding of the diffusion process, capturing changes and trends over time. By employing a longitudinal study design, researchers can gain a nuanced understanding of how UMK students' attitudes and behaviors towards e-capsule

innovation evolve over an extended period, providing valuable insights into the dynamics of innovation diffusion within an educational context. For instance, during exam season, students may access e-capsules more frequently because they wish to use the notes in the e-capsule for revision.

Second suggestion for future research is to explore the communication channels that are most effective in promoting the e-capsule platform among UMK students. This may include social media and word-of-mouth. Encouraging satisfied users to share their positive experiences with the e-capsule platform can help create a buzz and generate interest among students. Platforms like Facebook and Instagram can be used to create authentic and engaging content that encourages students to use e-capsule platform. Additionally, word-of-mouth marketing has been found to be highly influential, as students often rely on recommendations from friends when making decisions. By utilizing a combination of these communication channels, researchers can maximize the reach and impact of their promotional efforts for the e-capsule innovation.

Lastly, examining educators and institutional perspectives involves investigating how educators and educational institutions perceive and approach the integration of digital learning. This area of research explores the attitudes, beliefs, and experiences of educators regarding the adoption of e-capsule tools, as well as the broader institutional strategies and policies in place to support or hinder such adoption. Understanding these perspectives is crucial for identifying potential barriers to adoption and designing targeted interventions to enhance educators readiness and engagement with e-capsule. On an institutional level, the research examines how educational institutions conceptualize, implement, and support e-capsule initiatives. By exploring educators and institutional perspectives, researchers can acquire understanding of the dynamics that shape

the adoption and implementation of e-capsule.

By addressing these research recommendations, scholars can contribute valuable insights to the field of innovation diffusion within educational contexts. Researchers may ultimately inform educators, policymakers, and technology developers on effective strategies for implementing and sustaining innovative technologies like e-capsules.

5.7 Conclusion

In conclusion, this research was carried out to examine the perspective of UMK students' understanding of e-capsule innovation. Factors that influence (independent variables) the perspective of students' understanding of e-capsule innovations include relative advantage, compatibility, complexity, visibility, and information quality. In order to produce research, we have prepared several questions through a survey form that will be distributed to all UMK students at Campus Kota, Bachok, and Jeli. A total of 371 respondents were required to answer the survey form, and the form was shared on Google Forms through a link sent via WhatsApp and Telegram. Through this method, we do not have to physically face the respondents, which will save time for the data collection process.

The results of the questionnaire survey were analysed descriptively, using reliability analysis and Spearmen correlation analysis. Following that, the results obtained in the previous chapter, as well as all the data from the questionnaire, were evaluated using the Statistical Package for the Social Sciences (SPSS) peripheral program. Researchers use this software programme because it makes it easy to see all the results.

Finally, it is more about summing and forming conclusions based on data analysis. For this investigation, all hypotheses (H1, H2, H3, H4, and H5) are supported. Furthermore, limits and recommendations for future investigations have been applied for this research. As a consequence, all of the information gathered during this investigation will be useful in the future study.

REFERENCE

Rogers, Everett (16 August 2003). Diffusion of Innovations, 5th Edition. Simon and Schuster. ISBN 978-0-7432-5823-4.

Ferster, B. (2021b, May 12). The Diffusion Of Innovations: Everett Rogers. eLearningIndustryhttps://elearningindustry.com/diffusion-ofinnovationseverettrogers

Diffusion of innovation theory. (n.d.-c.) modules/sb/behavioralchangetheories/behavioralchangetheories4.html

Evolution of e-learning in the Malaysian Higher Education Institutions - MIDA: Malaysian Investment Development Authority. MIDA. (2021, February 25). https://www.mida.gov.my/mida-news/evolution-of-e-learning-in-the-malaysian-higher-education-institutions/

Hanafi, N., Chua, N. A., Yusoh, M. P., & Ismail, I. L. M. (2021). Innovation diffusion impact on students' online platform participation. Journal of Entrepreneurship and Business, 9(1), 118–132. https://doi.org/10.17687/jeb.v9i1.473

Maisha, K., & Shetu, S. N. (2023). Influencing factors of e-learning adoption amongst students in a developing country: the post-pandemic scenario in Bangladesh. Future Business Journal, 9(1). https://doi.org/10.1186/s43093-023-00214-3

Menzli, L. J., Smirani, L. K., Boulahia, J. A., & Hadjouni, M. (2022). Investigation of open educational resources adoption in higher education using Rogers' diffusion of innovation theory. Heliyon, 8(7), e09885. https://doi.org/10.1016/j.heliyon.2022.e09885

Call, D. R., & Herber, D. R. (2022). Applicability of the diffusion of innovation theory to accelerate model-based systems engineering adoption. Systems Engineering, 25(6), 574–583. https://doi.org/10.1002/sys.21638

Kaine, G., & Wright, V. (2022). Relative advantage and complexity: predicting the rate of adoption of agricultural innovations. Frontiers in Agronomy, 4. https://doi.org/10.3389/fagro.2022.967605

Leadership. (2023, September 29). How do you navigate ambiguity and complexity in innovation? www.linkedin.com. https://www.linkedin.com/advice/0/how-do-you-navigate- ambiguity-complexity-innovation

Complexity reduction (2023, July 14). Bain. https://www.bain.com/insights/management-tools-complexity-reduction/

Stecuła, K., & Wolniak, R. (2022). Advantages and Disadvantages of E-Learning Innovations during COVID-19 Pandemic in Higher Education in Poland. Journal of Open Innovation: Technology, Market, and Complexity, 8(3), 159. https://doi.org/10.3390/joitmc8030159

Telefónica. (2023, October 30). 7 advantages and disadvantages of ICTs in education. Telefónica.https://www.telefonica.com/en/communication-room/blog/advantages-disadvantages-icts-education/

Bhasin, H. (2019b, March 22). What is Relative Advantage? Concept, Advantage and Application. Marketing91. https://www.marketing91.com/relative-advantage/

Relative advantage: Gaining an edge in adoption speed - FasterCapital. (n.d.). FasterCapital. https://fastercapital.com/content/Relative-Advantage--Gaining-an-Edge-in- Adoption-Speed.html

Factors influencing adoption | The Art of Business Planning. (2023, February 8). The Art of Business Planning. https://www.business-planning-for-managers.com/main-courses/forecasting/factors-influencing-adoption/

Jones, R. (2022). Why user adoption of new technology fails or succeeds. https://www.trainingfolks.com/blog/why-technology-user-adoption-fails-or-succeeds

Admin. (2023, October 9). How to convince skeptical employees to adopt new technology. Eagle Point Software. https://eaglepoint.com/blog/how-to-convince-skeptical-employees-to-adopt-new-technology/

Sridharan, M. (2023, April 22). Rogers' Five Factors - How To Appraise Innovations? Think Insights. https://thinkinsights.net/strategy/rogers-five-factors/

Diffusion of innovation theory. Wayne W. LaMorte (2022). https://sphweb.bumc.bu.edu/otlt/mph-modules/sb/behavioralchangetheories/behavioralchangetheories4.html

Willard, J. (2022, December 3). 8 common challenges of online learning (and how to solve them). Big Think. https://bigthink.com/plus/challenges-of-online-learning/

Liu, K., Yao, J., Tao, D., & Yang, T. (2023). Influence of individual-technology-task-environment fit on university student online learning performance: the mediating role of

behavioral, emotional, and cognitive engagement. Education and Information Technologies. https://doi.org/10.1007/s10639-023-11833-2

Vos, J. F., & Boonstra, A. (2022). The influence of cultural values on Enterprise System adoption, towards a culture – Enterprise System alignment theory. International Journal of Information Management, 63, 102453. https://doi.org/10.1016/j.ijinfomgt.2021.102453

Mhlongo, S., Mbatha, K., Ramatsetse, B., & Dlamini, R. (2023). Challenges, opportunities, and prospects of adopting and using smart digital technologies in learning environments: An iterative review. Heliyon, 9(6), e16348. https://doi.org/10.1016/j.heliyon.2023.e16348

Korolov, M. (2022, May 3). Growing adoption of observability powers business transformation.TheNewStack. https://thenewstack.io/growing-adoption-of-observability- powers-business-transformation/

Fulton, J. (2022, May 26). 7 examples of innovative educational technology - Classcraft Blog.Resource hub for schools and districts. https://www.classcraft.com/blog/examples-of- educational-technology/

Bachofner, M. (2022, May 24). What is a learning platform? Cleverclip. https://cleverclipstudios.com/en-ch/blog/what-is-a-learning-platform/

Frei-Landau, R., Muchnik-Rozanov, Y., & Avidov-Ungar, O. (2022). Using Rogers' diffusion of innovation theory to conceptualize the mobile-learning adoption process in teacher education in the COVID-19 era. Education and Information Technologies, 27(9), 12811–12838. https://doi.org/10.1007/s10639-022-11148-8

Apuke, O. D. (2017). Quantitative Research Methods : A Synopsis approach. *Kuwait Chapter of Arabian Journal of Business & Management Review*, *6*(11), 40–47. https://doi.org/10.12816/0040336

Wang, Y., & Wang, Y. (2016). Determinants of firms' knowledge management system implementation: An empirical study. *Computers in Human Behavior*, *64*, 829–842. https://doi.org/10.1016/j.chb.2016.07.055

Theresiawati, Seta, H. B., Hidayanto, A. N., & Abidin, Z. (2020). Variables affecting E-Learning services quality in Indonesian Higher education: Students' perspectives. Journal of Information Technology Education, 19, 259–286. https://doi.org/10.28945/4489

Nkomo, L. M., Daniel, B. K., & Butson, R. (2021). Synthesis of student engagement with digital technologies: a systematic review of the literature. *PubMed*. https://doi.org/10.1186/s41239-021-00270-1

Nguyen, N. (2021). A study on satisfaction of users towards learning management system at International University – Vietnam National University HCMC. *Asia Pacific Management Review*, *26*(4), 186–196. https://doi.org/10.1016/j.apmrv.2021.02.001

Chronosphere. (2023, October 18). *Leading organizations in adopting observability turn complexity into a business advantage | Chronosphere*. https://chronosphere.io/learn/leading- organizations-in-adopting-observability-turn-complexity-into-a-business-advantage/

Rahayu, D. U., Mulyono, & Cahyono, A. N. (2020). *Kemampuan Literasi Matematika Ditinjau dari Gaya Kognitif Siswa pada Model PBL Berbantuan LMS*. *2019*. http://repo.iaintulungagung.ac.id/17447/

Mensah, I. K., Zeng, G., Luo, C., Lu, M., & Xiao, Z. (2022). Exploring the E-Learning adoption intentions of college students amidst the COVID-19 epidemic outbreak in China. SAGE Open, 12(2), 215824402210866. https://doi.org/10.1177/21582440221086629

Şahin, F., Doğan, E., Okur, M. R., & Şahin, Y. L. (2022). Emotional outcomes of e-learning adoption during compulsory online education. Education and Information Technologies, 27(6), 7827–7849. https://doi.org/10.1007/s10639-022-10930-y

Litmos. (2023, March 31). What is an eLearning Platform and How Do I Choose One? Litmos. https://www.litmos.com/platform/e-learning-platform-definition

Chu, A., Biancarelli, D. L., Drainoni, M., Liu, J. H., Schneider, J. I., Sullivan, R. P., & Sheng, A. Y. (2019). Usability of Learning Moment: features of an e-learning tool that maximize adoption by students. Western Journal of Emergency Medicine, 21(1), 78–84. https://doi.org/10.5811/westjem.2019.6.42657

The role of e-learning, the advantages and disadvantages of its adoption in Higher Education. (Nelly Abaidoo, 2021). https://www.ijern.com/E-learning.php

Shams, M. S., Niazi, M. M., Gul, H., Mei, T. S., & Khan, K. U. (2022). E-Learning adoption in higher education institutions during the COVID-19 Pandemic: a multigroup analysis. Frontiers in Education, 6. https://doi.org/10.3389/feduc.2021.783087

Awan, R. K., Afshan, G., & Memon, A. B. (2021). Adoption of E-Learning at Higher Education Institutions: A Systematic Literature review. Multidisciplinary Journal for Education, Social and Technological Sciences, 8(2), 74. https://doi.org/10.4995/muse.2021.15813

Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. Education and Information Technologies, 25(6), 5261–528. https://doi.org/10.1007/s10639-020-10219-y

Alyoussef, I. Y. (2023). Acceptance of e-learning in higher education: The role of task-technology fit with the information systems success model. Heliyon, 9(3), e13751. https://doi.org/10.1016/j.heliyon.2023.e13751

Ntsiful, A., Kwarteng, M. A., Pilík, M., & Osakwe, C. N. (2022). Transitioning to online teaching during the pandemic period: the role of innovation and psychological characteristics. Innovative Higher Education,48(2),197–218. https://doi.org/10.1007/s10755-022-09613-w

Al-Shargabi B, Sabri O, Aljawarneh S (2021). The adoption of an e-learning system using information systems success model: a case study of Jazan University. PeerJ ComputSci https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8507483/

Sürücü, L. & Maslakçı, A., Validity And Reliability In Quantitative Research, BMIJ, (2020), 8(3): 2694-2726, https://www.bmij.org/index.php/1/article/download/1540/1365

Yang, S., & Berdine, G. (2021). Normality tests. The Southwest Respiratory and Critical Care Chronicles,9(37), 87-90.

Wang, C., Brabenec, T., Gao, P., & Tang, Z. (2021). The business strategy, competitive advantage and financial strategy: a perspective from corporate maturity mismatched investment. Journal of Competitiveness, 13(1), 164.

UMK (2023). UNIVERSITI MALAYSIA KELANTAN. [online] Entrepreneur University | Universiti Malaysia Kelantan. Available at: https://www.umk.edu.my/ms/

Emerson, R W. (2018,March 1). Convenience Sampling, Random Sampling, and Snowball Sampling: How Does Sampling Affect the Validity of Research?. Journal of Visual Impairment& Blindness, 109(2), 164-168https://doi.org/10.1177/0145482x1510900215
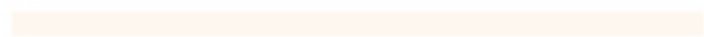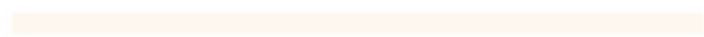
APPENDIX A - Draft of Questionnaire

SECTION A: DEMOGRAPHIC

Please tick (/) on the appropriate answer. Sila tandakan (/) pada jawapan yang sesuai.

1. Gender (Jantina)

   ( )   Male/Lelaki

   ( )   Female/Perempuan

2. Age (Umur)

   ( )   18 - 22 Years / 18 - 22 Tahun

   ( )   23 - 27 Years / 23 - 27 Tahun

   ( )   28 - 32 Years / 28 - 32 Tahun

   ( )   33 Years and Above / 33 Tahun dan Ke Atas

3. Race (Bangsa)

   ( )   Malay/Melayu
   ( )   Chinese/Cina
   ( )   Indian/India
   ( )   Others/Lain-lain

4. Campus (Kampus)

   ( )   Campus Kota/Kampus Kota

   ( )   Campus Bachok/Kampus Bachok
   ( )   Campus Jeli/Kampus Jeli

5. Years of Study (Tahun Pengajian)
   ( ) Year 1/Tahun 1
   ( )   Year 2/Tahun 2
   ( )   Year 3/Tahun 3
   ( )   Year 4/Tahun 4
   ( ) Others/Lain-lain

6. Frequency of using e-capsule application (Kekerapan penggunaan aplikasi e-capsule)
   ( )   Once per month/sebulan sekali
   ( )   2 - 3 times per month/2 - 3 kali sebulan

( ) 4 - 5 times per month/4 - 5 kali sebulan
( ) 5 times and above per month/5 kali dan lebih sebulan

7. Functions of always used in e-capsule (Fungsi yang selalu digunakan dalam e-capsule)
( ) Check financial debt/Semakan hutang kewangan
( ) Check date and result exam/Semakan tarikh dan keputusan peperiksaan
( ) Register course/Daftar kursus
( ) Check the lecture schedule/Semakan jadual kuliah
( ) Others/Lain-lain

SECTION B: INDEPENDENT VARIABLES

Please tick (/) your answer by using five points Likert Scale.
Sila tandakan (/) jawapan anda dengan menggunakan lima mata Skala Likert.

1	2	3	4	5
Strongly Disagree/ Sangat Tidak Setuju	Disagree/ Tidak Setuju	Neutral/ Neutral	Agree/ Setuju	Strongly Agree/ Sangat Setuju

Relative Advantage/ Kelebihan Relatif					
The use of e-capsule in online databases makes it simple to retrieve information at certain times/ Penggunaan e-capsule dalam pangkalan data dalam talian memudahkan untuk mendapatkan maklumat pada masa tertentu	1	2	3	4	5
Searching in coursework is possible through the use of online databases/ Pencarian dalam kursus	1	2	3	4	5

boleh dilakukan melalui penggunaan pangkalan data dalam talian					

79

Finding hypertext and documents that are connected can be done through the use of online databases/ Mencari hiperteks dan dokumen yang disambungkan boleh dilakukan melalui penggunaan pangkalan data dalam talian	1	2	3	4	5
Open educational resources serve to enhance the capabilities of students/ Sumber pendidikan terbuka berfungsi untuk meningkatkan keupayaan pelajar	1	2	3	4	5

Compatibility/ Keserasian					
Being familiar with e-capsule and having the ability to use it in the same way as using another e-application/ Biasa dengan e-capsule dan mempunyai keupayaan untuk menggunakannya dengan cara yang sama seperti menggunakan e-aplikasi lain	1	2	3	4	5
In order to access the e-capsule, there are time and location limitations/ Untuk mengakses e-capsule, terdapat had masa dan lokasi	1	2	3	4	5
The level of authenticity of the information included in e-capsules is comparable to that of printed materials/ Tahap ketulenan maklumat yang disertakan dalam e-capsule adalah setanding dengan bahan bercetak	1	2	3	4	5
By using e-capsule, our interactions education system in university significantly simplified/ Dengan menggunakan e-capsule, sistem pendidikan interaksi kami di universiti dipermudahkan dengan ketara	1	2	3	4	5

Complexity/ Kerumitan					
E-capsule is incredibly user-friendly/ E-capsule adalah sangat mesra pengguna	1	2	3	4	5

Using the e-capsule is a very simple process/ Menggunakan e-capsule adalah proses yang sangat mudah	1	2	3	4	5
The process of dealing with e-capsule was straightforward and easy to comprehend/ Proses berurusan dengan e-capsule adalah mudah dan mudah difahami	1	2	3	4	5
The e-capsule platform's features and functionalities met students' expectations/ Ciri dan fungsi platform e-capsule memenuhi jangkaan pelajar	1	2	3	4	5

Observability/ Kebolehlihatan					
The e-capsule can be accessed at the same time by multiple users without any issues/ E-capsule boleh diakses pada masa yang sama oleh berbilang pengguna tanpa sebarang masalah	1	2	3	4	5
It is possible to obtain the materials and information included in the e capsule/ Ianya mustahil untuk mendapatkan bahan dan maklumat yang disertakan dalam e-capsule	1	2	3	4	5
Using e-capsules can promote learning through e-applications/ Menggunakan e-capsule boleh menggalakkan pembelajaran melalui e-aplikasi	1	2	3	4	5
Potentially gain access to all of the information contained within the e capsule/ Berpotensi mendapat akses kepada semua maklumat yang terkandung dalam e-capsule	1	2	3	4	5

Information quality/ Kualiti maklumat

The material presented by the e-capsule platform is well-organized, easy to read, and comprehensible/ Bahan yang disampaikan oleh platform e-capsule adalah tersusun, mudah dibaca dan difahami	1	2	3	4	5
Relevant and current information is provided by the e-capsule system/ Maklumat yang relevan dan terkini disediakan oleh sistem e-capsule	1	2	3	4	5
The e-capsule was different from traditional classroom/ e-capsule adalah berbeza daripada bilik darjah tradisional	1	2	3	4	5
The e-capsule platform supplies you with course-related data/ Platform e-capsule membekalkan anda dengan data berkaitan kursus	1	2	3	4	5

SECTION C: DEPENDENT VARIABLE

Please tick (/) your answer by using five points Likert Scale.
Sila tandakan (/) jawapan anda dengan menggunakan lima mata Skala Likert.

1	2	3	4	5
Strongly Disagree/ Sangat Tidak Setuju	Disagree/ Tidak Setuju	Neutral/ Neutral	Agree/ Setuju	Strongly Agree/ Sangat Setuju

E-learning adoption/ Penerimaan e-pembelajaran					
Overall, using the e-capsule help improving student quality of life/ Secara keseluruhannya, penggunaan pembelajaran berasaskan e-capsule meningkatkan kualiti hidup pelajar	1	2	3	4	5

The use of e-capsule system saves money and time/ Penggunaan sistem e-capsule menjimatkan wang dan masa	1	2	3	4	5
The use of e-capsule system provides more opportunities to participate in the class/ Penggunaan sistem e-capsule memberikan lebih banyak peluang untuk mengambil bahagian dalam kelas	1	2	3	4	5

APPENDIX B : Gantt Chart

ACTIVITIES	LECTURE WEEK														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PPTA 1															
Form a WhatsApp group with group members.	■														
Contact with own supervisor and added her to group chat.	■														
Provide information request by the supervisor such as title, article paper and problem statement.	■														
Meet with the supervisor for the first time and discuss the appropriate research paper.	■														
Discuss the title in the group.	■														
Group discussion.	■														
Searching articles	■														
Build the title for research	■														
Discuss about theory		■													
Discuss about article with teammates.		■													
Second meeting with supervisor for confirmation the title.		■													
Division of task between teammates.			■												
Selection of appropriate titles for FYP.			■												
Discussion about IV and DV for proposal.			■												

84

Task															
Find an article that suitable for new topics.			■												
Complete framework.				■											
Submit proposal in Chapter 1 to 3.				■											
Make corrections for the PPTA1 research paper.				■											
Doing a questionnaire.				■											
Review the questionnaire on the Google Form with supervisor.					■										
Shared the questionnaire on the google form via link					■										
Discussion for presentation among group members.						■									
Recorded video presentation sent to supervisor and examiner.						■									

PPTA 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Doing a questionnaire.							■								
Review the questionnaire on the Google Form with supervisor.							■								
Shared the questionnaire on the google form via link							■								
Insert data from Google Form to Excel.								■							
Copy data into SPSS and do data analysis								■							
Describe data based on report SPSS.								■	■						
Start doing chapter 4.									■						
Start doing chapter 5.										■	■				

Task															
Do article research paper and poster.													██		
Submission research paper, poster to supervisor and, coordinator, and examiner.														██	
Submission of the final draft of the report research project to supervisor to check.															██
Submission final report to examiner and coordinator.															██
Final presentation in colloquium.															██

██	Actual time
██	Estimated time

UNIVERSITI

MALAYSIA

KELANTAN