AWARENESS AND READINESS OF GEN Z UNIVERSITY STUDENT TOWARD INDUSTRIAL REVOLUTION 4.0 TECHNOLOGIES

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BY

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DECLARATION

I hereby declare that:

(1) This undergraduate FYP is the end result of my own work and that due acknowledgement has been given in the references to ALL sources of information by they printed, electronic, or personal.

(2) No portion of this FYP has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Sole contribution has been made by me in completing the FYP.

(4) The word count of this research report is 12584.

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TABLE OF CONTENTS

Page

Copyright Page II
Declaration III
Acknowledgement IV
Table of contents V
List of Tables IX
List of Figures X
List of Abbreviations XI
List of Appendices XII
Preface XIII
Abstract XIV
CHAPTER 1: RESEARCH OVERVIEW 1
1.0 Introduction 1
1.1 Background of study 1
1.1.1 Industry Revolution 4.0 (IR4.0) technologies 1
1.1.2 Generation Z (Gen Z) 2
1.1.3 Relationship between IR4.0 technologies and Gen Z University Student 3
1.2 Problem Statement 4
1.3 Research Objectives 6
1.3.1 General Objective 6
1.3.2 Specific Objective 6
1.4 Research Questions 7
1.5 Significance of Research 7
1.5.1 Significance to educators 7
1.5.2 Significance to students 7
CHAPTER 2: LITERATURE REVIEW 8
2.0 Introduction 8
2.1 Underlying Theory 8

2.1.1 Unified Theory of Acceptance and Use of Technology (UTAUT) 8
2.2 Review of variables 9
2.2.1 Performance Expectancy 9
2.2.2 Effort Expectancy 9
2.2.3 Social Influence 10
2.2.4 Perceived Risk 10
2.2.5 Trust 11
2.3 Proposed conceptual framework 12
2.4 Hypothesis Development 13
2.4.1 Relationship between Performance Expectancy and Gen Z Behaviour intention to use IR 4.0 technologies: 13
2.4.2 Relationship between Effort Expectancy and Gen Z Behaviour intention to use IR 4.0 technologies: 13
2.4.3 Relationship between Social Influence and Gen Z Behaviour intention to use IR 4.0 technologies: 13
2.4.4 Relationship between Relationship with Perceived Risk and Gen Z Behaviour intention to use IR 4.0 technologies: 14
2.4.5 Relationship between Trust and Gen Z Behaviour intention to use IR 4.0 technologies: 14
CHAPTER 3: RESEARCH METHODOLOGY 15
3.0 Introduction 15
3.1 Research design 15
3.2 Data Collection 15
3.2.1 Primary Data 15
3.3 Sampling design 16
3.3.1 Target population 16
3.3.2 Sampling frame and sampling location 16
3.3.3 Sampling elements 16

3.3.4 Sampling techniques 16
3.3.5 Sample size 17
3.4 Research Instrument 17
3.4.1 Questionnaire Design 17
3.4.2 Pilot Test 18
3.5 Construct Measurement 20
3.5.1 Origin and Measure of the Construct 20
3.5.2 Scale of Measurement 25
3.5.2.1 Nominal Scale 25
3.5.2.2 Ordinal Scale 26
3.5.2.3 Interval Scale （Likert Scale） 26
3.6 Data Processing 27
3.6.1 Data checking 27
3.6.2 Data editing 27
3.6.3 Data coding 28
3.6.4 Data transcribing 28
3.6.5 Data Cleaning 28
3.7 Data Analysis 29
3.7.1 Descriptive Analysis 29
3.7.2 Reliability Analysis 29
3.7.3 Inferential Analysis 30
3.7.3.1 Pearson Correlation Coefficient Analysis 30
3.7.3.2 Multiple Linear Regression Analysis 31
3.8 Conclusion 31
CHAPTER 4: DATA ANALYSIS 32
4.0 Introduction 32
4.1 Descriptive Analysis 32

4.1.1 Demographic profile and general information of the respondents 32

4.1.2 Central Tendencies Measurement of Construct.....42

4.2 Scale Measurement.....43

4.2.1 Reliability Test.....43

4.3 Inferential Analysis.....44

4.3.1 Pearson Correlation Coefficient Analysis.....44

4.3.2 Multiple Linear Regression Analysis.....45

4.4 Test of Significance 49

4.5 Conclusion 51

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS 52

5.0 Introduction.....52

5.1 Discussions of Major Findings 52

5.1.1 Relationship between performance expectancy and behavioral intention to use IR 4.0 technologies.....53

5.1.2 Relationship between effort expectancy and behavioral intention to use IR 4.0 technologies. 53

5.1.3 Relationship between social influence and behavioral intention to use IR 4.0 technologies. 54

5.1.4 Relationship between perceived risk and behavioral intention to use IR 4.0 technologies. 54

5.1.5 Relationship between trust and behavioral intention to use IR 4.0 technologies. 55

5.2 Implication of the study 55

5.3 Limitations of the study 56

5.4 Recommendations of Research.....57

5.5 Conclusion 57

LIST OF TABLES

Page

Table 3.1 Cronbach's Alpha Range 19
Table 3.2 Pilot test result 19
Table 3.3 Origin of Construct 20
Table 3.2: Cronbach's Alpha Range 30
Table 3.3: Rules of Thumb on Pearson Correlation Coefficient 30
Table 4.1: Gender 33
Table 4.2: Age 34
Table 4.3: Nation 35
Table 4.4: Occupation 36
Table 4.5: Education Level 37
Table 4.6: Type of University 38
Table 4.7: Gen Z University Student 39
Table 4.8: Knowledge Level about IR 4.0 Technologies 40
Table 4.9 Descriptive Statistic on Variables 42
Table 4.10: Reliability Statistic for Actual Research 43
Table 4.11 Correlations 44
Table 4.12: Model Summary of Multiple Linear Regression 45
Table 4.13: ANOVA[a] 46
Table 4.14: Coefficients[a] 47
Table 5.1: Major Findings on Hypothesis Testing 52

LIST OF FIGURES

Page

Figure 2.1 The Proposed Conceptual Framework 12
Figure 3.1: Example of nominal scale 25
Figure 3.2: Example of ordinal scale 26
Figure 3.3: Example of Five-point Likert Scale 27
Figure 4.1: Gender 33
Figure 4.2: Age 34
Figure 4.3: Nation 35
Figure 4.4: Occupation 36
Figure 4.5: Education Level 37
Figure 4.6: Type of University 38
Figure 4.7: Knowledge Level about IR 4.0 Technologies 40
Figure 4.8: Hypothesis result of conceptual framework 49

LIST OF ABBREVIATION

SPSS	Statistical Package for Social Science
UTAUT	Unified Theory of Acceptance and Use of Technology
IR 4.0	Industrial Revolution 4.0
Gen Z	Generation Z
PE	Performance Expectancy
EE	Effort Expectancy
SI	Social Influence
PR	Perceived Risk
T	Trust
BI	Behavioral Intention to use IR4.0 Technologies\
IV	Independent Variable
DV	Dependent Variable
Min	Minimum
Max	Maximum
No. / N	Number
Std. Dev.	Standard Deviation
df	Degrees of freedom
F	F statistic
Sig.	Significant
t	t value
H	Hypothesis
β	Beta

LIST OF APPENDICES

Page

Appendix A: Questionnaire 58

Section A: Demographic Profile 59

Section B: General Questions 61

Section C: Construct Measurement 62

Appendix B: SPSS Output 69

Demographic profile and general information of the respondents 69

Descriptive Statistic on Variables 76

Reliability Test 77

Pearson Correlation Coefficient 78

Multiple Linear Regression Analysis 79

PREFACE

This research was completed as part of the Bachelor of International Business (Honours) Final Year Project in Universiti Tunku Abdul Rahman (UTAR). The title of this research is "Awareness and Readiness of Gen Z University Student toward Industrial Revolution 4.0 (IR4.0) Technologies". Before started this study, I have been curious that the awareness of my peer toward the current technologies and whether their will use the technologies for academic or work in their future. Hence, above two factors had motivated me to do this research. This research study is focusing on determining the main factors that will affect the behavioral intention of Gen Z university student to use the IR4.0 technologies. The factors include five independent variables such as performance expectancy, effort expectancy, social influence, perceived risk, and trust. As technology advances, more and more businesses are beginning to recognize the significance of IR4.0 technologies and raising the bar for new hires in terms of their knowledge of IR4.0. Therefore, this research paper could assist the companies to determine the awareness and readiness of Gen Z university student regarding the IR4.0 technologies.

ABSTRACT

In today's jargon, "Industrial Revolution 4.0" (IR4.0) refers to a wave of change that will touch all aspects of human existence. IR4.0 technologies and beyond will place increasing demands on the future workforce, which academics must help the new generation (Gen Z) university student prepare for. This paper attempts to investigate the awareness and readiness of Gen Z university student toward the IR4.0 technologies. Research overview, literature review, methodology, data analysis and discussion, conclusion and implications are all covered in this study. The independent and dependent variables have been analyzed in this study, and each variable is explained by referencing previous literature studies. The independent variables are performance expectancy, effort expectancy, social influence, perceived risk and trust, while the dependent variable is Gen Z university student's behavioral intention to use IR4.0 technologies.

The research approach chosen would be quantitative research in this study. Besides, primary data were collected through questionnaires with a sample size of 168 respondents who current study in Malaysia's univsersity. The results for descriptive analysis, reliability test, and inferential analysis were obtained through the Statistical Package for the Social Sciences (SPSS). As the result show that all independent variables have significant relationship with the dependent variable. Finally, this research has included the study's limitations as well as future research recommendations to the future researchers.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

This chapter's prologue begins. Researchers will summarize their work in this chapter by grouping it into five broad groups. The issue statement, research purpose, research questions, and the importance of the study are all stated first. ‘Awareness and Readiness of Gen Z University Student toward Industrial Revolution 4.0 Technologies" is the focus of this study. Chapter summaries will offer an overview of this chapter as well as a concise synopsis of each chapter in this study.

1.1 Background of study

1.1.1 Industry Revolution 4.0 (IR4.0) technologies

Industry 4.0, also known as the fourth industrial revolution, consists of advanced production and information technologies that are used to meet the customised needs of many aspects of the human person in less time (Javaid et al., 2020). Artificial intelligence (AI), the Internet of Things (IoT), the cyber-physical system (CPS), Clod computing (CC), and other digital technologies are used as a flexible manufacturing line in Industry 4.0. 3D printing, robots, 5G network, big data are all emerging technologies that are enabling the fourth industrial revolution (Marco Bettiol, M. C., 2019). Automation in the manufacturing and service sectors can be improved by using these technologies. A fully implemented Industry 4.0 scenario sees these technologies connected, and medical stakeholders communicate with each other for manufacturing and use of the vaccine, healthcare equipment and logistics, checkup and surveillance and deciding on necessary actions with less human physical involvement (Javaid et al., 2020). The data gathered by advanced technologies provides accurate updates on the number of persons present. As of 2019, (M. Javaid, A. H.) (M. Ienca, E. V. ,2020). Industry 4.0 is beginning to emerge in Malaysia's manufacturing industry, however at a slower pace than in other parts of the world. Because Industry 4.0 is a relatively new concept, SMEs in

Malaysia may be lacking in understanding about the specific implications and cost-effectiveness of Industry 4.0-related technologies.

1.1.2 Generation Z (Gen Z)

It is commonly referred to as Generation Z (Gen Z), which is the generation born between 1997 and 2012. Some of the eldest members of this generation will have finished college by 2020 and will be joining the workforce as a result of their upbringing on the internet and on social media. Between the ages of 10 and 25 in 2022, Pew Research defines Gen Z as those who are members of this generation. It is estimated that Generation Z is the youngest, most ethnically diverse and biggest generation according to Insider Intelligence (2022). Because Gen Z grew up with technology, the internet, and social media, they have been dubbed "tech addicts," "anti-socialists," and even "social justice fighters" because of this. Distinct generations have different preferences and expectations as learners since they grew up in a variety of socioeconomic situations (D. Rothman, 2016). As a new generation of college students has begun their studies in the last decade, the need for novel adaptable teaching approaches has grown (D. Ding, 2017). This generation (Gen Z) uses the Internet and social media on a daily basis, and this is becoming an integral element of their socialization. Because they've never known a world without the Internet, today's young people comprise the digital native generation (M. Prensky, 2001). According to Pallei (W. Palley, 2012), Gen Z is the first generation to have demonstrated such a high degree of proficiency and comfort with technology at such a young age, corroborating the argument that no previous generation has experienced such easy access to technology (M. Prensky, 2001). Young people today are not more brilliant or smarter than their predecessors; they just have more knowledge at their fingertips and know how to use it in a more efficient manner than ever before.

1.1.3 Relationship between IR4.0 technologies and Gen Z University Student

A shift from a labor-intensive economy to one dominated by capital and technology is enhancing the importance of Malaysia's human resources strategy, particularly in education and training. In order to meet the demands of IR4.0, all students enrolled in HEIs must go outside of their comfort zones and learn to adapt to this new era.

Globally, organisations are at a crossroads in terms of future operations. They are adopting Industry 4.0 while simultaneously dealing with the influx of post-1990 staff. These personnel are from Generations Y and Z, which includes future leaders. Both of these innovations have a significant impact on existing organisational procedures, workings, and behaviour. First, implementing sophisticated technology and various business practises connected with Industry 4.0 transforms internal and external company processes. The second point is that, in light of the huge changes brought by Industry 4.0, managers and leaders should adhere to particular personal values.

The adoption of new social and organisational philosophies regarded more sustainable in terms of nature and human systems is fast establishing an Industry 4.0 environment. Industry 4.0 is based on technology advancements, but it also influences other aspects of organisational functioning. Thus, future leaders' attitudes and actions will need to align with what is anticipated of future leaders in companies. The research reveals that Gen Y, prioritise money, promotion, growth at work, celebrity, and power above everything else. Gen Z, reared in a similar social context, shares many of the same values. There seems to be a mismatch between future leaders' personal beliefs (and consequent conduct) and the values needed by future enterprises using Industry 4.0 concepts. This contradicts the widely held belief that younger generations are “born with technology,” making them more prepared and qualified to work in firms that have adopted Industry 4.0 concepts than older generations.

To develop and analyse future leaders' potential, and to guarantee a good match between their values and the predominant values of the Industry 4.0 workplace, businesses must first understand their future leaders' personal values. However, the function of new generation leaders and their personal values is not fully recognised in the context of Industry 4.0. Until far, research has focused on contemporary

professionals' and leaders' personal values, workplace values across generations, and the role of personal values in leadership. Only a few research have addressed future leaders from Gen Z. However, while personal values are often examined for professionals in businesses across cultural settings, there are few studies concentrating on the personal values of future leaders. Concerning Industry 4.0, most current studies on Gen Z students do not cover the challenges posed by Industry 4.0.

1.2 Problem Statement

Unemployment in Malaysia has recently been blamed on a lack of IR 4.0 skills among Malaysian graduates of (HEI), according to Abdullah et al. (2020). Because of this, additional efforts should be made to prepare graduates for the IR 4.0 workforce by creating graduate work competence readiness of the skills needed in accordance with IR 4.0 challenges.

Cyber-physical systems combined with the Internet of Things will provide new job possibilities as part of the Industrial Revolution 4.0. (IoT). Automating, analysing, and integrating systems, utilizing robots and the cloud, as well as the Internet of things (IoT), and other new technologies were all part of this revolution. There is a need for all sectors of the economy and society to adapt to the digital transformation in order to remain competitive and accelerate their growth on the digital landscape, according to Yunos (2019). Despite the fact that this change opens up new possibilities, a large number of today's diversified workers will be left behind and not given the opportunity to plan for the future (Mohd Fairuz, 2017).

As a result, business leaders are growing afraid that the global labor force, particularly the 1.8 billion young people, would not be able to keep up with the changes. Graham Brown-Martin says that after high school, a person can continue to broaden their knowledge and abilities in a variety of areas that they are interested in (2018). However, when students continue to cultivate a spirit of continuous education after graduation, they will be more likely to pursue a wide range of interests. If their work requires it, they will be able to learn and re-learn on the go (Ministry of Higher Education, 2018).

The Industrial Revolution 4.0 will modify the nature of employment in the future, resulting in a more equitable distribution of income and revenue. According to Mohamad Raimi (2016), the first, second, and third industrial revolutions saw a significant shift away from a reliance on raw materials and labor. Automated processes will become increasingly prevalent in the industrial sector as smart factories, autopilots, and robots take hold (Said, 2017). The arrival of Generation Z was considered as the heir apparent to finish the digital age's last chapter and allow Malaysia to endure the Industrial Revolution 4.0. (Rubaneswaran, 2017).

Only one percent of the current information in persons today is expected to be relevant in the next 30 years, according to specialists in higher education (Marmolejo, 2017). Individuals or highly trained workers with talent, creativity, and critical thinking will be needed to fill future employment openings. As much as 65 percent of today's primary school pupils will meet a new type of work that has never been seen before, according to a study by the World Economic Organization (2016). (2018). To meet the demands of the Industrial Revolution 4.0 trends in technology, a wide range of stakeholders must be prepared to supply future skills and work patterns.

A new study by Ruslin Amir, Hamidun Bunawan, and Mohd Firdaus Yahaya (Amir, Bunawan, and Yahaya, 2018) reveals that residential college students will have to deal with a slew of new challenges brought on by the Fourth Industrial Revolution, which can be broken down into a number of different categories. High-level thinking, communication, and time management are only few of the abilities that are required to deal with the Industrial Revolution 4.0. Students' knowledge of Industrial Revolution 4.0 was found to be reasonable, but the survey also found that their motivation to participate in the digital revolution was also found to be low. Research (Ladin, 2018) demonstrates that students at the Ipoh university campus have a medium level of understanding about the Industrial Revolution 4.0, but their soft skills are at a high level. This study, therefore, bolstered empirical research on students' preparedness for the Fourth Industrial Revolution in higher education institutions.

Technology that does not require human intervention is viewed as part of the Industrial Revolution 4.0's automation. Another issue facing the sector, Gizemerboz, is that it is dependent on fossil fuels for much of its energy needs (2017). "The Fourth Industrial Revolution" by Klaus Schwab (2016) examines the influence of

the Industrial Revolution 4.0 on how we work and live, citing the three primary characteristics of speed, breadth, and depth as the driving forces behind it. Simulated and virtual reality, vertical and horizontal integration, the Internet of Things (IoT), cybersecurity and cloud computing, as well as the production of additional materials (supply chain), data analysis and automation of robot elections are all pillars of Industrial Revolution 4.0. The study's objectives were to determine how well Generation Z understands Industrial Revolution 4.0 and to assess how well they are prepared for it.

1.3 Research Objectives

1.3.1 General Objective

This study is to determine the Gen Z university student have the awareness and readiness toward the IR4.0 technologies. This research will investigate and study whether the independent variables which are performance expectancy, effort expectancy, social influence, perceived risk, and trust will have a relationship with the dependent variable, behavioral intention to use IR4.0 technologies.

1.3.2 Specific Objective

- To determine the relationship between performance expectancy and Gen Z university student’s behavioral intention to use IR 4.0 technologies.
- To investigate the relationship between effort expectancy and Gen Z university student’s behavioral intention to use IR 4.0 technologies.
- To identify the relationship between social influence and Gen Z university student’s behavioral intention to use IR 4.0 technologies.
- To analyse the relationship between perceived risk and Gen Z university student’s behavioral intention to use IR 4.0 technologies.
- To study whether there is a relationship between trust and Gen Z university student’s behavioral intention to use IR 4.0 technologies.

1.4 Research Questions

- Does performance expectancy will influence Gen Z university student's behavioral intention to use IR 4.0 technologies?
- Does effort expectancy will influence Gen Z university student's behavioral intention to use IR 4.0 technologies?
- Is there a relationship between social influence and Gen Z university student's behavioral intention to use IR 4.0 technologies?
- Is there a relationship between perceived risk and Gen Z university student's behavioral intention to use IR 4.0 technologies?
- Is there a relationship between trust and Gen Z university student's behavioral intention to use IR 4.0 technologies?

1.5 Significance of Research

1.5.1 Significance to educators

The educators must know how IR 4.0 technologies does has cause an impact on the Generation Z university students. The educators have to know what the knowledge are has to be passed down to the generation Z university students. This is to ensure that they can be aware and be ready in their career path in the future and to make sure that they are able to survive in the high-paced community due to IR 4.0 today.

1.5.2 Significance to students

The university students of generation Z must know that what are the things they have to be aware due to IR 4.0 technologies. For example, how does Artificial Intelligence (AI) have caused changes to their life and the working and academic environment. This is to ensure that they can adapt to the working environment after they have completed their university.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

The researcher will next explore the underlying ideas linked to the variables in this study and conduct a review of previous research on the dependent and independent variables. Following that, the researcher will provide a conceptual framework for identifying the network of variables' relationships and, if validated and articulated, will build the study hypothesis.

2.1 Underlying Theory

2.1.1 Unified Theory of Acceptance and Use of Technology (UTAUT)

There are eight well-established postulates that must be combined in order to arrive at the UTAUT: The technology acceptance model (TAM), the theory of reasoned action, the theory of planned behavior, the motivational model (MM), and the social cognition theory (SCT). To arrive at the UTAUT, the eight well-established postulates must be combined (Venkatesh et al., 2003). In terms of behavioral intention, this model explains up to 70% of the variation and up to 50% of the variation in actual usage (Venkatesh et al., 2003). The new UTAUT model is shown to explain 20%-30% more end-user behavior than the TAM, which explains 40%–50% of end-user behavior or behavioral intention to use (Venkatesh et al., 2003). The UTAUT model is one of the most complete and significant theories for understanding IT adoption since it incorporates up to eight theories (Qingfei et al., 2008). Performance expectation, social influence, and effort expectancy are the three most important characteristics that impact a user's behavioural intention.

Extrinsic and intrinsic motivations as well as work fit and perceived usefulness are all evaluated in performance expectation (Venkatesh et al., 2003), and it is defined as a perception that the outcomes of a test will be positive when advanced technology is employed. To put it another way, performance expectations are based

on the perceived utility of TAM (Van Raaij & Schepers, 2008). According to Van Raaij and Schepers (2008), perceived ease of use is equivalent to effort expectancy, which is defined as a consumer's perceived ease of utilizing and connecting with an information technology system (Venkatesh et al., 2003). According to the TPB (Ajzen, 1991), social influence is defined as the extent to which influential people in a consumer's domain encourage a consumer's desire to embrace a new information-technology product or service (Venkatesh et al., 2003).

2.2 Review of variables

2.2.1 Performance Expectancy

The phrase "performance expectation," according to Venkatesh et al. (2003), refers to the degree to which an individual believes that work performance will improve as a result of the deployment of new technology. 'Perceived usefulness' is related to 'performance expectation,' a term found in behavioral models such as the 'Technology Adoption Model' (TAM). Performance expectations, according to other studies, refer to a person's belief in the system's ability to boost performance (Min et al., 2008; Jambulingam, 2013). Performance expectancy is a reliable predictor of behavioral intention in the context of technology adoption and usage (W. Lee & Shin, 2019). According to Lee and Shin (2019), performance expectancy is defined as the degree to which a user expects that adopting a technology would result in advantages. IR 4.0 technology performance expectations refer to the extent to which students feel that using IR 4.0 technologies would improve their productivity and performance.

2.2.2 Effort Expectancy

Effort expectancy might be defined as "the extent to which the system's use is easy" (Venkatesh et al., 2003). Consumers' current perceptions of technology's usability are directly related to how much work they expect it to take to utilize it (Jambulingam, 2013). Effort expectation (EE) is the degree of ease connected with

the use of technology, and earlier research has proven that EE is a key predictor of technological intention (Dinev & Hu, 2007). According to Marr and Prendergast (1991), there is a larger possibility that consumers would accept technologies if they are intelligible and easy to use. Chipeva et al. (2018) found this to be true in their research in Bulgaria and Portugal. Perceived risk influences effort expectancy (Mer, A., 2021). It is more likely that customers will be unwilling to utilize the IR4.0 technologies if they are associated with a significant degree of risk. In contrast, consumers are more likely to consider technology to be simple to use if they believe there is less risk involved (Daneshgadeh & Yldrm, 2014).

2.2.3 Social Influence

Influenced by social norms, an individual's perception of how much others believe he or she should use the new system (Venkatesh et al., 2003). The subjective norm supports the TPA and TRA-based paradigm of social impact (Venkatesh et al., 2003). Social impact is the statistic that measures how important it is for a user's peers or family to believe in IR4.0 technology. Peers, coworkers, family members, and friends are consulted while determining whether to utilize new technologies (Riquelme & Rios, 2010). Because of the inherent risk and uncertainty of doing business online, individuals are turning to the advice and recommendations of those who have experience in the field. As a result of the customers' reliance on word-of-mouth recommendations, the perceived ease of use of new technology is elevated (Featherman & Hajli, 2016). When a person has never used a new technology before, the social pressure exerted by others has a stronger impact (Hartwick & Barki, 1994).

2.2.4 Perceived Risk

Using a new technology may have both positive and negative consequences for consumers, and this is encapsulated by the concept of "perceived risk." (Mer, A., 2021). There is a great deal of mystery and danger in the internet world due to the fact that it is devoid of any central authority or oversight, as well as the fact that it

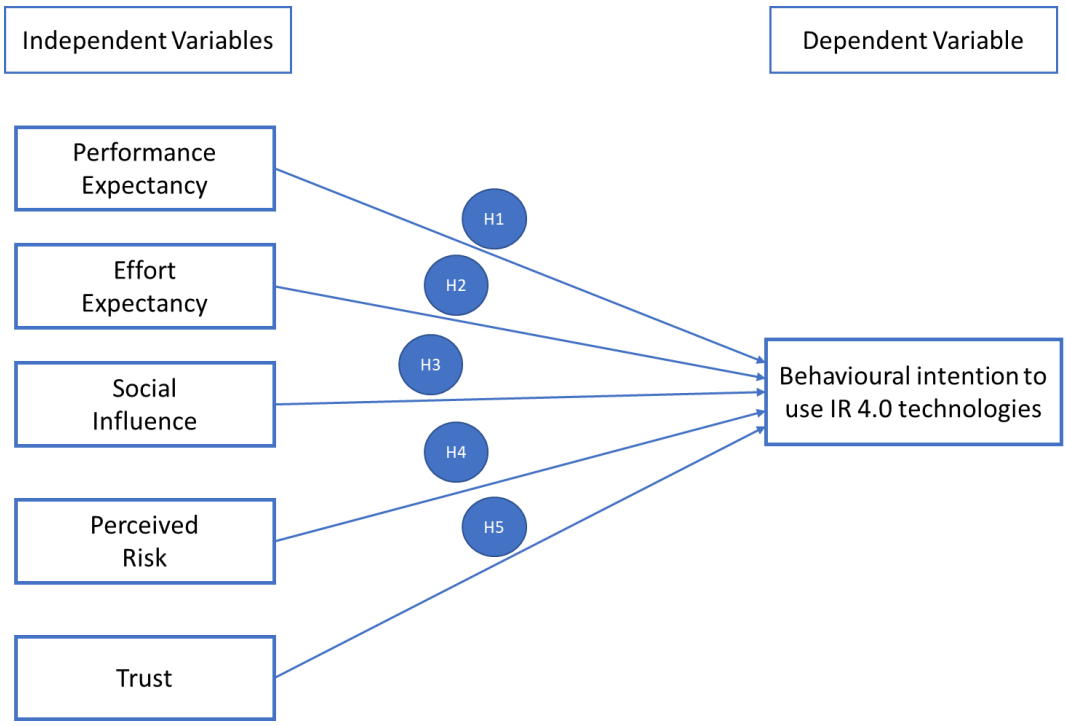
is unregulated and unprotected (Mer, A., 2021). The adoption of new technology is hampered by a lack of understanding of how the system works and a misperception of privacy (Pederson P, 2002). Adoption of new technology is influenced by one's previous experience with technology and their impression of security and secrecy (Laforet S, 2005). Claims by Ryu (2018) stated that customers would often pick services based on their perceived risk and value. According to the research of Im et al. (2007), people's perceptions of performance can differ from the reality on the ground. Because people are unaware of the importance of this mismatch, there is a 'risk' involved. The user will suffer if a technology fails to deliver on its promise (financial, psychological, physical, or social) (Im et al., 2007).

2.2.5 Trust

The degree to which one believes in and is prepared to act on behalf of another's words, actions, and judgements is described as trust by Mc Allister (1995). A decision to tolerate vulnerability based on favorable assumptions about another's intentions or conduct is described as trust by Rousseau et al. (1998). Instead, trust in persuasive technology is defined as users' anticipation that the technology will perform as expected and without causing harm to the user (P. Verbeek, 2006). When the trust element outweighs the apparent risk, the customer is more likely to take a chance (Mer, A., 2021). For Vance et al. (2008), institution-based trust is the belief that the environment in which one does business is sufficiently safe and secure. Several studies show a strong connection between trust, acceptance, and the usage of technology (Oliveira, 2016). Trust is a critical aspect in the adoption of new technologies, according to Kim and Prabhakar (2004).

2.3 Proposed conceptual framework

Figure 2.1 The Proposed Conceptual Framework



Source: Developed for the research, refer to Sarfaraz J (2017) & Mer, A., & Virdi, A. S. (2021)

As a result of the three restrictions (scope, time and cost), this studykept the model relatively basic. An adaptation of the UTAUT model is used to explain the factors influencing IR4.0 technologies adoption by Gen Z university student. For its theoretical integration and comprehensiveness, the model was chosen. UTAUT's effort expectation (EE), performance expectancy (PE) and social influence (SI) variables are adapted to the model in order to better understand Gen Z university students' adoption of IR4.0 technologies. The factors perceived risk (PR) and trust (TR) are integrated into the proposed model to identify the IR4.0 technologies adoption among Gen Z university student.

2.4 Hypothesis Development

2.4.1 Relationship between Performance Expectancy and Gen Z Behaviour intention to use IR 4.0 technologies:

H0: There is no significant relationship between Performance Expectancy and Gen Z behavioural intention to use IR 4.0 technologies.

H1: There is a significant relationship between Performance Expectancy and Gen Z behavioural intention to use IR 4.0 technologies.

2.4.2 Relationship between Effort Expectancy and Gen Z Behaviour intention to use IR 4.0 technologies:

H0: There is no significant relationship between Effort Expectancy and Gen Z Behaviour intention to use IR 4.0 technologies.

H2: There is a significant relationship between Effort Expectancy and Gen Z Behaviour intention to use IR 4.0 technologies.

2.4.3 Relationship between Social Influence and Gen Z Behaviour intention to use IR 4.0 technologies:

H0: There is no significant relationship between Social Influence and Gen Z Behaviour intention to use IR 4.0 technologies.

H3: There is a significant relationship between Social Influence and Gen Z Behaviour intention to use IR 4.0 technologies.

2.4.4 Relationship between Relationship with Perceived Risk and Gen Z Behaviour intention to use IR 4.0 technologies:

H0: There is no significant relationship between Perceived Risk and Gen Z Behaviour intention to use IR 4.0 technologies.

H4: There is a significant relationship between Perceived Risk and Gen Z Behaviour intention to use IR 4.0 technologies.

2.4.5 Relationship between Trust and Gen Z Behaviour intention to use IR 4.0 technologies:

H0: There is no significant relationship between Trust and Gen Z Behaviour intention to use IR 4.0 technologies.

H5: There is a significant relationship between Trust and Gen Z Behaviour intention to use IR 4.0 technologies.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

Research Methodology can be defined as the process or techniques used to conduct the research, which includes data collection, analysis, and conclusion. It is critical to employ the appropriate research approach while establishing the validity of a study's data. In this chapter, the study design, data collection method, sample design, research tools, construct measurements, data processing, and data analysis will be discussed in detail.

3.1 Research design

Research design can be explained as a method in carry out data collection and analysis. In order to carry out data collection and data analysis, both qualitative and quantitative research methods can be used. Quantitative research is the method where the data come from the collection of sufficient number of respondent data to drawn conclusion while qualitative research focus more on several case study which rely more on written documents and interviews. In this research, the method of quantitative research will be executed because it can optimize the findings that are normally evaluated in the predictions. This method is frequently explained as deductive because the results taken from the hypothesis will lead to general judgment about the characteristic of the population.

3.2 Data Collection

3.2.1 Primary Data

Primary data is data that was gathered by the researcher directly (Driscoll, 2011). Primary data is gathered by sending out surveys to participants in large numbers by email and handouts. A number of previous research journals have been examined to ensure the validity of the questions in the self-administrated questionnaires.

3.3 Sampling design

3.3.1 Target population

Population in the research is a group of individuals who have a great relationship to the researcher's topic and purposes. Researcher collect data, process the data and draw the conclusion base on the information given by the target population (Research Population, 2009). In this research, Generation Z university students is the researcher target population in this research.

3.3.2 Sampling frame and sampling location

According to Zikmund, Babin, Carr, & Griffin, (2010), a sampling frame is "a list of elements from which the sample may be drawn" and it is the list of the population that the researcher interest to study. Researcher had targeted generation Z university students who study in Malaysia's University. This research was conducted across all Malaysian through online, by delivering the online survey which is Google form. The Google form will be send through online platform such as WhatsApp, Facebook, Instagram, and WeChat.

3.3.3 Sampling elements

A sampling element is a person, a group, an organization, or a specific element that is chosen to use in the research (Ortinan & Hair, 2006). In this research study, the target population that is selected for the sampling element will be Gen Z university student with high education level.

3.3.4 Sampling techniques

Sampling techniques can be classified into probability sampling and non-probability sampling. In this research, researcher will be using convenience

sampling from non-probability sampling method because it is less costly and the participants are easily to be reached (Taherdoost, 2016). The convenience sampling is an effective technique to get sufficient volume and usable data from participants whereby the techniques can be generated in more direct way within time constraints.

3.3.5 Sample size

The sample size refers to the number of participants or observations included in the study. This number is usually represented by n. The size of the sample affects two statistical properties. These two properties are the accuracy of our estimates and the ability of the research to reach conclusions. Hence, 50 sets of questionnaires were distributed for pilot test in this research to ensure that the validity and accuracy of the questionnaire before distributing the actual questionnaire. After conducting the factor loading for the pilot test, 206 sets of the questionnaire were distributing to the target respondents.

3.4 Research Instrument

A research instrument is a tool used to analyze, obtain, and measure data from subjects around the research topic (Edigate Insight, 2020). A researcher must decide what kind of instrument they should use based on the type of study they are conducting. Since this research is using a quantitative method, thus, a questionnaire will be used to collect data from the targeted population, and it is also a self-administered questionnaire. Besides, the questionnaire was prepared and adopted from the literature review.

3.4.1 Questionnaire Design

A questionnaire will be employed for this research project because it is the most productive method for collecting information from respondents or a huge population. Additionally, the questionnaire is inexpensive and simple to run, and

the respondents' private data will be kept confidential (Rani & Roopa, 2012). The questionnaire is in English and all questions are closed-ended.

The cover page, which includes an explanation of the study's purpose and methods, is the first step in creating the questionnaire. Section A, Section B, and Section C comprise the three sections of this questionnaire. Section A of the questionnaire asks respondents to submit demographic data. We used the nominal scale and the ordinal scale to separate the demographic information for a preliminary study of the background. Gender, age, country of origin, job title, degree of education, and type of university attended are a few examples.

Moreover, Section B also includes generic questions, such as, "Have you heard of any of the IR4.0 technologies, such as AI, Cloud Computing, IoT, Big Data, and 3D printing before?". Each statement is asked to be answered in section C, where respondents are asked to indicate their level of confidence in IR4.0 technology and their willingness to employ it. In the meanwhile, there are 32 questions about the independent variables and 4 questions about the dependent variables in this part. Use of the Likert scale was used here so that respondents would not be able to give a neutral answer. This study used a Likert scale with a range of 1–5 for each item, with 1 denoting “strongly disagree” and 5 denoting “strongly agree”.

3.4.2 Pilot Test

The pilot test is to test on a small scale of respondents and based on the result to find out the error and mistake of the research questions and make an action to modify the questions to reduce possible risks (Fraser, Fahlman, Arscott, & Guillot, 2018). If the participants feel difficult to answer the question that means that there is some problem with the questions, so the researchers should identify the problem and modify the questions before the actual survey is conducted (Fraser, Fahlman, Arscott, & Guillot, 2018). To study the internal reliability of the pilot test, Cronbach's Alpha was used.

Table 3.1 Cronbach's Alpha Range

Coefficient Alpha Value, α	Strength of Association
< 0.60	Poor Reliability
0.60 – 0.70	Fair Reliability
0.70 – 0.80	Good Reliability
0.80 – 0.95	Very Good Reliability

Source from: Zikmund, W. G., Babin, B.J., Carr, J.C., & Griffin, M. (2013). Business Research Methods, 9th International Edition. South-Western Cengage Learning, Canada.

A total of 37 respondents was selected for pilot testing by using Google form in the research study. To define the reliability and validity, the collected data were tested using the SPSS system and the result is shown in Table 3.2 below:

Table 3.2 Pilot test result

Construct	Cronbach's Alpha	Number of Items	Strength of association
Performance Expectancy	0.826	6	Very Good Reliability
Effort Expectancy	0.770	7	Good Reliability
Social Influence	0.901	7	Very Good Reliability
Perceived Risk	0.599	6	Poor Reliability
Trust	0.826	6	Very Good Reliability
Behavioral intention to use IR4.0 technologies	0.802	4	Very Good Reliability

Source: Develop for research

3.5 Construct Measurement

3.5.1 Origin and Measure of the Construct

Table 3.3 Origin of Construct

Construct	Measurement Item	Sources
Performance Expectancy	1. I would like to use IR 4.0 technologies frequently. 2. IR 4.0 technologies improve my learning performance. 3. IR 4.0 technologies increase my academic performance. 4. Internet of Things (IoT) makes it easier to study course content. 5. Big data assist me easier to collect data in my research and assignment. 6. I frequently use Cloud system to save my documents.	Cheng-Min. C (2019); Tan, Paul. (2013); Onaolapo, S.A., & Oyewole, O.K. (2018); Salim. B, (2012); Lima, M. & Baudier, P. (2017); Paul Matthew (2016).
Effort Expectancy	1. I find IR 4.0 technology is easy to use.	Cheng-Min. C (2019); Tan, Paul. (2013); Onaolapo, S.A., &

	2. I find the IR 4.0 technology is cumbersome to use. 3. Learning how to use a computing system is easy for me. 4. It is easy to become skillful at using the robotics. 5. I feel comfortable and confident when I use RFID technology. 6. I need to learn more things before I can get going with the system. 7. I save documents better through Cloud system compared to pen drive or external hard drive.	Oyewole, O.K. (2018); Salim. B, (2012); Lima, M. & Baudier, P. (2017); Paul Matthew (2016).
Social Influence	1. My peers and friends have discussed about IR 4.0 technologies. 2. I have learned about IR 4.0 technologies in class.	Cheng-Min. C (2019); Tan, Paul. (2013); Onaolapo, S.A., & Oyewole, O.K. (2018); Salim. B, (2012); Lima, M. & Baudier, P. (2017); Paul Matthew (2016).

	3. I have attended seminars or talks relating to IR 4.0 technologies before. 4. I think that using IR 4.0 technologies is fashionable. 5. My peers and teachers think that I should use IR 4.0 technologies in learning. 6. People who are important to me think that I should use IR4.0 technologies in daily life. 7. I think I am more ready to use the IR 4.0 technologies if my friends and my family use it.	

Perceived Risk	1. IR 4.0 technologies (big data, IoT, cybersecurity…) will disclose my private information. 2. I am not really security on IR 4.0 technologies. 3. Authorization mechanisms of IR4.0 technologies make me feel comfortable. 4. I feel not safe when I release personal information through Internet of Things (IoT). 5. I think big data and cloud computing put my privacy at risk. 6. I feel insecure on Cyber Security in protect my information over interconnected corporate systems.	Tsai, Y., & Yeh, J.C. (2010); Cheng-Min. C (2019).
Trust	1. I believe that IR 4.0 technologies is trustworthy.	Cheng-Min. C (2019); Ghazizadeh, Mahtab & Peng, Yiyun & Lee, John & Boyle, Linda. (2012); Sun, Baolin &

	2. I trust the IR 4.0 technologies will assist efficiently in my learning. 3. I do not doubt the honesty of IR 4.0 technologies. 4. Even if not monitoring, I would trust IR 4.0 technologies (AI) will do the job right. 5. IR 4.0 technologies have the ability to fulfill its task. 6. Legal and technological policies of IR 4.0 technologies adequately protect me from problems on internet.	Sun, Chaohao & Liu, Chang & Liu, Kun. (2017).
Behavioral Intention to use IR 4.0 Technologies	1. I intend to use IR 4.0 technologies in my future learning. 2. I would use IR 4.0 technologies to support me in my daily life.	Charles Buabeng (2018); Khamaruddin, P.F., Sauki, A., Othman Kadri, N.H., Rahim, A.A., & Kadri, A. (2017); Cheng-Min. C (2019).

	3. I plan to use IR 4.0 technologies in the next 6 months. 4. I expect that I would use IR 4.0 technologies in my future work.	

Source: Develop for research

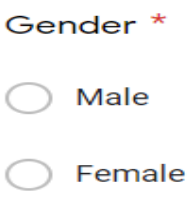
3.5.2 Scale of Measurement

In performing statistical data analysis, the researcher need to know what are the variables need should be measured. Basically, there are four types of measurement scales would be used in research, which are nominal scale, ordinal scale, interval scale and ratio scale. These four scales will provide the different types of information in the questionnaire. The researcher would use all types of measurement scale in this research study, excluding ratio scale.

3.5.2.1 Nominal Scale

The nominal scale is a metric scale used to assign events or objects into discrete categories. This form of scale does not require the use of numerical values or categories classified by category, but only uses a unique identifier to label each different category. For example, the gender respondents are classified by male and female, and the marital status classified as single, married, divorce or widow. The figure below showed one of the examples of nominal scale:

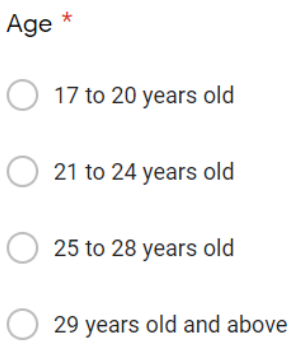
Figure 3.1: Example of nominal scale



3.5.2.2 Ordinal Scale

Ordinal scale is used to simply depict rank order of variables, but it does not show the difference between each category. There are two ordinal scales in the questionnaire, which are age and currently education. The figure below showed one of the examples of ordinal scale:

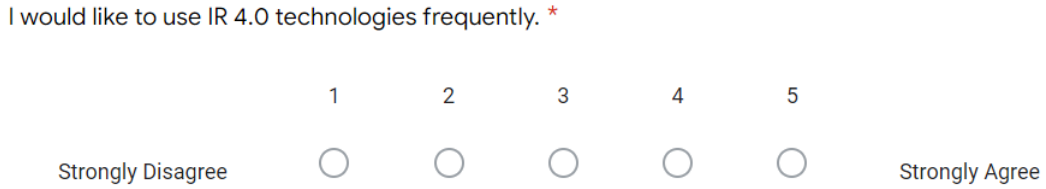
Figure 3.2: Example of ordinal scale



3.5.2.3 Interval Scale （Likert Scale）

Interval scale provides the different information between the rank order of variables. Likert scale is one of the examples of the most-used interval scale to summarize the data. The research questionnaire will be using a 5-point Likert scale is require the respondents to indicate whether are strongly agrees (SA), agrees (A), Neutral (N), strongly disagree (SD), disagree (D). Likert scale was a five-point scales that ranges from Strongly Disagree until Strongly Agree to test the intense a subject agreed or disagreed with the statement. It will analyse the question of the dependent variables and independent variables. The Likert scale is from the response is given a point value and calculate the point value from questions (Mills & Gay, 2019). The figure below showed one of the example of Five-point Likert Scale:

Figure 3.3: Example of Five-point Likert Scale



3.6 Data Processing

According to Sekaran and Bougie (2013), data processing begins with the collection of raw data from distributed surveys or questionnaires and continues with data checking, data editing, data coding, data transcription, and data identification. This is to verify that any data obtained is appropriate and suitable for further analysis by researchers (Bee et al., 2014).

3.6.1 Data checking

Data checking is used to ensure all the questions are filled by respondents completely. During the data checking, the collected questionnaires will be check through by the researcher to eliminate the uncomplete questionnaires and also the questionnaires with uncertain answer such as answering multiple questions or missing the question. This is to maintain the reliability of the research.

3.6.2 Data editing

Data editing is the process where data is analyzed to check for sufficiency, identify errors and outliners, consistency, and the correction made on error data is to maximize its usefulness for research (Saira, 2019). The reason of why the researcher will perform data editing is in order to improve data accuracy. In considering there are some of the omission data or multiple answers in one question, data editing is necessary for the researcher. This is because to measure to get the reliability of the research.

3.6.3 Data coding

Data coding is referring to the process that transforms verbal data into variables while label them as numbers so that the data can be used for analysis purposes by entering them into a computer system (Borque, 2004). Data coding is the process to organize the checked and edited data into numerals or symbols. It is important as the data after coded may later on enter into the SPSS software to generate the significant result. There are some of the coding examples that the researcher can be devised before process the questionnaire, such as labeling the answer in number or using some special coding for giving meaning to each answer. For instance, in the questionnaire's Section A, the gender of the respondents can be coded as 1 for males and 2 for females. In addition, for sections B and C, the level of satisfaction from "strongly disagree" to "strongly agree" can be decoded from 1 to 5.

3.6.4 Data transcribing

Data transcribing can assist the researcher to enter all the coded data into computer. After that, Statistical Package for Social Sciences (SPSS) software will transcribe all the data that collected from respondents.

3.6.5 Data Cleaning

Data cleaning is the action of identifying any inaccurate or unreliable data in each response and the data can be checked by using computer analysis software (Malhotra, 2010). The researcher will use Statistical Package for Social Sciences (SPSS) software to check the possible errors. If there is an incorrect or incomplete data, data cleaning will remove or modify it to ensure the data is consistent and usable.

3.7 Data Analysis

The final section of Chapter 3 in this study is devoted to data analysis. Daniel Johnson (2021) states that it is a process of cleaning, manipulating, and modelling data that the researcher must perform in order to get usable information from it. This study's data analysis is divided into three sections: descriptive analysis, reliability analysis, and multiple linear regression analysis.

3.7.1 Descriptive Analysis

According to Bernardita Calzon (2021), descriptive analysis is a simple method for raw data transformation to any analytic process. Descriptive analysis is important as it is use to measure and describe the different characteristic of the respondents. Moreover, descriptive analysis is the important point in conducting the first step statistical analysis. It allows to give the researcher an idea of the distribution data, helps researcher to detect the outliers and typos, and enable the researcher to identify the associations among variables. In this research questionnaire, researcher will conduct on personal details such as gender, age, employee status and education level. Through the analyzing the mean, mode, median of the collected questionnaires, researcher will be able to be drawn out the common patterns or characteristic of the respondents and then further shown it in a histogram and pie chart.

3.7.2 Reliability Analysis

In this research, reliability test will be carried out to make sure the data collected is consistent and stable with very minor errors to ensure the consistency of result. Cronbach’s alpha is the common method used in reliability analysis and it is also a measure of internal consistency based on average inter-item correlation. Besides, Cronbach’s Alpha method is commonly used by researchers in conducting reliability analysis to calculate the average coefficient of all variables. The higher the degree of the Coefficient Alpha value, the greater the reliability of the variables

(Santos, 1999). The table below illustrate the levels of Cronbach's Alpha that researcher can refer to:

Table 3.2: Cronbach's Alpha Range

Cronbach's Alpha Coefficient	Strength of Association
Lower than (<) 0.6	Poor Reliability
0.6 – 0.7	Fair Reliability
0.7 – 0.8	Good Reliability
0.8 – 0.95	Very Good Reliability

Source from: Zikmund, W. G., Babin, B.J., Carr, J.C., & Griffin, M. (2013). Business Research Methods, 9th International Edition. South-Western Cengage Learning, Canada

3.7.3 Inferential Analysis

3.7.3.1 Pearson Correlation Coefficient Analysis

Correlation Coefficient is a technique that analyses the strength of the link and examines the relationship between variables in this research, which includes a honeycomb structure of variables such as Present, Relationship... [Read more...] Additionally, Williams (1996) stated that the range of -1.0 to +1.0 is possible. The negative linear relationship between the independent and dependent variables was assigned a value of -1.0, while the positive linear relationship was assigned a value of +1.0. (Hair, Money, Samuel and Page, 2007). The greater the influence of the independent variable on the dependent variable, the closer the result comes to either +1.0 or -1.0. A general rule of thumb for calculating the Person Correlation Coefficient is provided in the following table:

Table 3.3: Rules of Thumb on Pearson Correlation Coefficient

Coefficient range	Strength of Association
±0.91 to ±1.00	Very High Positive/Negative Correlation
±0.71 to ±0.90	High Positive/Negative Correlation
±0.41 to ±0.70	Moderate Positive/Negative Correlation
±0.21 to ±0.40	Low Positive/Negative Correlation
0.00 to ±0.20	Negligible Correlation

Source: Hair, J. F., Money, A. H., Samouel, P., & Page, M. (2007).

3.7.3.2 Multiple Linear Regression Analysis

According to Zikmund, 2003, when a study contains two or more independent variables and a dependent variable, multiple linear regression enables researchers to simultaneously test for hypotheses, relationships, and their effects. The researcher will employ Multiple Linear Regression Analysis to determine the relevance and significance of each IV in predicting the DV in this study. Multiple linear regressions will be used to examine the relationship between the independent variables presence, group, reputation, relationship, identity, sharing, and conversation, and the dependent variable, tourist planning influences. Multiple regression analysis is calculated as follows:

$$Y = b_0 + b_1x_1 + b_2x_2 + \cdots + b_nx_n$$

When Y = dependent variable and X = independent variables

Table below show the P-value in regression:

P-value	Strength of evidence against null hypothesis (H_0)
P > 0.10	Little / none
0.05 < P < 0.10	Weak
0.01 < P < 0.05	Moderate
0.001 < P < 0.01	Strong
P ≤ 0.001	Very strong

If P-value is less than or equal to 0.05 ($P \leq 0.05$), reject H_0.

If P-value is greater than 0.05 ($P > 0.05$), do not reject H_0.

3.8 Conclusion

To make things short, this chapter is mainly talk about the research methodology and the result of pilot test. The next chapter would discuss the data analysis and interpretation that obtained from more than 200 respondents through online questionnaire.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

This chapter explains data processing while also providing an interpretation of the information gleaned from the 206 questions. Additionally, SPSS software will be utilized to do descriptive analysis, Cronbach's Alpha reliability analysis, multiple regression analysis, and Pearson correlation analysis in order to assess and provide data for this study. A variety of visual representations of data will be used in order to make the findings easier to comprehend. This chapter will also finish the theory.

4.1 Descriptive Analysis

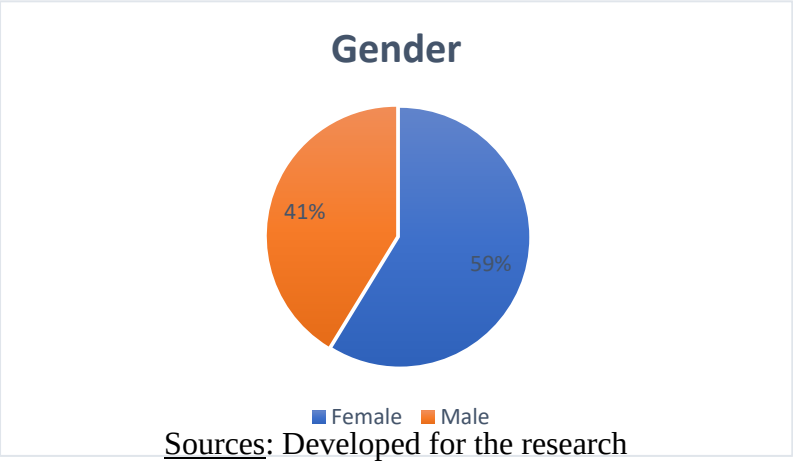
Frequency analysis is used to describe the demographics of 206 participants in a descriptive study. The frequency, percent, mean, median, mode, variance, and standard deviation would all be shown in this graph. It's that simple. Pie charts and tables depict the demographics of all 206 survey participants.

4.1.1 Demographic profile and general information of the respondents

This section will briefly discuss the demographic and general questions of the respondents. This will include all section A question, which is Gender, Age, Education Level, Malaysian Resident, Employment status, and Type of university. Hence, section B, which is the general questions to investigate the responses understanding level about the IR4.0 technologies.

4.1.1.1 Gender

Figure 4.1: Gender



Sources: Developed for the research

Table 4.1: Gender

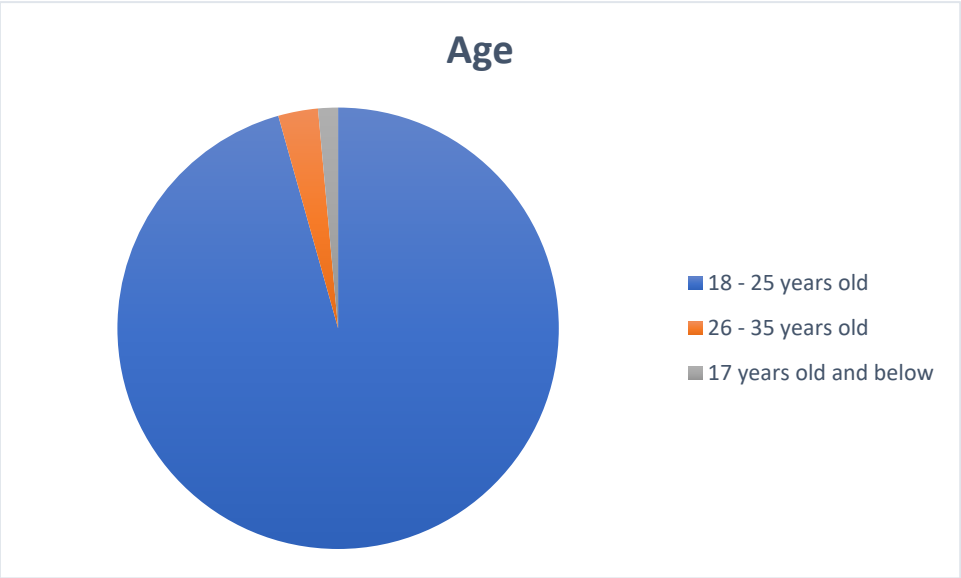
Gender	Frequency	Percentage (%)
Male	85	41.3
Female	121	58.7
Total	**206**	**100**

Sources: Developed for the research

Figure 4.1 and Table 4.1 show the gender of the respondents. In the total of 206 respondents in this research, 85 of the respondents (41.3%) are male and 121 of the respondents (58.7%) are female.

4.1.1.2 Age Group

Figure 4.2: Age



Sources: Developed for the research

Table 4.2: Age

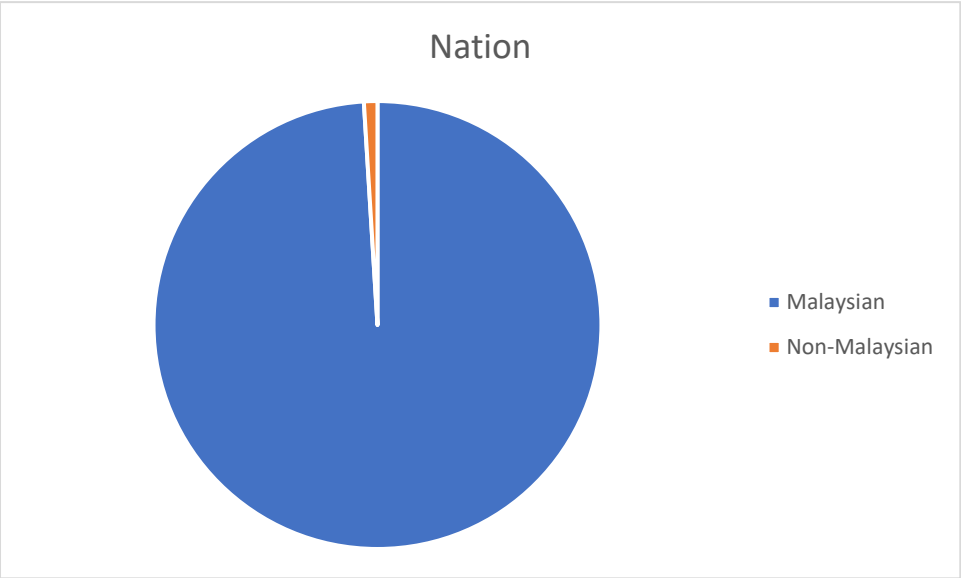
Age	Frequency	Percentage (%)
17 years old and below	3	1.5
18 - 25 years old	197	95.6
26 - 35 years old	6	2.9
36 years old and above	0	0
Total	**206**	**100**

Sources: Developed for the research

Based on the Figure 4.2 and Table 4.2 show the age of the respondents. In the total of 206 respondents in this research, 3 of the respondents (1.5%) are 17 years old and below, 197 of the respondents (95.6%) are among 18 to 25 years old, 6 of the respondents (2.9%) are among 26 to 35 years old, and none of the respondents (0%) are above 36 years old. The age group participates in this research only adopted 17 years old and below and 18 to 25 years old's respondents as Gen Z in 2022 is between age 10 to 25 years old. The others age will be filter out in the variables analysis.

4.1.1.3 Nation

Figure 4.3: Nation



Sources: Developed for the research

Table 4.3: Nation

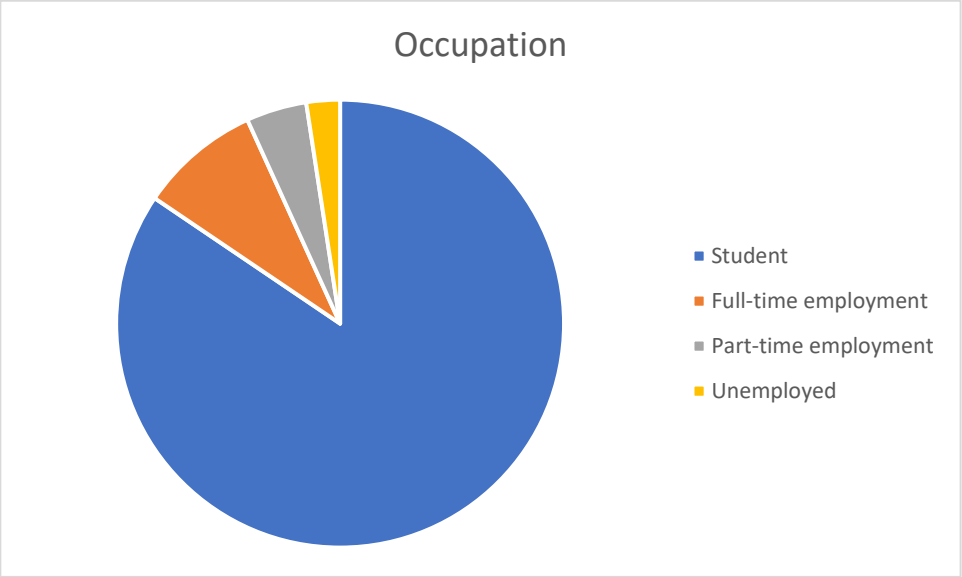
Nation	Frequency	Percentage (%)
Malaysian	204	99
Non-Malaysian	2	1
Total	**206**	**100**

Sources: Developed for the research

Based on the Figure 4.3 and Table 4.3 show the nation of the respondents. In the total of 206 respondents in this research, 204 of the respondents (99%) is Malaysian and only 2 respondents (1%) is come from the others country.

4.1.1.4 Occupation

Figure 4.4: Occupation



Sources: Developed for the research

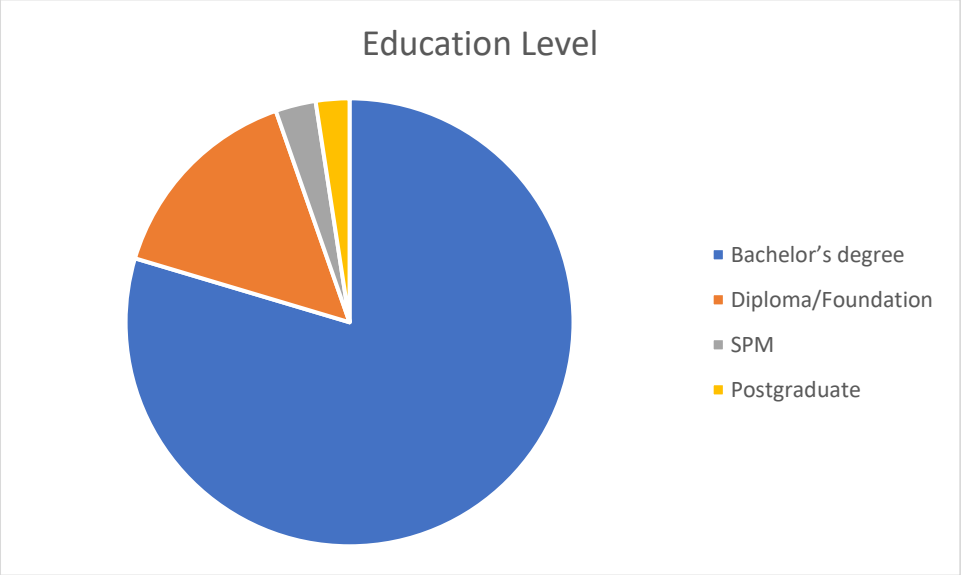
Table 4.4: Occupation

Occupation	Frequency	Percentage (%)
Student	174	84.5
Full-time employment	18	8.7
Part-time employment	9	4.4
Unemployment	5	2.4
Total	**206**	**100**

In the table 4.4 and figure 4.4 stated that there are 84.5% (174 respondents) of students, 4.4% (5 respondents) is part-time employment, 8.7% (18 respondents) is full-time employment, 2.4% (5 respondents) is unemployment. In this research, only student respondents as the main research target. The others occupations will be filter out in the variables analysis.

4.1.1.5 Education Level

Figure 4.5: Education Level



Sources: Developed for the research

Table 4.5: Education Level

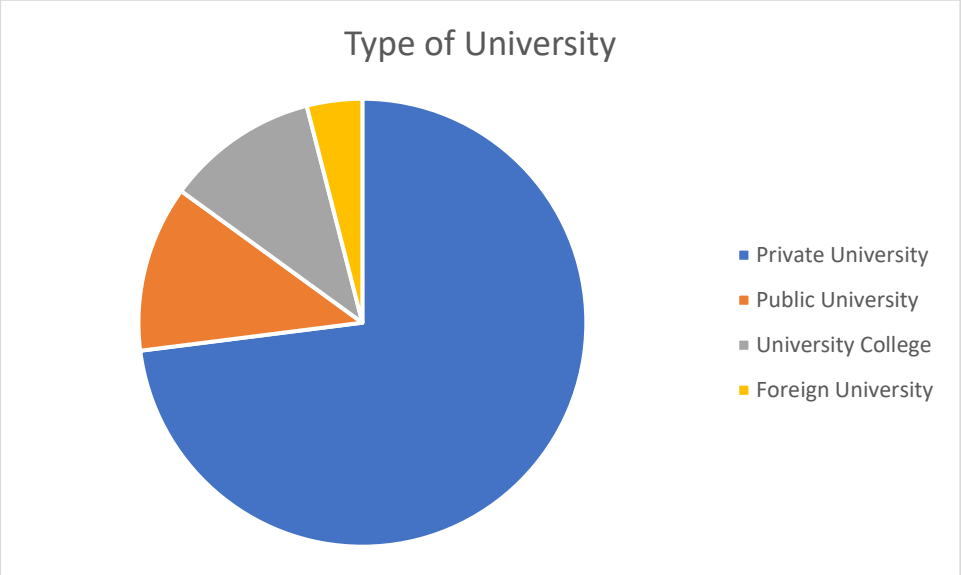
Education Level	Frequency	Percentage (%)
Bachelor's degree	164	79.6
Diploma/Foundation	31	15
SPM	6	2.9
Postgraduate	5	2.4
PhD	0	0
Total	**206**	**100**

Sources: Developed for the research

Figure 4.5 and table 4.5 show the education level of the respondents. In the total of 206 respondents in this research, 164 of the respondents (79.6%) are Bachelor's Degrees, 31 of the respondents (15%) are Diploma or Foundation, 5 of the respondents (2.4%) are Postgraduate, and 6 of the respondents (2.9%) are SPM. None of the PhD level's respondent collect in this survey. The education level participate in this research is appropriate exclude the respondent with SPM education level because the target respondents of this research is University student only. The SPM level's respondents will be filter out in the variables analysis.

4.1.1.6 Type of University

Figure 4.6: Type of University



Sources: Developed for the research

Table 4.6: Type of University

Education Level	Frequency	Percentage (%)
Private University	146	73
Public University	24	12
Foreign University	8	4
University College	22	11
Total	**200**	**100**

Sources: Developed for the research

In this analysis only 200 respondents out of 206 respondents have been taken is because there are 6 respondents only graduate until SPM level as last part showed, so they were skip on this part in the survey. As the figure 4.6 and table 4.6 shown, among 200 of respondents that have been chosen, 146 of respondents (73%) are come from Private University, 24 of respondents (12%) are come from Public University, 8 of respondents (4%) are come from Foreign University and 22 of respondents (11%) are come from University College.

4.1.1.7 Gen Z University Student

Table 4.7: Gen Z University Student

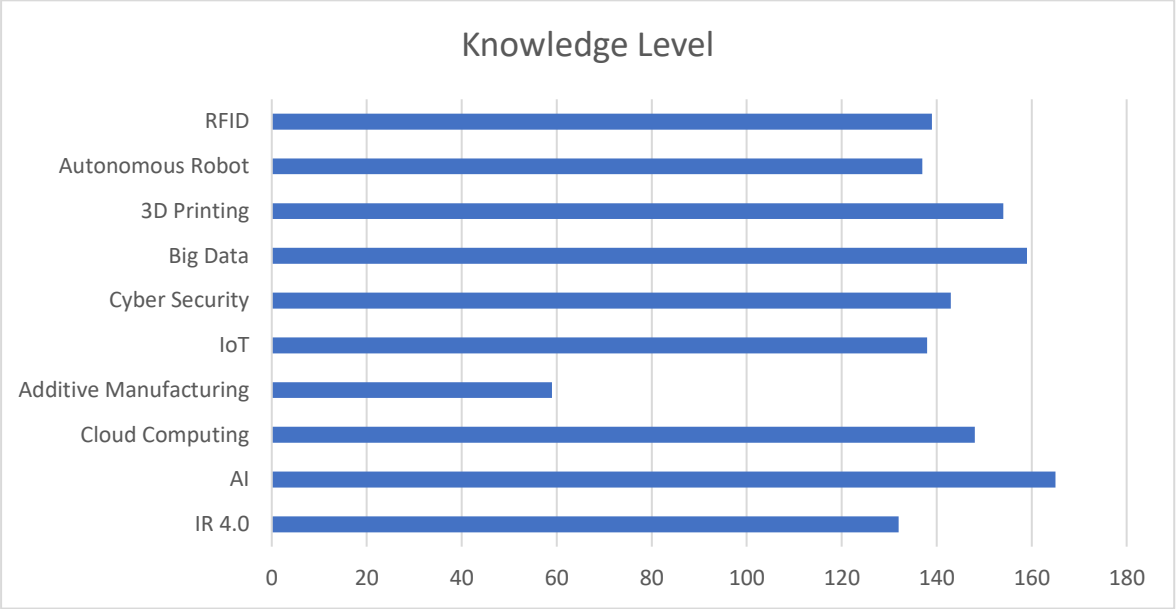
		Age			
		17 years old and below	18-25 years old	26-35 years old	Total
Occupation	University Student	2	166	2	170
	Unemployment	0	5	0	5
	Part-time employment	0	8	0	8
	Full-time employment	0	13	4	17
	Total	2	192	6	200

Sources: Developed for the research

As Table 4.7 shown, there are total of 200 respondents which after filtering out the 6 of SPM education level's respondents from the 206 respondents. Due to this research only target in Gen Z university student, therefore, the researcher filters out the respondents by using the cross-tabulation analysis to find out the main target respondents from the survey. There are 2 university students are below 17 years old and 166 university students are among 18 to 25 years old. In a summary, there are total of 168 of respondents is Gen Z university students. These 168 respondents will be use in the general information analysis and variables analysis in this research.

4.1.1.8 Knowledge Level about IR4.0 Technologies

Figure 4.7: Knowledge Level about IR 4.0 Technologies



Sources: Developed for the research

Table 4.8: Knowledge Level about IR 4.0 Technologies

Item	Frequency	Total of Respondent	Percentage (%)
IR 4.0	132	168	78.57
AI	165	168	98.21
Cloud Computing	148	168	88.10
Additive Manufacturing	59	168	35.12
IoT	138	168	82.14
Cyber Security	143	168	85.12
Big Data	159	168	94.64
3D Printing	154	168	91.67
Autonomous Robot	137	168	81.55
RFID	139	168	82.74
Total Average	**1374**	**1680**	**81.79**

Sources: Developed for the research

Figure 4.7 and Table 4.8 show the knowledge level about IR 4.0 technologies of the respondents. In the total of 168 valid respondents in this research, 132 of the respondents (78.57%) know IR4.0, 165 of the respondents (98.21%) know AI, 148 of the respondents (88.10%) know Cloud Computing, 59 of the respondents (35.12%) know Additive Manufacturing, 138 of the respondents (82.14%) know IoT, 143 of the respondents (85.12%) know Cyber Security, 159 of the respondents (94.64%) know Big Data, 154 of the respondents (91.67%) know 3D Printing, 137 of the respondents (81.55%) know Autonomous Robot, and 139 of the respondents (82.74%) know RFID. In a summary, the total average percentage of Gen Z University Student's Knowledge Level about IR 4.0 Technologies are 81.79% from these 168 valid respondents.

4.1.2 Central Tendencies Measurement of Construct

Table 4.9 Descriptive Statistic on Variables

Variables	N	Minimum	Maximum	Means	Std. Deviation
Performance Expectancy (PE)	168	2.00	5.00	4.0060	0.57443
Effort Expectancy (EE)	168	2.00	4.43	3.4507	0.52015
Social Influence (SI)	168	1.00	5.00	3.4881	0.84196
Perceived Risk (PR)	168	1.17	4.00	2.6409	0.53238
Trust (T)	168	1.67	5.00	3.6895	0.61662
Behavioral Intention to use IR 4.0 Technologies (BI)	168	1.25	5.00	3.8616	0.70167

Sources: Developed for the research

In the table 4.9, the result show of the descriptive statistic of the independent variable which are performance expectancy, effort expectancy, social influence, perceived risk, trust and the dependent variable is behavioral intention to use IR4.0 technologies. The highest mean in this six of the variables is performance expectancy (4.0060), followed by behavioral intention to use IR 4.0 technologies (3.8616), trust (3.6895), social influence (3.4881), and effort expectancy (3.4507). Based on the statistic obtained from the questionnaire, most of the respondents agreed that perceived risk is the least important factor due to perceived risk has the lowest mean of 2.6409 among the variables.

For the standard deviation among the variables, the highest standard deviation is social influence which is 0.84196. Second is behavioral intention to use IR4.0 technologies (0.70167). Follow by is trust (0.61662), performance expectancy (0.57443), and perceived risk (0.53238). The effort expectancy has the lowest standard deviation which is 0.52015.

4.2 Scale Measurement

4.2.1 Reliability Test

Table 4.10: Reliability Statistic for Actual Research

Variables	Cronbach's Alpha Coefficient	No. of Items
Performance Expectancy (PE)	0.829	6
Effort Expectancy (EE)	0.659	7
Social Influence (SI)	0.902	7
Perceived Risk (PR)	0.645	6
Trust (T)	0.859	6
Behavioral Intention to use IR4.0 Technologies (BI)	0.844	4

Sources: Developed for the research

The researcher would use Cronbach's Alpha Coefficient to measure internal consistency of the data values that were collected from the 168 respondents. The Cronbach's Alpha test in SPSS was displayed in the table 4.10, which indicated the reliability of the data. It is regarded acceptable and dependable if the Cronbach's Alpha Coefficient for each variable is more than 0.6. This is because Cronbach's Alpha values that are close to or greater than 0.6 are considered acceptable as reliable, while values that are equal to or less than 0.6 are considered unsatisfactory internal-consistency reliability. From the result obtained, Social Influence (SI) has the highest Cronbach's Alpha value of 0.902, followed by Trust (T), Behavioral Intention to use IR4.0 technologies (BI), Performance Expectancy (PE), Effort Expectancy (EE), Perceived Risk (PR), which is 0.859, 0.844, 0.829, 0.659, 0.645. Thus, the results shows that each variable are acceptable and reliable.

4.3 Inferential Analysis

4.3.1 Pearson Correlation Coefficient Analysis

Table 4.11 Correlations

		PE	SI	EE	PR	T	BI
Performance Expectancy (PE)	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	168					
Social Influence (SI)	Pearson Correlation	.655**	1				
	Sig. (2-tailed)	.000					
	N	168	168				
Effort Expectancy (EE)	Pearson Correlation	.716**	.644**	1			
	Sig. (2-tailed)	.000	.000				
	N	168	168	168			
Perceived Risk (PR)	Pearson Correlation	-.151	-.318**	-.260**	1		
	Sig. (2-tailed)	.050	.000	.001			
	N	168	168	168	168		
Trust (T)	Pearson Correlation	.582**	.723**	.572**	-.165*	1	
	Sig. (2-tailed)	.000	.000	.000	.032		
	N	168	168	168	168	168	
Behavioral Intention to use IR 4.0 Technologies (BI)	Pearson Correlation	.604**	.719**	.486**	-.293**	.699**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	168	168	168	168	168	168

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

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Developed for the research

From the Table 4.11, it shows the result of Pearson correlation analysis between the independent variables (performance expectancy, social influence, effort expectancy, perceived risk, and trust) and the dependent variable (behavioral intention to use IR4.0 technologies). All the significance value shown 0.000, indicating that the correlation of variables is significant at 0.01 (p 0.01). The Pearson correlation is lies between -0.293 and 0.719. Furthermore, positive signs denote a positive relationship between all independent and dependent variables excluded the relationship between perceived risk and behavioral intention to use IR 4.0 technologies. A positively correlated means the independent variables and dependent variable has statically linear relationship, but a negative correlation indication that both variables move in the opposite direction.

According to the result obtained, social influence had the greatest correlation to behavioral intention to use IR4.0 technologies (0.719) among the 5 variables, and this indicated that there is a strong positive relationship between social influence and behavioral intention to use IR4.0 technologies. Next, trust is the second independent variables that have stronger positive relationship with the behavioral intention to use IR4.0 technologies with the coefficient of 0.699 while followed by are performance expectancy and effort expectancy that have stronger relationship with influence in tourist's planning with the coefficient of 0.604 and 0.486. Nevertheless, the weakest relationship among the 5 variables is between perceived risk and behavioral intention to use IR4.0 technologies, which has the coefficient of -0.293, which indicated that there is a negative relationship.

4.3.2 Multiple Linear Regression Analysis

Table 4.12: Model Summary of Multiple Linear Regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.798[a]	0.622	0.611	0.43784

a. Predictors: (Constant), Trust, Perceived Risk, Performance Expectancy, Effort Expectancy, Social Influence

Source: Developed for the research

Based on the Table 4.12, R value for this study research is 0.798, R Square is 0.622, and Adjusted R Square us 0.611. While the standard error of the estimate is 0.43784. From the outcome of R Square, 62.2% of variation in the dependent variable (behavioral intention to use IR 4.0 technologies) is influenced by the independent variables (performance expectancy, social influence, effort expectancy, perceived risk, and trust). Regarding the 62.2% of variation explained, yet there are 33.8% cannot be explained in this study.

Table 4.13: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	51.164	5	10.233	53.378	0.000[b]
	Residual	31.056	162	0.192		
	Total	82.220	167			

a. Dependent Variable: Behavioral Intention to use IR 4.0 Technologies

b. Predictors: (Constant), Trust, Perceived Risk, Performance Expectancy, Effort Expectancy, Social Influence

Source: Developed for the research

Table 4.13 shows the F value in this research is 53.378 at 0.000b significant level. Due to the F value is significant, so the independent variables which are performance expectancy, social influence, effort expectancy, perceived risk, and trust are significant in explaining the dependent variable (behavioral intention to use IR 4.0 technologies).

Table 4.14: Coefficients[a]

Model		Unstandardized Coefficient		Standardized Coefficient	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.236	0.349		3.540	0.001
	PE	0.324	0.092	0.265	3.515	0.001
	EE	-0.232	0.101	-0.172	-2.309	0.022
	SI	0.291	0.068	0.349	4.270	0.000
	PR	-0.165	0.068	-0.125	-2.416	0.017
		0.421	0.082	0.370	5.113	0.000

Dependent Variable: behavioral intention to use IR 4.0 technologies

Source: Developed for the research

Table 4.14 illustrate the coefficient value of this research. The standardized coefficient is useful to determine the most important independent variable at the same time non-standardized coefficient is used to determine what effect a unit change in the independent variable will have on the dependent variable. Also, the B value in the non-standard coefficient means that for every increase of 1 unit value in the independent variable, the dependent variable will increase according to the B value.

As refer to the on Table 4.14, unstandardized coefficient (β) depicted the positive and negative relationship between Dependent Variable and each Independent Variable. The first positive effect is performance expectancy which have 0.324 changes when there is one unit change in the behavioral intention to use IR 4.0 technologies. Second positive effect is social influence which have 0.291 changes when there is one unit change in the behavioral intention to use IR 4.0 technologies. The third is trust which have 0.421 changes when there is one unit change in the behavioral intention to use IR 4.0 technologies. While the negative relationship is

effort expectancy and perceived risk which have -0.232 and -0.165 changes when there is one unit change in the behavioral intention to use IR 4.0 technologies. The positive relationship can be explained to increase the unit of the independent variable on the dependent variable, on the others hand, the negative relationship will decrease the unit of the independent variable on the dependent variable.

The multiple regression equation can be formed as below:

$$\mathbf{Y = a + b1X1 + b2X2 + b3X3 + b4X4 + b5X5}$$

Whereas:

Y = Behavioral Intention to use IR 4.0 Technologies

A = Constant term, Value of Y when X become zero

X1 = Dimension of Behavioral Intention to use IR 4.0 Technologies

B1 = Performance Expectancy

B2 = Effort Expectancy

B3 = Social Influence

B4 = Perceived Risk

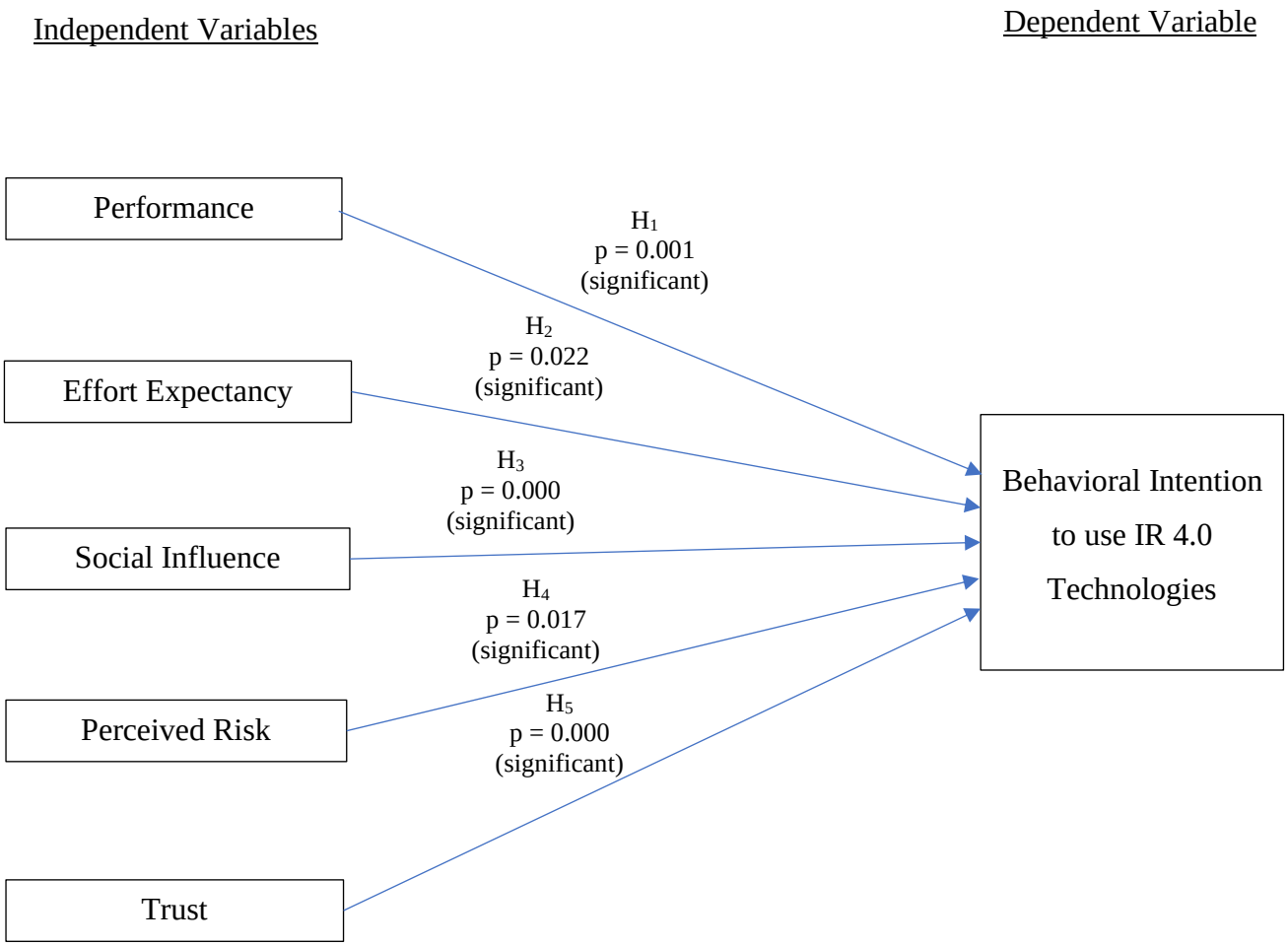
B5 = Trust

Therefore, the equation for multiple linear regressions as below:

Service Quality = (1.236) + (0.324) (Performance Expectancy) + (-0.232) (Effort Expectancy) + (0.291) (Social Influence) + (-0.165) (Perceived Risk) + (0.421) (Trust)

4.4 Test of Significance

Figure 4.8: Hypothesis result of conceptual framework



Hypothesis 1

H_0: There is no significant relationship between performance expectancy and behavioral intention to use IR 4.0 technologies.

H_1: There is a significant relationship between performance expectancy and behavioral intention to use IR 4.0 technologies.

If p value is less than (<) 0.05, reject H_0

If p value is more than (>) 0.05, do not reject H_0

The significant value of the conversation is 0. 001 ($p < 0.05$). Hence, H_0 is rejected, and H_1 is accepted. Therefore, there is a significant relationship between performance expectancy and behavioural intention to use IR 4.0 technologies.

Hypothesis 2

H_0: There is no significant relationship between effort expectancy and behavioral intention to use IR 4.0 technologies.

H_2: There is a significant relationship between effort expectancy and behavioral intention to use IR 4.0 technologies.

If p value is less than (<) 0.05, reject H_0

If p value is more than (>) 0.05, do not reject H_0

The significant value of the conversation is 0. 022 ($p < 0.05$). Hence, H_0 is rejected, and H_2 is accepted. Therefore, there is a significant relationship between effort expectancy and behavioural intention to use IR 4.0 technologies.

Hypothesis 3

H_0: There is no significant relationship between social influence and behavioral intention to use IR 4.0 technologies.

H_3: There is a significant relationship between social influence and behavioral intention to use IR 4.0 technologies.

If p value is less than (<) 0.05, reject H_0

If p value is more than (>) 0.05, do not reject H_0

The significant value of the conversation is 0. 000 ($p < 0.05$). Hence, H_0 is rejected, and H_3 is accepted. Therefore, there is a significant relationship between social influence and behavioural intention to use IR 4.0 technologies.

Hypothesis 4

H_0: There is no significant relationship between perceived risk and behavioral intention to use IR 4.0 technologies.

H_4: There is a significant relationship between perceived risk and behavioral intention to use IR 4.0 technologies.

If p value is less than (<) 0.05, reject H_0

If p value is more than (>) 0.05, do not reject H_0

The significant value of the conversation is 0. 017 ($p < 0.05$). Hence, H_0 is rejected, and H_4 is accepted. Therefore, there is a significant relationship between perceived risk and behavioural intention to use IR 4.0 technologies.

Hypothesis 5

H_0: There is no significant relationship between trust and behavioral intention to use IR 4.0 technologies.

H_5: There is a significant relationship between trust and behavioral intention to use IR 4.0 technologies.

If p value is less than (<) 0.05, reject H_0

If p value is more than (>) 0.05, do not reject H_0

The significant value of the conversation is 0. 000 ($p < 0.05$). Hence, H_0 is rejected, and H_5 is accepted. Therefore, there is a significant relationship between trust and behavioural intention to use IR 4.0 technologies.

4.5 Conclusion

The SPSS analytic tools have been used in this chapter to evaluate and interpret the data gathered from respondents. In this chapter, the formulation and analysis approach has been demonstrated, and the discussion, conclusion, and consequence will be presented in the Chapter 5 section.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

The results collected and obtained from the analysis that is discussed in Chapter 4 will be summarized in this chapter, while the primary findings that are related to the research results will be formed as well. End-of-chapter discussion of independent/dependent variable relationships is planned. In addition, the significance and limitations of this research study will be discussed in this chapter, as well as comments and ideas for future researchers.

5.1 Discussions of Major Findings

Table 5.1: Major Findings on Hypothesis Testing

No.	Hypothesis	Significant	Conclusion
1	H1: There is a significant relationship between performance expectancy and behavioral intention to use IR 4.0 technologies.	$\beta = 0.324$ p value = 0.001 < 0.05	Supported
2	H2: There is a significant relationship between effort expectancy and behavioral intention to use IR 4.0 technologies.	$\beta = -0.232$ p value = 0.022 < 0.05	Supported
3	H3: There is a significant relationship between social influence and behavioral intention to use IR 4.0 technologies.	$\beta = 0.291$ p value = 0.000 < 0.05	Supported
4	H4: There is a significant relationship between perceived risk and behavioral intention to use IR 4.0 technologies.	$\beta = -0.165$ p value = 0.017 < 0.05	Supported
5	H5: There is a significant relationship between trust and behavioral intention to use IR 4.0 technologies.	$\beta = 0.412$ p value = 0.000 < 0.05	Supported

The result obtained from the questionnaire illustrate the important determinants of behavioral intention to use IR4.0 technologies are performance expectancy, effort expectancy, social influence, perceived risk, and trust.

5.1.1 Relationship between performance expectancy and behavioral intention to use IR 4.0 technologies.

Table 5.1 shows the p-value of performance expectancy ($p = 0.001$) is lower than the significant level of 0.05 with a positive beta coefficient of 0.324. Thus, there is a positive significant relationship between performance expectancy and behavioral intention to use IR 4.0 technologies. Therefore, the first objective of this study is achieved and hypothesis 1 is supported. The result is supported by Almetere, E. (2020), Venkatesh et al. (2003) and Aseng, (2020) study which state that performance expectancy refers to the degree to which students perceive that using the IR 4.0 technologies will improve their productivity and gaining improvements in work performance. It is indicated that the higher optimism the person towards the newest technology would result the higher performance expectancy for the IR4.0. As a result, past studies (Godoe, et al., 2012; Acheampong, et al., 2017) have found that optimistic beliefs strongly influence the performance expectancy of future technologies that might improve a person's performance at work.

5.1.2 Relationship between effort expectancy and behavioral intention to use IR 4.0 technologies.

Based on the results of this study, the effort expectancy ($\beta = -0.165$ with $P = 0.022$) has a negative correlation coefficient and significant relationship with behavioral intention to use IR 4.0 technologies. This is because the β value is negative and its p value is smaller than 0.05. So, the interpretation of findings has specified that the effort expectancy impact on behavioral intention to use IR4.0 technologies negatively significant. According to recent research by Mer, A. (2021), customers' expectations for quick and easy transactions have increased as a result of technological advancements. How much time and effort are consumers willing to spend into a given task affects their productivity (Anitsal & Schumann, 2007). Research by Green et al. (2005) found a positive association between customer

productivity and perceived ease of use (effort expectancy). However, our research shows that effort expectation has a substantial negative correlation with IR 4.0 technology adoption by Gen Z students.

5.1.3 Relationship between social influence and behavioral intention to use IR 4.0 technologies.

According to Table 5.1, it shows that the p-value social influence (p = 0.000) is lower than the significant level of 0.05 with a positive β value of 0. 291 while a p-value that is lower than the significant level of 0.05 shows a positive relationship between social influence and behavioral intention to use IR4.0 technologies. Researchers like Nur & Panggabean (2021) found that Gen Z university students' behavioral intention to utilize technology is positively influenced by social influence. Generation Z university students are more likely to use IR4.0 technology if their closest friends and family members have a stronger impact on their use of it. Generation Z uses social media the most, according to (Alshehri et al., 2019) and (Jung et al., 2020), who have also found a similar correlation between their results.

5.1.4 Relationship between perceived risk and behavioral intention to use IR 4.0 technologies.

Based on the results of Table 5.1, the perceived risk (β = -0.232 with P = 0.017) has a negative correlation coefficient and significant relationship with behavioral intention to use IR 4.0 technologies. This is because the β value is negative and its p value is smaller than 0.05. So, the interpretation of findings has specified that the effort expectancy impact on behavioral intention to use IR4.0 technologies negatively significant. The findings corroborated by Mer, A. (2021) reveal the same conclusion to illustrate that perceived risk has a significant negative influence on the behavioral intention (β= –0.15, p 0.001), which suggests that when the perception of danger is strong, the behavioral intention to utilize technology is lowered greatly. This is in accordance with previous research, which found that people are less likely to adopt new technology if they see it as high risk (Bailey et al., 2019; Tan & Leby Lau, 2016).

5.1.5 Relationship between trust and behavioral intention to use IR 4.0 technologies.

Based on the Table 5.1 shows the p-value of trust (p = 0.000) is lower than the significant level of 0.05 with a positive beta coefficient of 0.412. Therefore, there is a positive significant relationship between trust and behavioral intention to use IR 4.0 technologies. The result is supported by the study of Nur & Panggabean (2021) which indicated that users are more likely to adopt a new technology if they have faith in its reliability. This is in accordance with the findings of recent studies by (Gong, Zhang, Chen, Cheung, & Lee, 2019; Patil et al., 2020; N. Singh & Sinha, 2020; Widyanto, Kusumawardani, & Septyawanda, 2020). In the context of online technologies, trust refers to the degree to which a user has confidence in the information technology and the transaction operating mechanism performance. In order to develop user confidence, technology operators must put out considerable effort. It doesn't matter if IR4.0 technologies are employed or not; user intention and behavior in adoption are heavily influenced by their level of trust. It is more probable that Gen Z university students will employ IR4.0 technology if they feel it is secure and trustworthy. Another study also confirms the strong effect of trust on the behavioral intention to adopt IR4.0 technologies, demonstrating that users place a high degree of importance on the security aspects (Chong et al., 2010; Yousafzai et al., 2003).

5.2 Implication of the study

There has been a lot of discussion about the "Industry 4.0" phenomenon recently. Smart machines or autonomous robots can be created as a result of the Internet of Things (IoT), the Internet of Services (IoS), the Internet of Data (IoD), and Cyber-Physical Systems (CPS) in the era of Industry 4.0. Malaysia, like the rest of the globe, is responding quickly to the era of Industry 4.0. The Malaysian government is urging the country's citizens to become more technologically literate, particularly in the education sector. Higher education serves as a catalyst for change in the society. IR 4.0 technology education can help colleges prepare for the fourth industrial revolution by making students more aware of and ready for the new

technologies that will emerge as a result of the revolution. Schwab believed that every individual should equip themselves with adequate knowledge and skills of 4.0 technologies in the era of IR4.0. The results of the systematic review will help the universities to develop the student's ability to embrace new technologies, which enable them to adapt to changes in the learning environment. Awareness and readiness of IR 4.0 technologies can provide more opportunities for Gen Z university students to acquire essential skills to bring into their workplace. This paper is expected to support Malaysia's mission to promote the advancement of knowledge of research that will help transform the country into a competitive and high-income nation especially in the development of IR 4.0.

5.3 Limitations of the study

First and foremost, the quantitative method of data collection is quick and easy, but respondents are unable to provide their other personal opinion or comment on the research questions by their word, especially for those respondents who reject the relationship between the variables because closed-ended questions only allow respondents to answer the questions by the provided answers and limit their opinion. Another limitation is that the type of universities being asked in the research. Initially reseacher wish to get respondents from different types of universities, which are private university, public university, foreign university, and college. A comparison will be made between the respondents and the kind of institutions they attend. However, the results shown the bulk of responders are from private universities, it was failed in making comparisons.

Moreover, the survey form is being disseminated across Malaysia over the internet. Due to the pandemic Covid-19, it has caused the researcher to be difficult to focus the research on one area as it has to be distributed through online form. This has caused the target respondents to disperse all over Malaysia and the data collected is slightly inconsistent. However, the valid sample size of this research only 168 respondents, but according to the MIDA (2021) stated that there are 1.32 million university students studying in Malaysia. Therefore, the data collection from this research may not that precise and details when compare with the large size of Malaysia university students if not target in the specific area.

5.4 Recommendations of Research

First, data collection methods other than questionnaires can be adopted in this study. Qualitative and quantitative data collecting approaches can be used by future scholars. Using two ways of data gathering in a study allows respondents to express their views and give more detailed and meaningful information.

Besides, it is recommended that the type of universities that was sent on the questionnaire to do this research only consist of private and public university in the future research. This method can ensure the balance of results which answer by the respondents. To allow the researcher to be able to do comparisons among the respondents from both universities. By doing so, it enables the researcher to add in more aspects in their research and provide a much better quality of research.

Moreover, it is advisable for the researcher not only distribute questionnaires via online platforms, but also distribute the survey form physically. This is to ensure that the area of coverage will not be going too far like online distribution. As through online, the area of coverage is too large, and it caused the result to be inconsistent and inaccurate. By distributing physical survey form, it will be focused only on one area and the outcome will be much more accurate and consistent. The sample size also can be enlarged to 500 respondents.

5.5 Conclusion

In conclusion, this research is determining the Gen Z university student have the awareness and readiness toward the IR4.0 technologies. Performance expectancy, social influence, and trust were shown to have a positive correlation with the dependent variable (behavioral intention to use IR4.0 technologies), whereas effort expectancy and perceived risk were found to have a negative correlation with the dependent variable (behavioral intention to use IR4.0 technologies). Finally, this research article discusses the study's shortcomings and makes recommendations for further work. Future scholars may use this study as a guide.

APPENDICES

Appendix A: Questionnaire

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF ACCOUNTANCY AND MANAGEMENT

Dear respondents,

I am Lee Weng Zhan, currently pursuing my undergraduate in Bachelor of International Business (Hons) from University Tunku Abdul Rahman (UTAR) Sungai Long. The purpose of this study is to analyses the awareness and readiness of Gen Z university student towards Industrial Revolution 4.0 (IR 4.0) technologies.

I wish if you could spend around 10 minutes of your variable time to complete the survey questions. Please answer all the questions as I greatly value your thoughts and belies. Your participation will greatly contribute to the success of the survey. We deeply appreciate your help in participating in this survey and your survey responses will be kept totally confidential, and all survey data will be presented only in aggregate and purely for academic purposes.

Thank you for participating to allow this survey to be completed successfully.

SURVEY QUESTIONNAIRE

The purpose of this survey is to identify the awareness and readiness of Gen Z university student towards Industrial Revolution 4.0 (IR 4.0) technologies. There are **FOUR (4) sections** in this questionnaire. Please answer ALL questions in ALL sections. Thank you.

Section A: Demographic Profile

INSTURCTION: Please read the questions carefully and select ONE (1) answer for each question.

1. Gender of respondent: *

- ◯ Male
- ◯ Female

2. Age of respondent *

- ◯ 17 years old and below
- ◯ 18 - 25 years old
- ◯ 26 - 35 years old
- ◯ 36 years old and above

3. Are you a Malaysian? *

- ◯ Yes
- ◯ No

4. Current employment status of respondent: *

- ◯ Unemployed
- ◯ Student
- ◯ Part-time employment
- ◯ Full-time employment

5. Education Level of respondent: *

- ○ SPM
- ○ Diploma/Foundation
- ○ Bachelor's degree
- ○ Postgraduate
- ○ PhD

6. University type of respondent: *

- ○ Private University
- ○ Public University
- ○ Foreign University
- ○ University College

Section B: General Questions

INSTURCTION: Please read the questions carefully and select ONE (1) answer for each question.

Have you heard about... *

	Yes	No
Industry Revolution 4.0 (IR 4.0) te...	○	○
Artificial Intelligence (AI)?	○	○
Cloud Computing?	○	○
Additive Manufacturing?	○	○
Internet of Things (IoT)?	○	○
Cyber Security?	○	○
Big Data?	○	○
3D Printing?	○	○
Autonomous Robot?	○	○
Radio Frequency Identification (R...	○	○

Section C: Construct Measurement

Please select the appropriate answer for every question based on the statement given and there is no right or wrong answer. The 5-Point Likert Scale is used in this section.

(1) Strongly Disagree

(2) Disagree

(3) Neutral

(4) Agree

(5) Strongly Agree

IV: Performance Expectancy

I would like to use IR 4.0 technologies frequently. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

IR 4.0 technologies improve my learning performance. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

IR 4.0 technologies increase my academic performance. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Internet of Things (IoT) makes it easier to study course content. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Big data assist me easier to collect data in my research and assignment. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I frequently use Cloud system to save my documents. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

IV: Effort Expectancy

I find IR 4.0 technology is easy to use. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I find the IR 4.0 technology is cumbersome to use. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Learning how to use a computing system is easy for me. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

It is easy to become skillful at using the robotics. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I feel comfortable and confident when I use RFID technology. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I need to learn more things before I can get going with the system. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I save documents better through Cloud system compared to pen drive or external hard drive. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

IV: Social Influence

My peers and friends have discussed about IR 4.0 technologies. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I have learned about IR 4.0 technologies in class. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I have attended seminars or talks relating to IR 4.0 technologies before. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I think that using IR 4.0 technologies is fashionable. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

My peers and teachers think that I should use IR 4.0 technologies in learning. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

People who are important to me think that I should use IR4.0 technologies in daily life. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I think I am more ready to use the IR 4.0 technologies if my friends and my family use it. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

IV: Perceived Risk

IR 4.0 technologies (big data, IoT, cybersecurity...) will disclose my private information. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I am not really security on IR 4.0 technologies. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Authorization mechanisms of IR4.0 technologies make me feel comfortable. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I feel not safe when I release personal information through Internet of Things (IoT). *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I think big data and cloud computing put my privacy at risk. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I feel insecure on Cyber Security in protect my information over interconnected corporate systems. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

IV: Trust

I believe that IR 4.0 technologies is trustworthy. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I trust the IR 4.0 technologies will assist efficiently in my learning. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I do not doubt the honesty of IR 4.0 technologies. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Even if not monitoring, I would trust IR 4.0 technologies (AI) will do the job right. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

IR 4.0 technologies have the ability to fulfill its task. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Legal and technological policies of IR 4.0 technologies adequately protect me from problems on internet. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

DV: Behavioral Intention to use IR 4.0 Technologies

I intend to use IR 4.0 technologies in my future learning. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I would use IR 4.0 technologies to support me in my daily life. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I plan to use IR 4.0 technologies in the next 6 months. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

I expect that I would use IR 4.0 technologies in my future work. *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

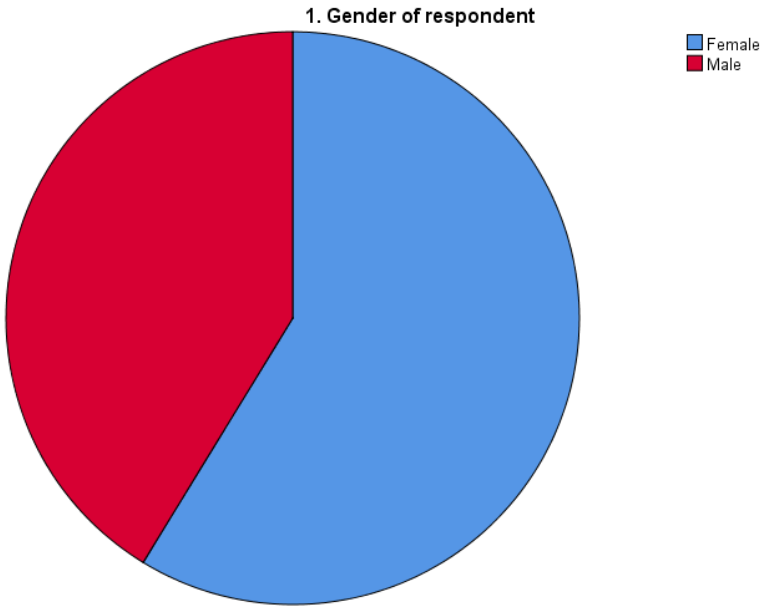
Appendix B: SPSS Output

Demographic profile and general information of the respondents

Gender

1. Gender of respondent

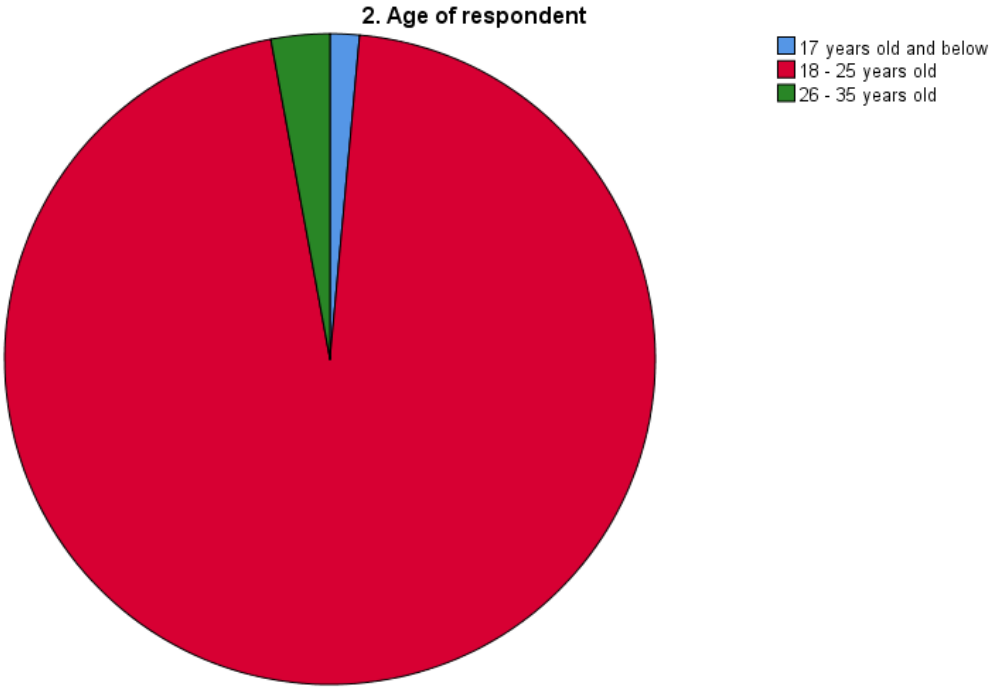
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	121	58.7	58.7	58.7
	Male	85	41.3	41.3	100.0
	Total	206	100.0	100.0	



Age

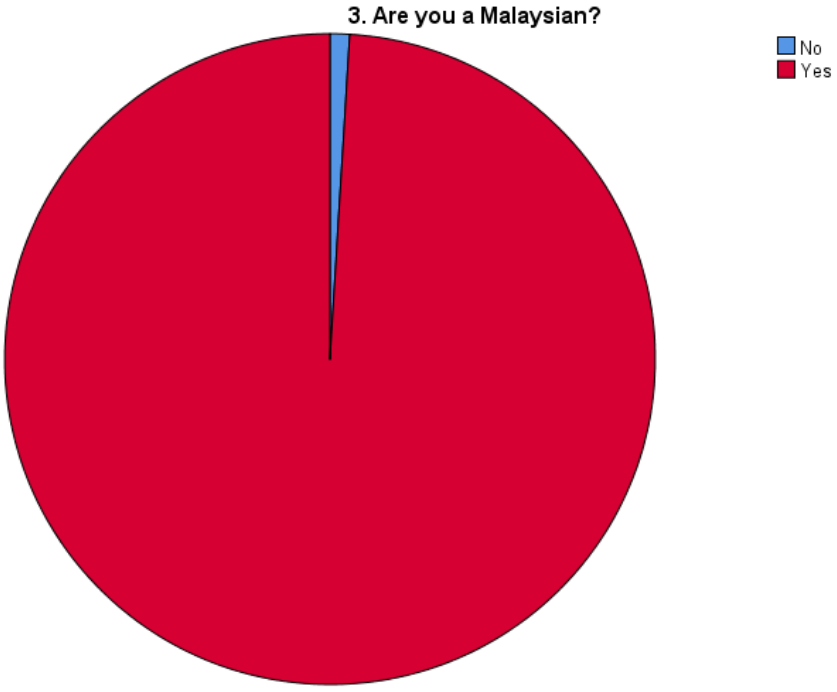
2. Age of respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17 years old and below	3	1.5	1.5	1.5
	18 - 25 years old	197	95.6	95.6	97.1
	26 - 35 years old	6	2.9	2.9	100.0
	Total	206	100.0	100.0	



3. Are you a Malaysian?

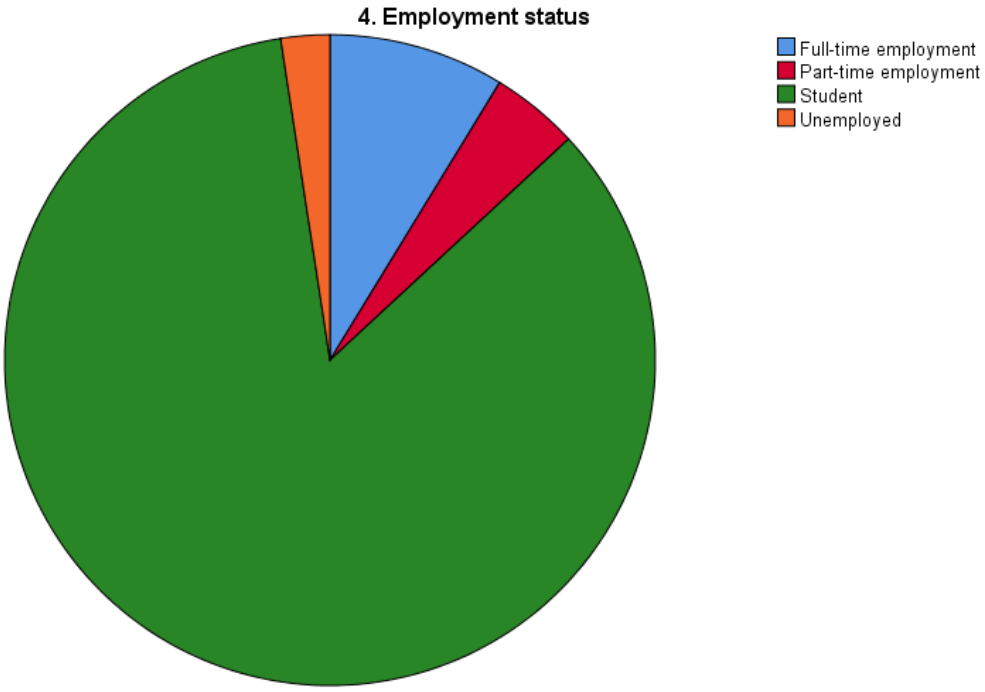
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	1.0	1.0	1.0
	Yes	204	99.0	99.0	100.0
	Total	206	100.0	100.0	



Occupation

4. Employment status

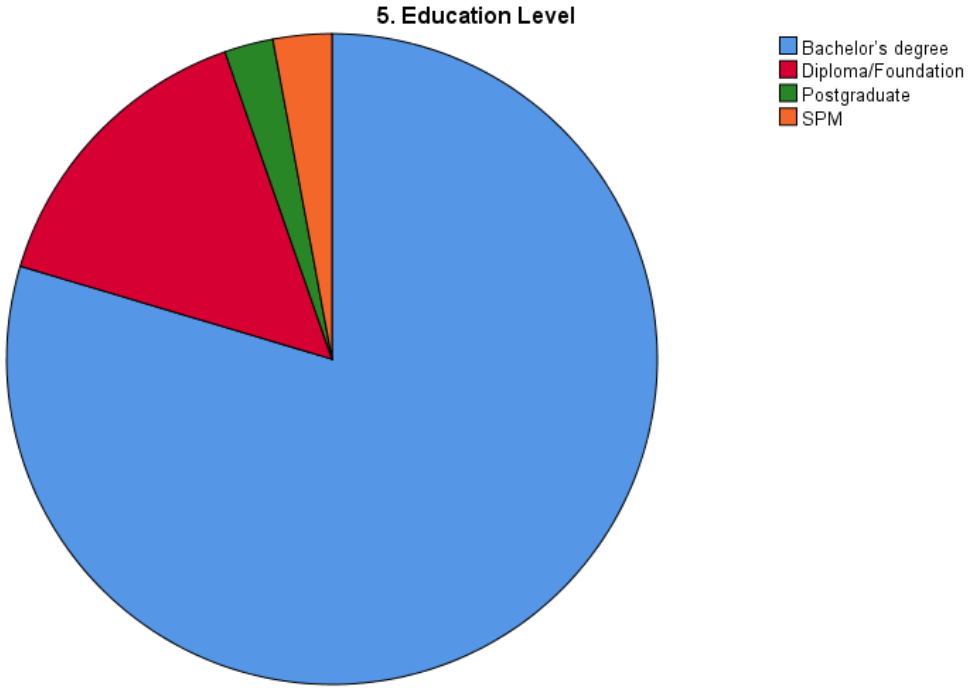
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full-time employment	18	8.7	8.7	8.7
	Part-time employment	9	4.4	4.4	13.1
	Student	174	84.5	84.5	97.6
	Unemployed	5	2.4	2.4	100.0
	Total	206	100.0	100.0	



Education Level

5. Education Level

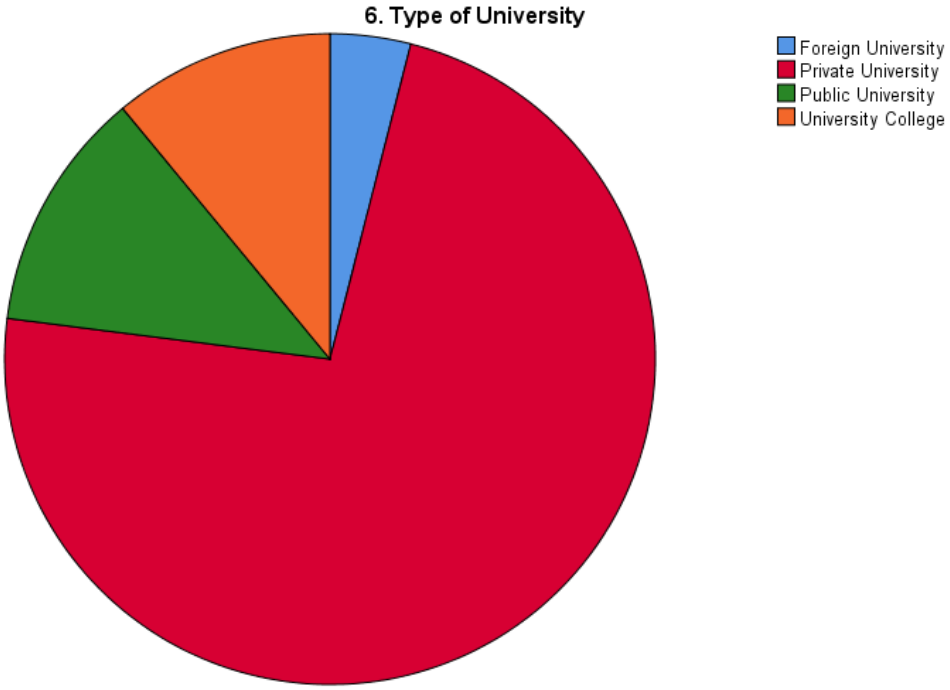
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's degree	164	79.6	79.6	79.6
	Diploma/Foundation	31	15.0	15.0	94.7
	Postgraduate	5	2.4	2.4	97.1
	SPM	6	2.9	2.9	100.0
	Total	206	100.0	100.0	



Type of University

6. Type of University

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Foreign University	8	4.0	4.0	4.0
	Private University	146	73.0	73.0	77.0
	Public University	24	12.0	12.0	89.0
	University College	22	11.0	11.0	100.0
	Total	200	100.0	100.0	



4. Employment status * 2. Age of respondent Crosstabulation

Count

		2. Age of respondent			
		17 years old and below	18 - 25 years old	26 - 35 years old	Total
4. Employment status	Full-time employment	0	13	4	17
	Part-time employment	0	8	0	8
	Student	2	166	2	170
	Unemployed	0	5	0	5
Total		2	192	6	200

$Knowledgelevel Frequencies

		Responses		
		N	Percent	Percent of Cases
$Knowledgelevel[a]	Have you heard about... [Industry Revolution 4.0 (IR 4.0) technologies?]	132	9.6%	78.6%
	Have you heard about... [Artificial Intelligence (AI)?]	165	12.0%	98.2%
	Have you heard about... [Cloud Computing?]	148	10.8%	88.1%
	Have you heard about... [Additive Manufacturing?]	59	4.3%	35.1%
	Have you heard about... [Internet of Things (IoT)?]	138	10.0%	82.1%
	Have you heard about... [Cyber Security?]	143	10.4%	85.1%
	Have you heard about... [Big Data?]	159	11.6%	94.6%
	Have you heard about... [3D Printing?]	154	11.2%	91.7%
	Have you heard about... [Autonomous Robot?]	137	10.0%	81.5%
	Have you heard about... [Radio Frequency Identification (RFID) tag?]	139	10.1%	82.7%
Total		1374	100.0%	817.9%

a. Dichotomy group tabulated at value 1.

Descriptive Statistic on Variables

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
MEAN_PE	168	2.00	5.00	4.0060	.57443
MEAN_EE	168	2.00	4.43	3.4507	.52015
MEAN_SI	168	1.00	5.00	3.4881	.84196
MEAN_PR	168	1.17	4.00	2.6409	.53238
MEAN_T	168	1.67	5.00	3.6895	.61662
MEAN_BI	168	1.25	5.00	3.8616	.70167
Valid N (listwise)	168				

Reliability Test

Performance Expectancy (PE)

Reliability Statistics

Cronbach's Alpha	N of Items
.829	6

Effort Expectancy (EE)

Reliability Statistics

Cronbach's Alpha	N of Items
.659	7

Social Influence (SI)

Reliability Statistics

Cronbach's Alpha	N of Items
.902	7

Perceived Risk (PR)

Reliability Statistics

Cronbach's Alpha	N of Items
.645	6

Trust (T)

Reliability Statistics

Cronbach's Alpha	N of Items
.859	6

Behavioral Intention to use IR4.0 Technologies (BI)

Reliability Statistics

Cronbach's Alpha	N of Items
.844	4

Pearson Correlation Coefficient

Correlations

		MEAN_PE	MEAN_EE	MEAN_SI	MEAN_PR	MEAN_T	MEAN_BI
MEAN_PE	Pearson Correlation	1	.716**	.655**	-.151	.582**	.604**
	Sig. (2-tailed)		.000	.000	.050	.000	.000
	N	168	168	168	168	168	168
MEAN_EE	Pearson Correlation	.716**	1	.644**	-.260**	.572**	.486**
	Sig. (2-tailed)	.000		.000	.001	.000	.000
	N	168	168	168	168	168	168
MEAN_SI	Pearson Correlation	.655**	.644**	1	-.318**	.723**	.719**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	168	168	168	168	168	168
MEAN_PR	Pearson Correlation	-.151	-.260**	-.318**	1	-.165*	-.293**
	Sig. (2-tailed)	.050	.001	.000		.032	.000
	N	168	168	168	168	168	168
MEAN_T	Pearson Correlation	.582**	.572**	.723**	-.165*	1	.699**
	Sig. (2-tailed)	.000	.000	.000	.032		.000
	N	168	168	168	168	168	168
MEAN_BI	Pearson Correlation	.604**	.486**	.719**	-.293**	.699**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	168	168	168	168	168	168

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

*. Correlation is significant at the 0.05 level (2-tailed).

Multiple Linear Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.789[a]	.622	.611	.43784	.622	53.378	5	162	.000

a. Predictors: (Constant), MEAN_T, MEAN_PR, MEAN_PE, MEAN_EE, MEAN_SI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	51.164	5	10.233	53.378	.000[b]
	Residual	31.056	162	.192		
	Total	82.220	167			

a. Dependent Variable: MEAN_BI

b. Predictors: (Constant), MEAN_T, MEAN_PR, MEAN_PE, MEAN_EE, MEAN_SI

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.236	.349		3.540	.001
	MEAN_PE	.324	.092	.265	3.515	.001
	MEAN_EE	-.232	.101	-.172	-2.309	.022
	MEAN_SI	.291	.068	.349	4.270	.000
	MEAN_PR	-.165	.068	-.125	-2.416	.017
	MEAN_T	.421	.082	.370	5.113	.000

a. Dependent Variable: MEAN_BI