

THE FACTORS THAT INFLUENCE THE INTENTION TO USE OF HIGH-END
CHIPSET SMARTPHONE AMONG GEN-Z IN MALAYSIA

LIM ZI JIE

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

APPROVAL

I/ We acknowledge that have read this report and on my view this report is sufficient in term of scope and quality for purpose for the certificate of Bachelor of Technology Management (Technology Innovation) With Honours.

Signature :

Name of Supervisor :

Date :

Signature :

Name of Panel :

Date :

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Universiti Teknikal Malaysia Melaka

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DECLARATION OF ORIGINAL WORK

I, Lim Zi Jie, (I/C Number: 950311-01-6579)

“I am hereby to declare that the work of this exercise is mine except for the quotations and summaries that have been duly acknowledge.”

Signature :

Name :

Date :

DEDICATION

This research paper is dedicated to my loving parents, Mr. Lim Chong Hoo and Mrs. Pong Mee Lan, who always inspired me. They gave me unconditional love and support in finishing my studies. As my parents, I am honored to have them. My special thanks go to all my family, especially my siblings and my aunt, who always helped and encouraged me when I was faced with problems.

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Next, I would like to thank all of my friends who helped me and assisted me with this research paper. Guidance, cooperation and encouragement by my friends help me to finish this paper when facing the problems. Their encouragement was important to me because it provided confidence to me for finish my research paper.

Finally, my special thanks to all the people who helped me directly or indirectly and who contributed to the completion of this report. I would like this research paper to be useful not only to me, but also to those who need the information in the future.

ABSTRACT

The research was to investigate the factors that influence the intention to use of high-end chipset smartphone among Gen-Z in Malaysia. Smartphone undeniably become a must for Malaysian, hence, this study aims to determine the level of consumer in Malaysia to accept the high-end chipset smartphone. Furthermore, the research was more concern about Gen-Z in Malaysia as their exposure to the technology is highest compared to other age group. Meanwhile, Gen-Z will be the largest group of population in Malaysia in future, hence it is necessarily to study about the Gen-Z behaviour towards high-end chipset smartphone.

Keywords: Malaysian, High-end chipset smartphone, Gen-Z, Factors, Influence, Intention to use

ABSTRAK

Pengajian ini bertujuan mengaji tentang faktor-faktor yang boleh mempengaruhi niat untuk mengguna “high-end chipset” telefon pintar di kalangan Gen-Z di Malaysia. Tidak dapat dinafikan bahawa telefon pintar telah menjadi keperluan untuk rakyat Malaysia. Oleh sebab itu, pengajian ini bertujuan untuk kadar pelanggan di Malaysia menerima teknologi “high-end chipset” telefon pintar. Kajian ini lebih focus kepadakalangan Gen-Z kerana mereka lebih cenderung dalam informasi teknologi berbanding umur lain. Pada masa depan pula, Gen-Z akan menjadi kumpulan populasi yang paling besar di Malaysia. Oleh sebab itu, kajian ini perlu dijalankan untuk kajian cara Gen-Z terhadap teknologi tinggi.

Kata Kunci: *Malaysia, “high-end chipset” telefon pintar, Gen-Z, faktor, mempengaruhi*

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	APPROVAL	i
	DECLARATION	iii
	DEDICATION	iv
	ACKNOWLEDGEMENT	v
	ABSTRACT	vi
	TABLE OF CONTENTS	viii
	LIST OF TABLES	xii
	LIST OF FIGURES	xiii
	LIST OF ABBREVIATIONS	xiv
	LIST OF APPENDIXES	xv
 CHAPTER 1	 INTRODUCTION	
	1.1 Introduction	1
	1.2 Research Problem	2
	1.3 Research Objective	3
	1.4 Research Questions	3
	1.5 Implication of Research	3
	1.6 Significance of Research	4

CHAPTER 2	LITERATURE REVIEW	
2.1	Performance of Chipset	5
	2.1.1 Qualcomm Processor	7
	2.1.2 APPLE Mobile Processor	8
	2.1.3 MediaTek Processor	9
	2.1.4 Huawei HiSilicon	9
	2.1.5 Samsung Exynos Processor	10
	2.1.6 High-End Chipset Market Condition	11
2.2	Brand	11
2.3	Price	12
2.4	Social Influence	13
2.5	Gen-Z	14
2.6	Technology Acceptance Model	16
2.7	Theoretical Framework	17
2.8	Hypothesis	18
CHAPTER 3	RESEARCH METHODS	
3.1	Methodology	20
3.2	Research Design	20
3.3	Data Sources	21
	3.3.1 Primary Data	21
	3.3.2 Secondary Data	22
3.4	Data Collection Techniques	22
	3.4.1 Primary Data Collection	22
	3.4.2 Questionnaire Design	24
	3.4.2.1 Section A	25
	3.4.2.2 Section B	26
	3.4.2.3 Section C	29
	3.4.3 Secondary Data Collection	29

3.5	Issues of Reliability and Validity	29
	3.5.1 Internal Validity	30
	3.5.2 External Validity	30
	3.5.3 Construct Validity	30
	3.5.4 Reliability	31
3.6	Sampling Design	32
	3.6.1 Target Population	32
	3.6.2 Sampling Frame and Sampling Location	32
	3.6.3 Sampling Elements	33
	3.6.4 Sampling Techniques	33
3.7	Definition of Key Terms, Concepts and Variables	35
3.8	Data Analysis and Interpretation	36
	3.8.1 Inferential Analysis	36
	3.8.1.1 Multiple Linear Regression Analysis	36
3.9	Pilot Study	37
 CHAPTER 4 DATA ANALYSIS		
4.1	Introduction	38
4.2	Descriptive Analysis	39
	4.2.1 Respondents' Background	39
	4.2.1.1 Gender	39
	4.2.1.2 Occupation	40
	4.2.1.3 Race	40
	4.2.1.4 Monthly Income	41
	4.2.1.5 Awareness of Chipset in the Smartphone	42

4.2.1.6	Used or Intend to Use High-end Chipset Brand	43
4.3	Reliability Test	44
4.4	Inferential Analysis	45
4.4.1	Multiple Regression	45
4.4.2	Test of Significance (Hypotheses)	49
CHAPTER 5	CONCLUSION AND RECOMMENDATION	
5.1	Introduction	52
5.2	Summary of Descriptive Analysis	52
5.3	Scale Measurement	54
5.3.1	Validity	54
5.3.2	Reliability	55
5.4	Discussion of Objectives and Hypothesis	55
5.4.1	Objective 1	55
5.4.2	Objective 2	56
5.4.3	Objective 3	59
5.5	Implications	60
5.6	Recommendations	61
5.7	Conclusion	62
	REFERENCES	63
	APPENDIXES	70

LIST OF TABLES

TABLE	TITLE	PAGE
2.1	The Top 10 Performance Mobile Processors	7
2.2	Qualcomm Snapdragon Series	8
2.3	Samsung Exynos Series	10
2.4	The Generations	15
3.1	The Independent Variables	24
3.2	The Independent Variables	25
3.3	The Dependent Variables	25
3.4	The Likert Scale	27
3.5	Rules of Thumb about Cronbach's Alpha Coefficient Size	31
3.6	Determining Sample Size from a Given Population	34
4.1	Gender	39
4.2	Occupation	40
4.3	Race	40
4.4	Monthly Income	41
4.5	Awareness of Chipset in the Smartphone	42
4.6	Used or Intent to Use High-end Chipset Brand	43
4.7	Cronbach's Alpha Value	44
4.8	Multiple Regressions	45
4.9	Anova Test	46
4.10	Coefficients	47
4.11	Coefficients	49

LIST OF FIGURES

FIGURE	TITLE	PAGE
Figure 2.1	Best Flagship Processors	6
Figure 2.2	Technology Acceptance Model	16
Figure 2.3	Theoretical Framework	17

LIST OF ABBREVIATIONS

MCMC	Malaysian Communication and Multimedia Commission
GPS	Global Positioning Systems
CPU	Central Processing Unit
GPU	Graphic Processing Unit
AI	Artificial Intelligence
FPU	Floating Point Unit
LTE	Long Term Evolution
CDMA	Code Division Multiple Access
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
UTAUT	Unified Theory of Acceptance and Use of Technology
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
UTeM	Universiti Teknikal Malaysia Melaka
Gen-Z	Generation-Z
IV	Independent Variable
DV	Dependent Variable

LIST OF APPENDIXES

APPENDIXES	TITLE	PAGE
A	Gantt Chart for PSM 1	79
B	Gantt Chart for PSM 2	80
C	Questionnaire	81

CHAPTER 1

INTRODUCTION

1.1 Introduction

Smartphone enables the users to use most of the service available on the internet such as social media, search engine, email, etc (Gerpott, Thomas, & Weichert, 2012). Unlike before where smartphones were just a machine for those who wants to call and SMS, nowadays, consumers treat smartphone as their multifunctional device which has the function of gaming, social and apps. This undeniably causes a noticeable shift in behaviour trends among the people in this era. According to Ericsson (2014), it was predicted to have a dramatical increase in smartphones adoption in future. It was forecasted that subscriptions of smartphone will grow by five times in 2019.

With a massive of choices available out there in the market, it can be difficult to buy the perfect smartphone, especially Gen-Z. A smartphone is built with a lot of component, and the most important things inside the smartphone is the processor, the chipset that determined the power of the smartphone. (Francisco Cheng, 2013). Unlike personal computers, which people know are powered by an Intel chipset, most of the consumers didn't know that the existence of chipset in their smartphone hence it caused wrong impression towards the specific brand (Ben Fox Rubin, 2015). The intention to use of the High-end processor among the youngster in Malaysia will help in develops a more technologies aware country in future, that is a key element for a developed country.

On the other hand, Generation Z is composed of those born between 1995 and 2012, which means that the oldest are about 23 as of 2018 and are just entering the workforce. The Gen-Z is chosen as they are the one who exposed to the Internet most also known as NetGen or IGen (Kelvin Claveria, 2018).

1.2 Research Problem

The research intended to investigate the factors that influence the intention to use of high-end chipset smartphone among Gen-Z in Malaysia.

From the big desktop to laptop, the smaller smartphone might replace the both as it has the same function in the future due to its convenience. There are a lot of options in the market such as OPPO, Samsung, Huawei, Apple, etc. However, not every manufacturer produced smartphone with high-end chipset due to its cost and marketing strategy. According to Malaysian Communication and Multimedia Commission, smartphone undeniably become a must for Malaysian as the percentage of smartphone users in Malaysia is 75.9% in 2017 (Malaysian Communications and Multimedia Commission, 2017). Hence, this study aims to determine the level of consumer in Malaysia to accept the high-end chipset smartphone. A lot of research has been done preliminarily about smartphone intention to use, but none of it is focus on high-end segment. According to Strategy Analytics (2018), there are a penetration of 1 in 7 in smartphone usage all over the world, also, 1 billion of smartphone users globally. In Malaysia, 17.3% of smartphone users are between 20 to 24 years old which are the highest among all the age group. This research was more concern about Gen-Z in Malaysia as their exposure to the technology is highest compared to other age group. Meanwhile, the largest group of population in Malaysia in future is definitely Gen-Z, hence it is necessarily to study about the Gen-Z behaviour towards high-end chipset smartphone. In United States, the Gen-Z spends 15.4 hours per week for smartphone which is more than other devices such as computers, play-station and so on (Jose Costa, 2018), hence in Malaysia, it is believed to have similar data which will be carry out in this research.

1.3 Research Objective

- i. To determine the awareness of Gen-Z in Malaysia towards the existence of high-end chipset in smartphone.
- ii. To determine the factors that influence the intention to use a high-end chipset smartphone among Gen-Z in Malaysia.
- iii. To determine the most important factor that influence the intention to use the high-end chipset smartphone among Gen-Z in Malaysia.

1.4 Research Question

- i. What is the awareness of Malaysian Gen-Z about the existence of high-end chipset that used in smartphone?
- ii. What are the factors that influence the intention to use a high-end chipset smartphone among Gen-Z in Malaysia?
- iii. What is the most important factor that influence intention to use the high-end chipset smartphone among Gen-Z in Malaysia?

1.5 Implication of Research

The study was focus about the largest population that might control the market and workforce in near future, which is Gen-Z. The awareness of Gen-Z towards technology is important because the high technology is important in many fields. Due to Industry Revolution 4.0, internet has become the mainstream media and will replace the conventional media soon. To be specific, Gen-Z is the group that expose to internet the most. Hence, the research result can be an insight for marketers to forecast the future market needs. This research can also become the useful reference for researchers who intent for study about another age group.

1.6 Significance of Research

This provided a forecasting material for smartphone manufacturers as they will gain a better knowledge on the factors that influence the intention to use of High-End Chipset Smartphone among Gen-Z in Malaysia. The importance of smartphone given to smartphone has increased very fast since the smartphone revolution done by Apple with the launching of IPHONE in 2007. According to Digitime Research in 2018, it is estimated that total shipments of smartphone application processors (AP) will grow 1.5% to 1.67 billion units. The report shows that Qualcomm continuously reigning at No. 1 in terms of vendor rankings in 2018, followed by MediaTek.

However, there are a segment of smartphone that might be forgotten by smartphone manufacturer, which is high-end chipset smartphone. In United States, the high-end chipset smartphone is owned by almost all the people as IPHONE and Samsung Galaxy S8 possessed the top 10 popular smartphones according to DeviceAtlas (jkielty, 2018). Since Malaysia is also a large market to be penetrated in South East Asia, this research aims to provide insight to aid marketers to penetrate high-end market. Besides, the intention to use of high-end chipset smartphone among Gen-Z in Malaysia will act as an indicator for various organizations to educate the younger generation and helps them to prepare better before joining the workforce because the jobs in future might need a lot of knowledge about the high-end technology.

CHAPTER 2

LITERATURE REVIEW

2.1 Performance of Chipset

According to Muhammad Shiraz (2013), the latest smartphone has substituted different portable devices such as GPS, gaming device camera and computers. Nowadays, smartphone users are depending on the smartphone in various aspects such as e-business, m-learning and even e-sports. Furthermore, smartphone is forecasted to be major computing devices in future. Some of the firm even uses smartphone to act as the company management information system.

Every smartphone equipped with a processor. The CPU, GPU, memory controller, modem, and other controllers are built into this single chip that is called the chipset or SOC (Saad Mughal, 2016). The processor act as the central hub of smartphone as it receives and executes every single command and performing billions of calculations per second (Francisco Cheng, 2013). The smartphone SOC market nowadays is divided by some of the most popular chipsets in the smartphone market today which are, Qualcomm, Mediatek, Samsung and Hisilicon. These are all integrated chips that have their own processing units (CPU and GPU).

The mainstream smartphone processors are manufactured from a basic structure and framework that provided by a company named ARM. Instead of selling their own chipset, they simply design the processors' architectures and instruction sets and then licenses to chipset manufacturers as mention above. As a result, this created

competition within the chipset manufacturers and encourage them to use ARM's architecture to come out with their own technology SOC. (Jim Norris, 2014). ARM based processors are the most used in current smartphones. ARM is 64-bit instruction set architecture based on RISC architecture. According to Mahendra Prata Singh (2014), it is the most popular used in smartphones because of its great performance yet low power consumption. Various ARM architectures used in Smartphone are ARMv6 utilized in low-end devices, and ARMv7, ARMv8 utilized in high performance devices. The ARMv8 chips have a floating-point unit (FPU) that is better than the one in older ARMv7 and NEON (SIMD) chips. Some of these chips do contain coprocessors, for example the AppliedMicro Helix that also includes cores from the older 32-bit architecture (ARMv7). Furthermore, some of the chips are SoCs and even combine the ARM Cortex-A53 with ARM Cortex-A57, such as the Samsung Exynos 7 Octa.

According to Kashish Kumawat (2018), the best chipset is from APPLE named A12 Bionic which is used in the new iphone XS and XR. Followed by HiSilicon Kirin 980 among the android phone with Qualcomm Snapdragon 845 ranked after it. He benchmarked all the processors and came out with conclusion below:

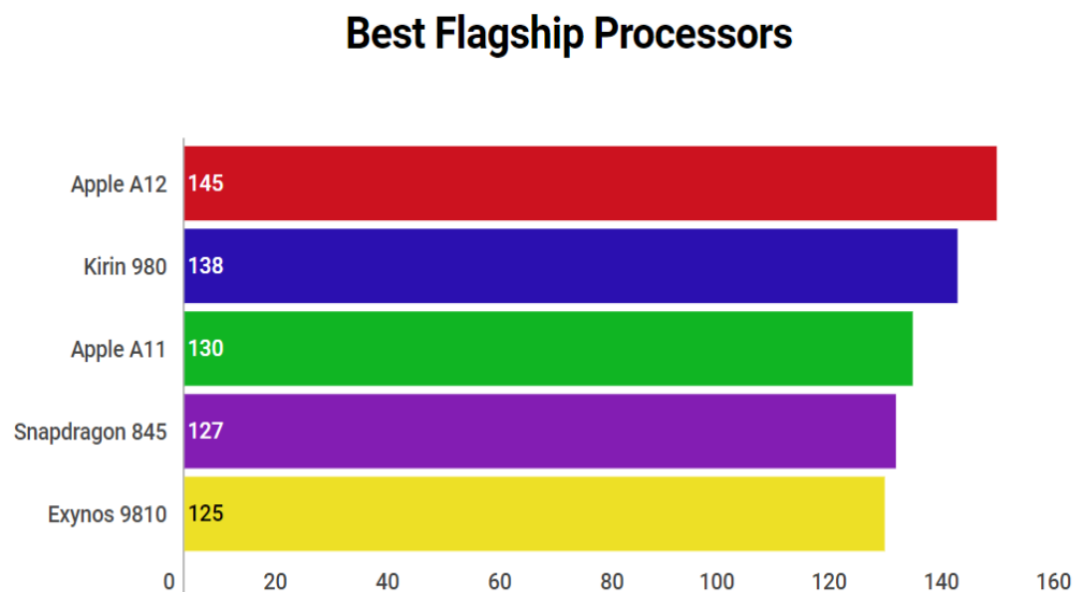


Figure 2.1: Best Flagship Processors

In this research, below top 10 mobile processor will be considered as high-end chipset smartphone according to their computing, graphic and Artificial Intelligence performance.

Table 2.1: The Top 10 Performance Mobile Processors.

RANK	PROCESSOR	MANUFACTURER
1	A12 BIONIC	APPLE
2	KIRIN 980	HUAWEI HISILICON
3	A11 BIONIC	APPLE
4	SNAPDRAGON 845	QUALCOMM
5	EXYNOS 9810	SAMSUNG
6	KIRIN 970	HUAWEI HISILICON
7	A10 FUSION	APPLE
8	SNAPDRAGON 835	QUALCOMM
9	EXYNOS 8895	SAMSUNG
10	SNAPDRAGON 710	QUALCOMM

2.1.1 Qualcomm Processor

Qualcomm is a US based company that firstly launched CDMA technology to the market. Besides, Qualcomm involved semiconductors technology manufacturing and designing for mobile devices such as smartphone and Virtual Reality actively.

Qualcomm is a company which is well known for its Snapdragon series. The company is always the pioneer to release the mobile processors & LTE modems. (Shubham Bopche,2017). When most of the smartphone were only 0.5ghz, Qualcomm released it first 1 Ghz processor that stunned the market. Since 2005, Snapdragon has manufactured a lot of series – S1, S2, S3, S4, S200, S400, S600, S800.

Now, Qualcomm has differentiated the processors in 4 class where S800 indicates high-end, S600 and S700 indicates mid-end, S200 and S400 indicates low end. Most Qualcomm processors are playing the role of market leader in high-end

phone market segment. Until now, S845 is already widely used in flagship devices in Samsung, Asus, Oneplus and XiaoMi.

Table 2.2: Qualcomm Snapdragon Series.

Platform	Model
Snapdragon S200 Platform	S205
Snapdragon S400 Platform	S427, S430, S435, S450
Snapdragon S600 Platform	S625, S626, S630, S636, S650, S652, S653, S660, S670
Snapdragon S700 Platform	S710
Snapdragon S845 Platform	S801, S808, S810, S820, S821, S835, S845

2.1.2 APPLE Mobile Processor

Apple unlike the other manufacturers, they did not manufacture any microprocessors. To be exact, they signed contract with the other manufacturer such as Samsung and TSMC for making custom processors that suit Apple's expectation on performance. (Shubham Bopche, 2017). The processors used in Apple smartphone is called A-series and manufactured by Samsung which integrated CPU, GPU and other necessities.

Apple A-series	A4, A5, A5X, A6, A6X, A7, A8, A8X, A9, A9X, A10 Fusion, A10X Fusion, A11 Bionic, A12 Bionic.
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