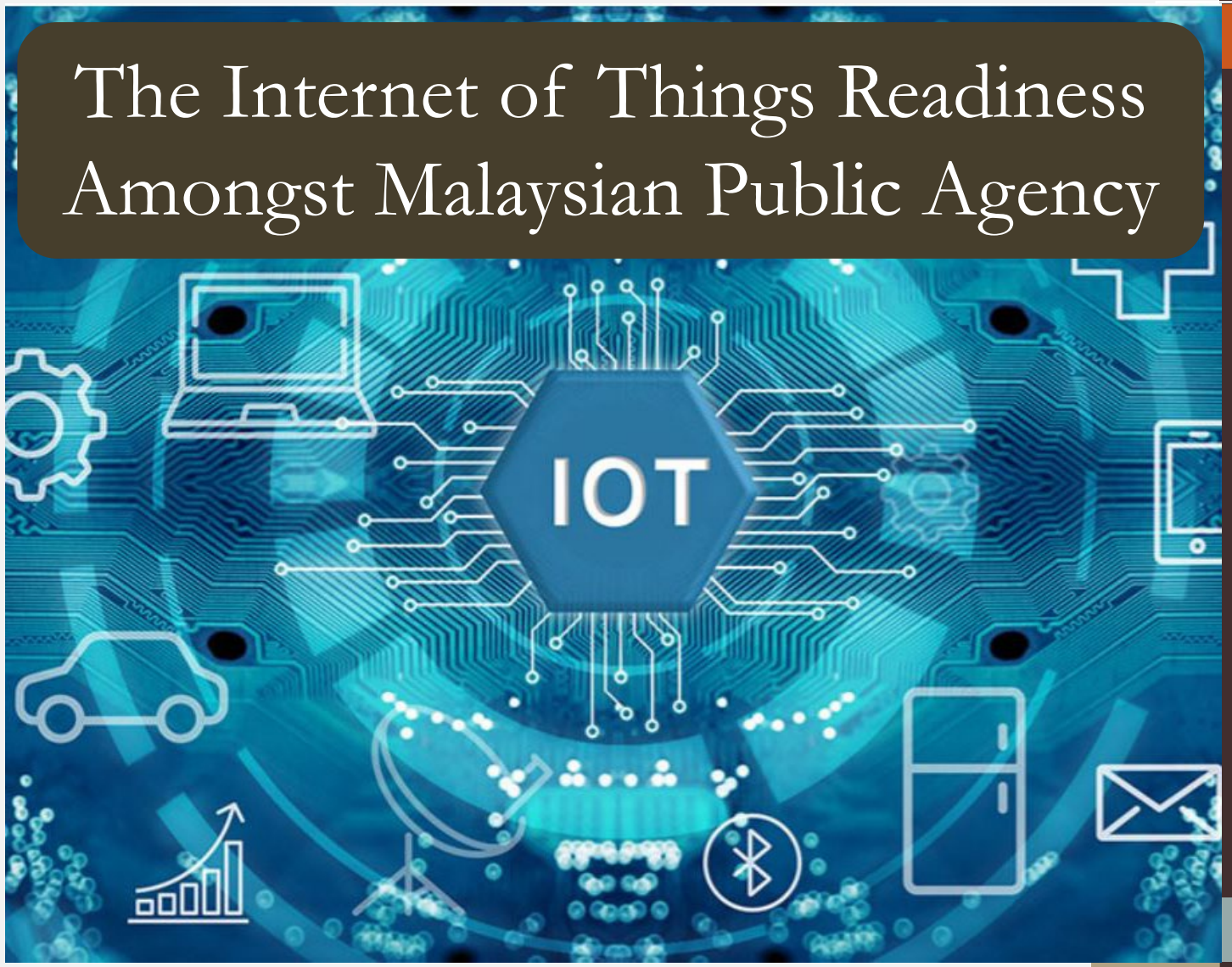
The Internet of Things Readiness Amongst Malaysian Public Agency



KOLOKIUM PENYELIDIKAN 2020

NORJANAH BINTI SULAIMAN

OVERVIEW

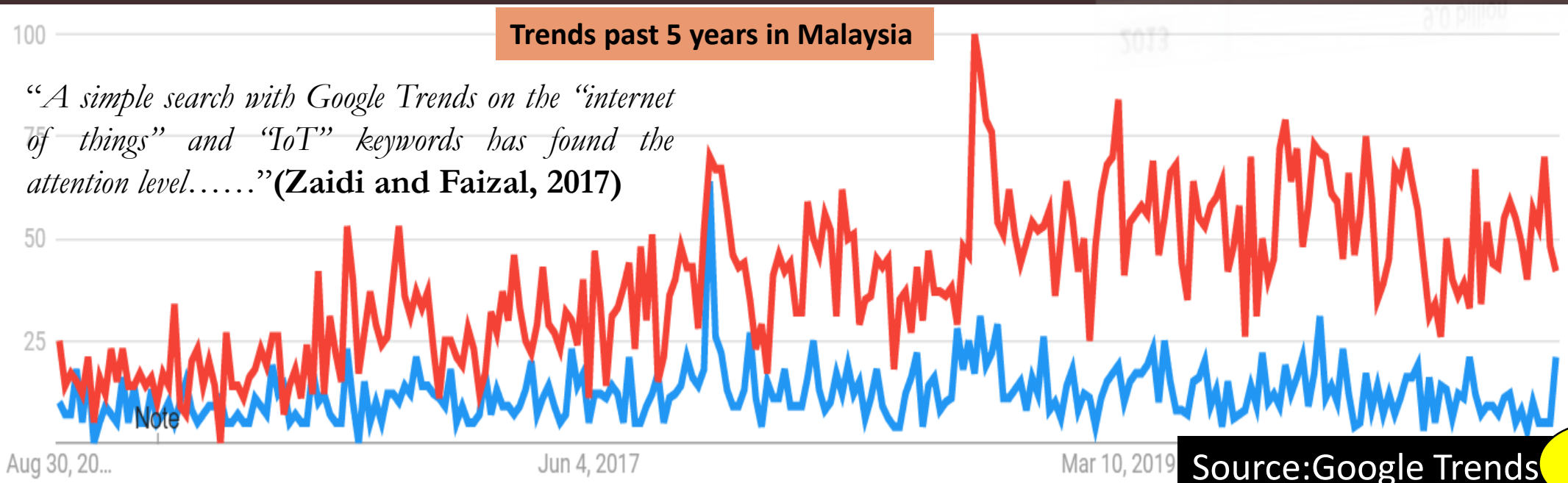
"Things can be connected to the Internet through wired Communication technologies and wireless communication Technologies.."
(Wang *et al.*, 2018)

YEAR	NUMBER OF CONNECTED DEVICES
1990	0.3 million
1999	90.0 million
2010	5.0 billion
2013	9.0 billion
2025	1.0 trillion

(Mohan, 2018) Source:HP

Trends past 5 years in Malaysia

*"A simple search with Google Trends on the "internet of things" and "IoT" keywords has found the attention level……"***(Zaidi and Faizal, 2017)**



Source:Google Trends

BACKGROUND

Challenge:
Identify Factors & Model Influence IoT Readiness

Previous Studies:
Readiness Theory/Model from other ICT Domain

Readiness Factors:

- Technology-related with infrastructures/hardware
- Security-related with protocol, features
- Policy & Law-Guideline & reference
- Human-attitude, usage level
- Governance & Management-support, financial, training & enforcement

Solution:
IoT Readiness Identified & Proposed Conceptual Model

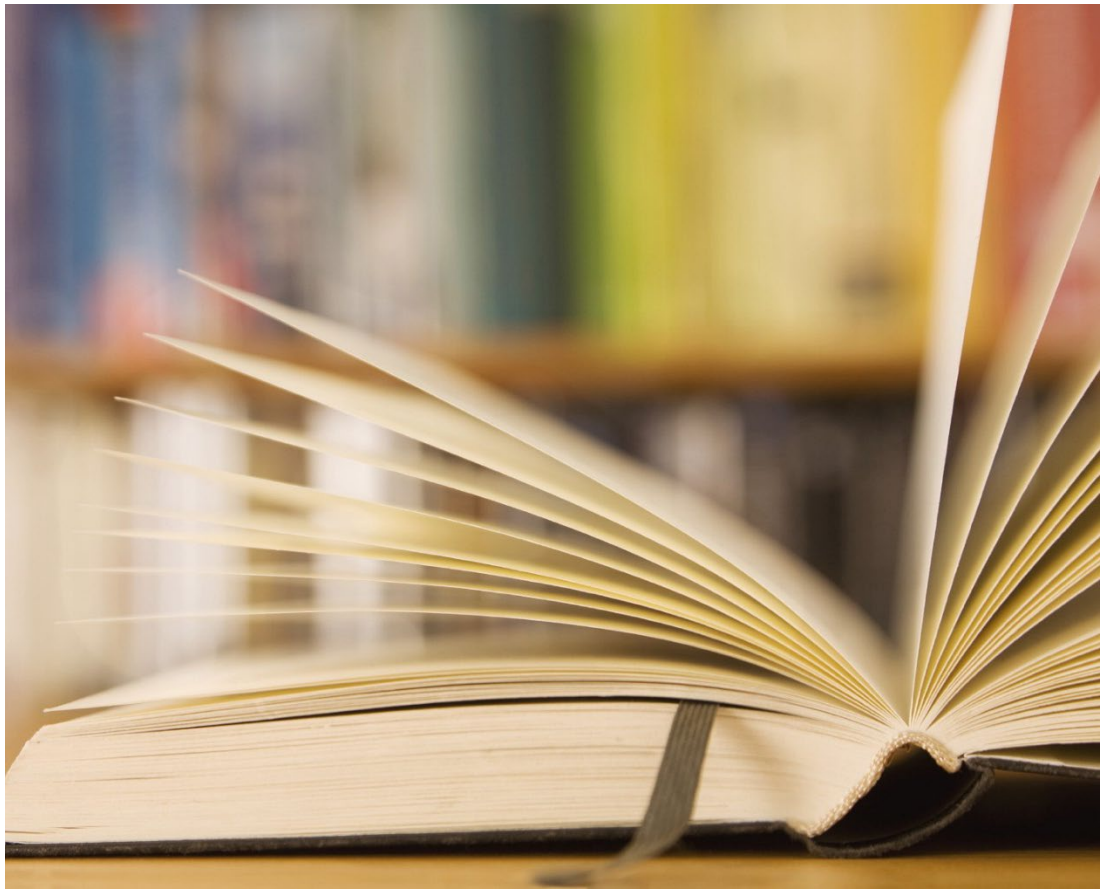
PROBLEM STATEMENT

"Malaysian public agencies took this opportunity to enhance their capabilities to create this situation of citizens' trustiness throughout digital government initiatives including IoT and BDA" **(MAMPU, 2017)**

"Mobile penetration in Malaysia increase 150%. This number will be increasing up to 280 percent in 2025" **(Badarudin *et al.*, 2019)**

It is a major concern to investigate the readiness factors of IoT amongst public agencies to adapt and understand the technology with the issues or challenges that might be existing during implementation.

"Due to importance of IoT, the government of Malaysia through MIMOS introduce the National IoT Strategic Roadmap 2015 " **(Zaidi and Faizal, 2017)**

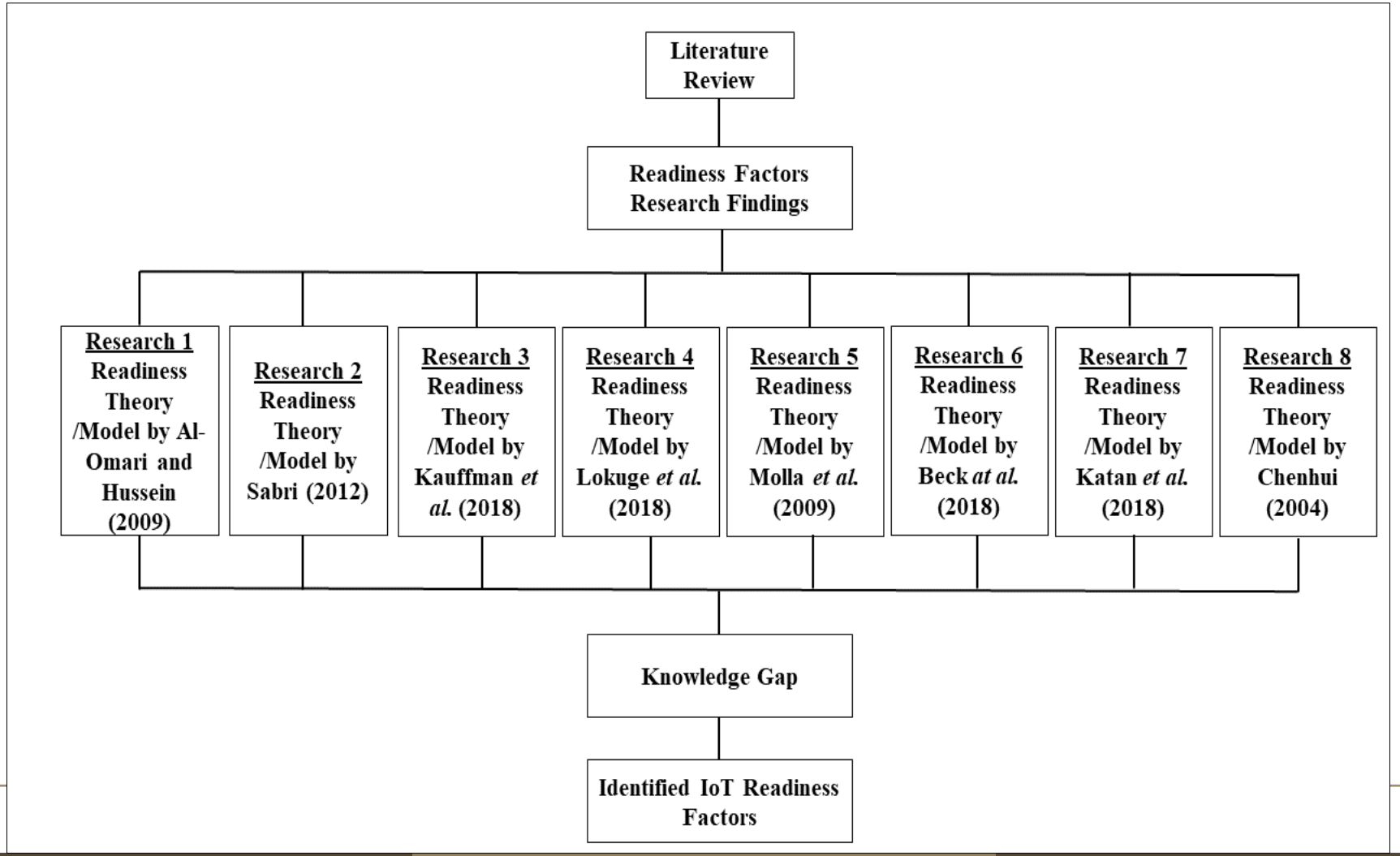


RESEARCH OBJECTIVES

The purpose of this study is to **investigate**, **identify** and **propose** the readiness factors of IoT implementation

LITERATURE REVIEW

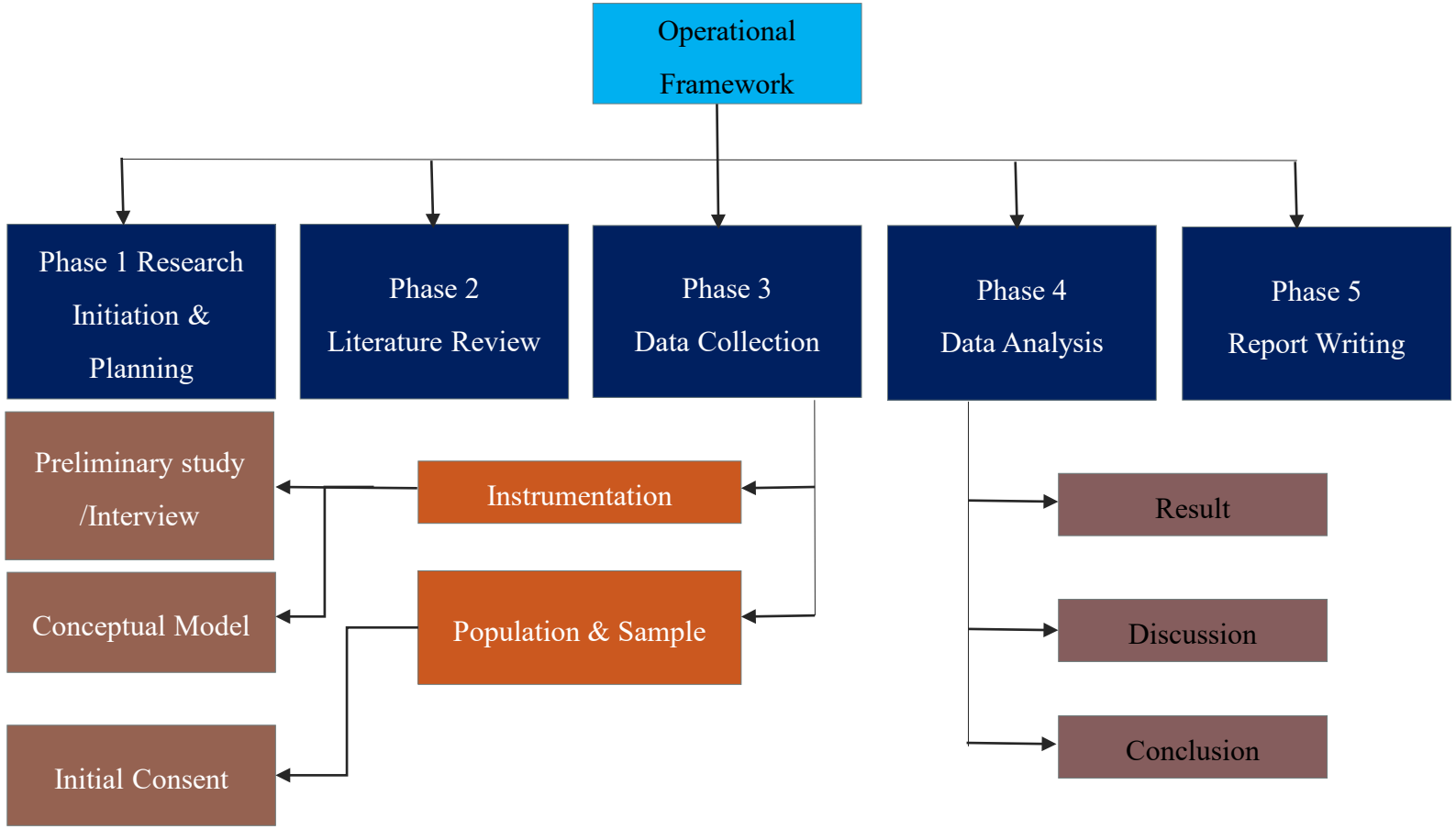
Literature Review Framework



IDENTIFIED FACTORS

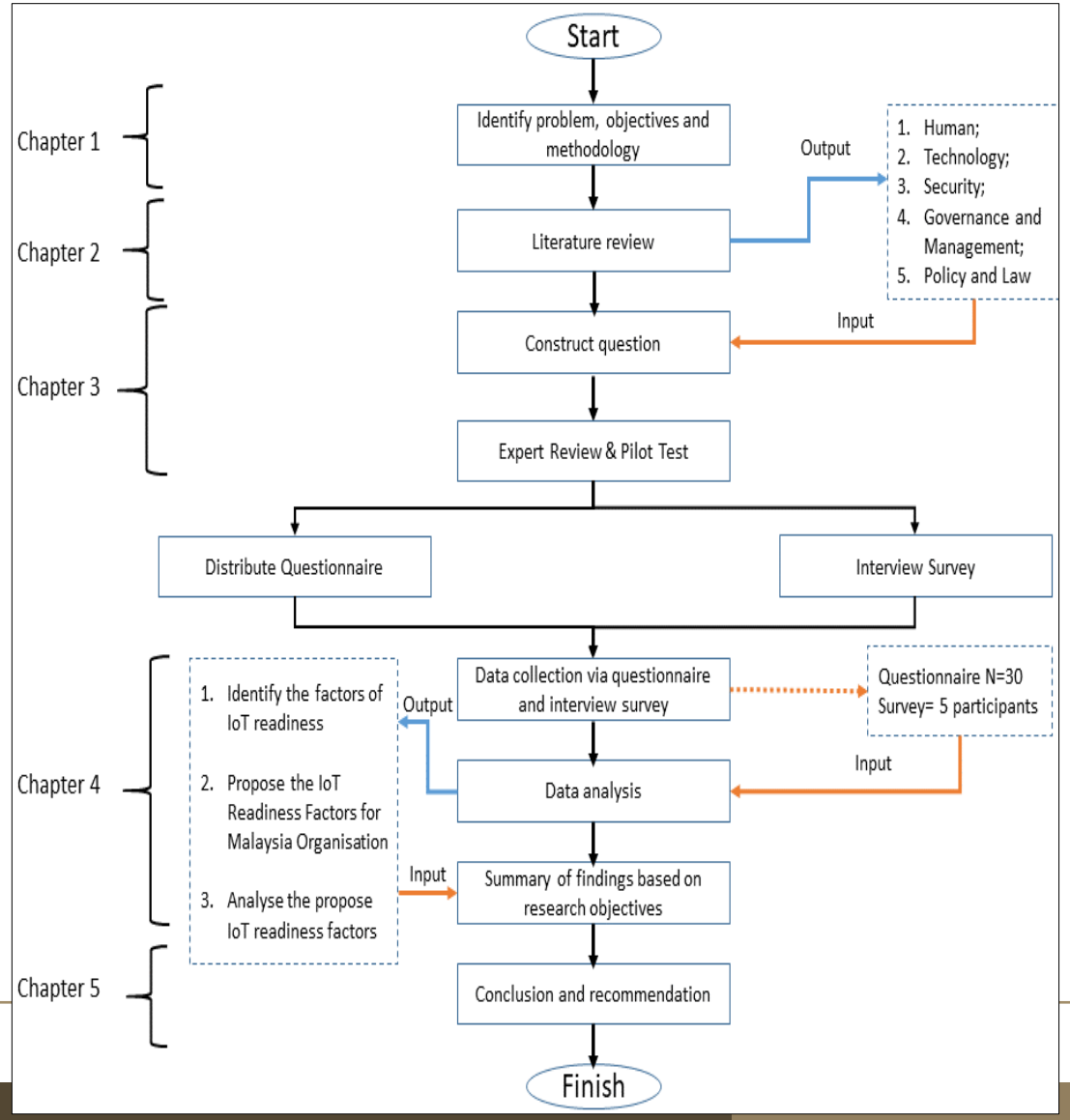
Dimensional	Sub-dimensional
Human [(Badarudin et al., 2019), (Katan et al., 2018), (Molla et al., 2009), (Beck et al., 2018), (Asir, 2016)]	• Usage • Attitude • Expectation/perceive • Expertise
Technology [(Kauffman et al., 2018), (Molla et al., 2009), (Katan et al., 2018), (Chenhui, 2004), (Asir, 2016), (Xiwei Wang et al., 2018)];	• Infrastructure • Hardware • Software
Security [(Xiwei Wang et al., 2018), (Asir, 2016), (Suo et al., 2012), (Naden, 2018), (Things and Management, 2018)];	• Protocol • Security features • Standardization • Security measures
Policy and Law [(Katan et al., 2018), (Molla et al., 2009), (Beck et al., 2018), (MCMC, 2018), (Zaidi and Faizal, 2017)]	• Enforcement body • Architecture • Policy and regulation
Governance and Management [(Katan et al., 2018), (Molla et al., 2009), (Rose et al., 2015), (Sabri, 2012), (MIMOS, 2015)].	• Support • Financial • Training

METHODOLOGY



METHODOLOGY

DATA COLLECTION METHOD



Preliminary Study

- 30 respondents (online)
- 26 questions (3 parts)
- Conducted in Klang Valley

"A preliminary study is an initial exploration of issues related to a proposed review or evaluation" **(Harvey, 2004)**

"...extant literature suggests that a pilot or preliminary sample should be 10 percent of the sample projected for the larger parent study" **(Connelly, 2008)**

METHODOLOGY

Demographic

Variable	Item	Percentage (%)
Gender	Male	33.3
	Female	66.7
Experience Area (More than one area)	Network	53.3
	IoT	40
	Block chain	3.3
	Machine Learning	23.3
	Business Intelligence	33.3
	Cyber Physical System	16.7
	Other IT Domain	53.3
Education	Diploma	20
	Bachelor Degree	21.1
	Master Degree	20
	PhD	13.3
Working Experience	LESS 5	20
	6-10	23.33
	11-15	26.67
	16-20	23.33
	More 20	6.67

Reliability test on Factors

Governance and Management	0.802
Human	0.610
Policy and Law	0.901
Security	0.871
Technology	0.837

respondent think that all the **5 factors are reliable** as a readiness factors

Descriptive based on Factors

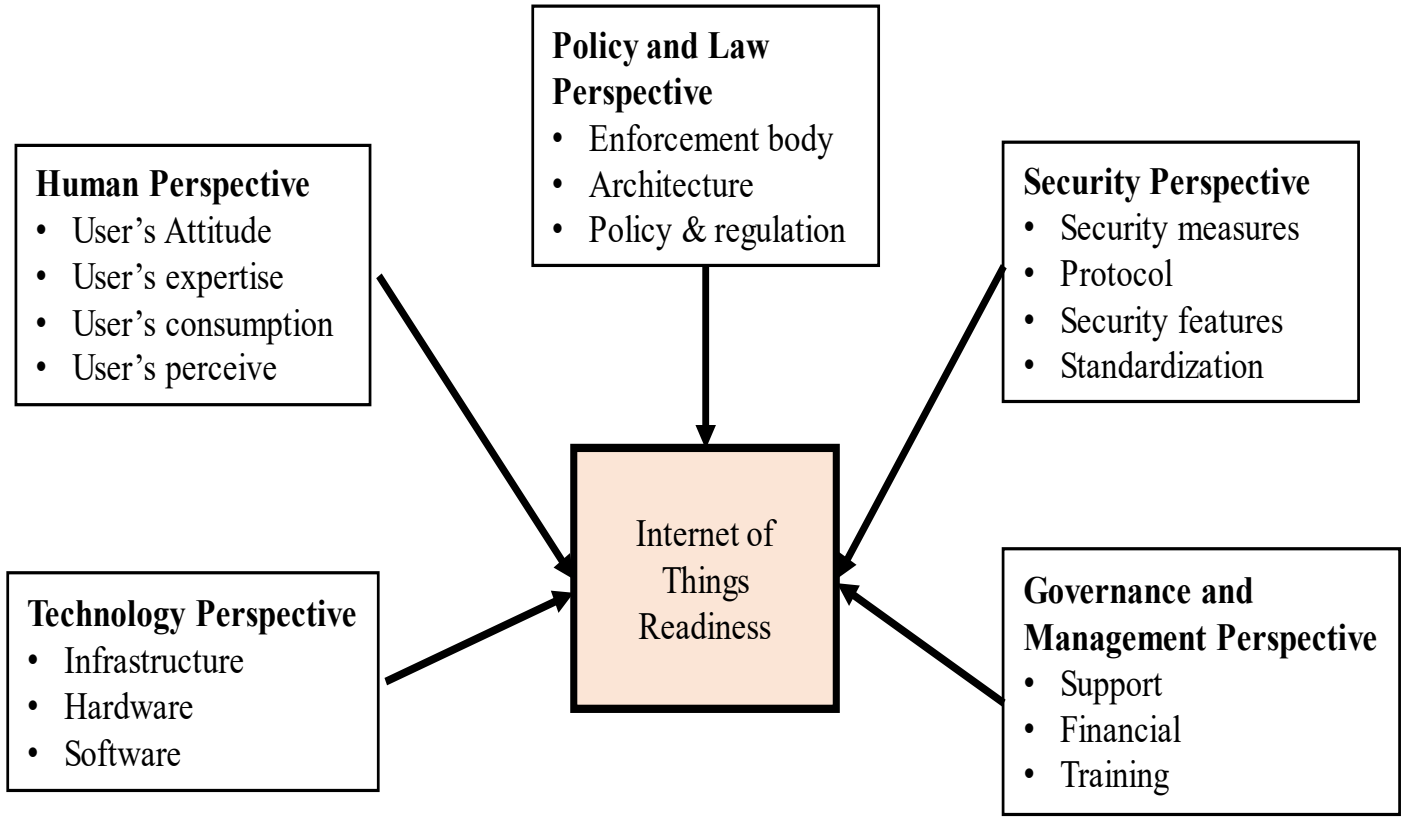
Factor	Mean	Median	Standard Deviation
Human	4.252	4	0.704
Technology	4.383	4	0.649
Security	4.425	5	0.595
Governance and Management	4.346	4	0.580
Policy and Law	4.425	4	0.589

All participants have shown high level of agreement for each factors

indicates that these factors are important to ensure readiness of IoT implementation

FINDINGS

Proposed Conceptual Model



FINDINGS

Descriptive Results (N=30)

Factor	Sub-Factor	Mean	Median	Standard Deviation
Human	Usage, Attitude,Expectation, Expertise	4.252	4	0.704
Technology	Infrastructure, Software, Hardware, Interoperability	4.383	4	0.649
Security	Protocol, Security Features, Standardization, Security Measures	4.425	5	0.595
Governance and Management	Management Support, Financial Aid, Training & Awareness	4.346	4	0.580
Policy and Law	Enforcement Body, Architecture, Policy and Regulation	4.425	4	0.589

FINDINGS

Demographic

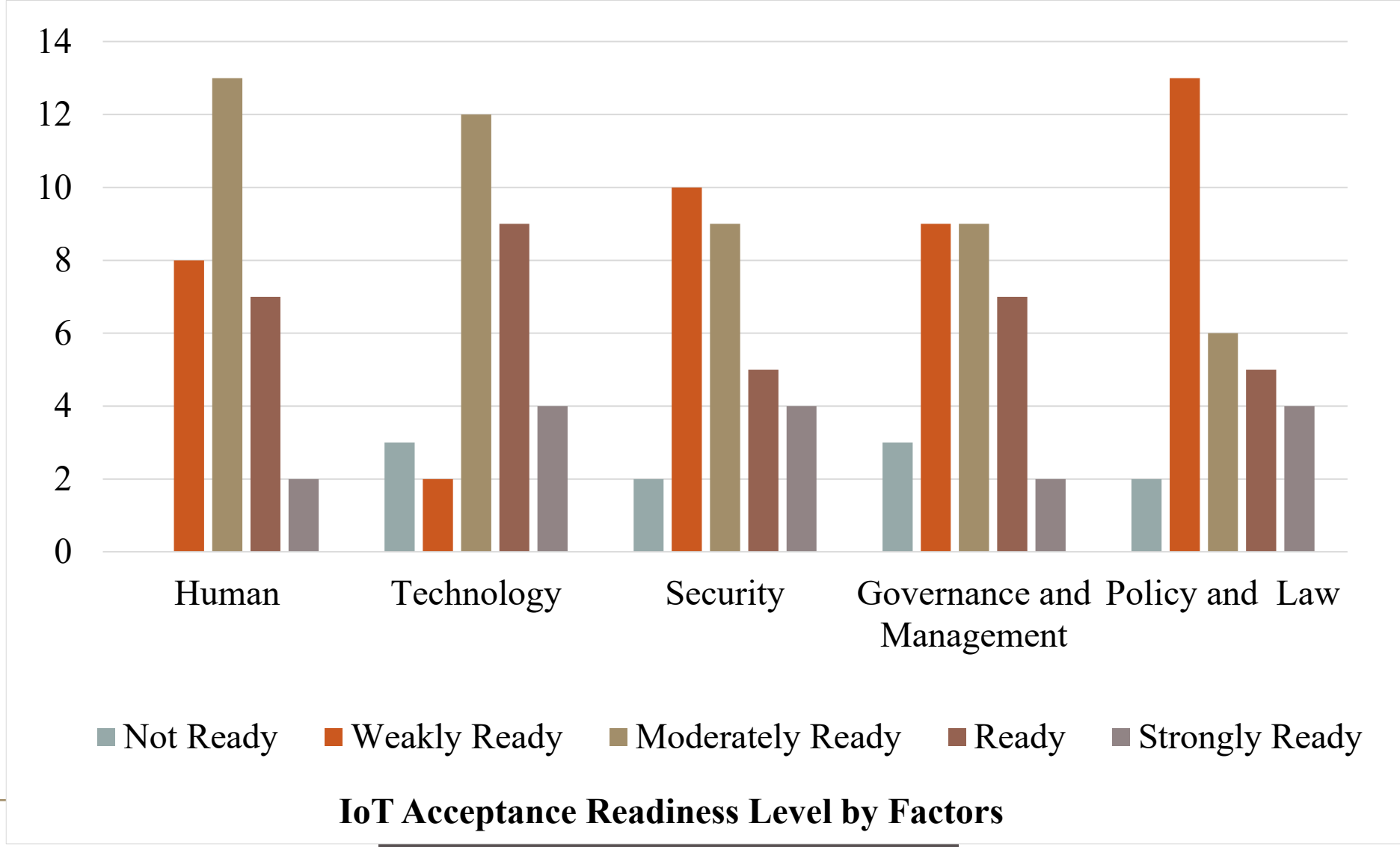
Participants	Gender	Age (Years)	Working Period (Years)	Education	Designation	Work tasks
1	Male	>40	17	Master Degree	System analyst	Business Intelligence
2	Male	>40	15	Master Degree	ICT Consultant	IoT courses participants
3	Female	>40	17	Master Degree	PMO	IoT-RFID
4	Female	35-39	13	Master Degree	PhD Student	Block chain
5	Female	>40	16	Master Degree	Deputy director	Project Manager, auditor

FINDINGS

Interview Excerpts

Factor	Rating	Example of Excerpts
Human	Important	"…..Human is the really importance roles in ensuring IOT readiness. By knowing human perspective IOT can be done in correct way. Attitude must be in mood of following the IoT and not works in denial….." **(Participant 1)** "….its all about attitude. People some time do not aware of the existence of the new technology that has been installed in front of them. They heard about the technology but does not eager to understand and adopt..." **(Participant 2)**
Technology	Very Important	"…Technology readiness is something that really important in our daily life. Kuala Lumpur for example is really ready with terms such as infrastructure, technical framework but the remote area is still not ready with technology development. The idea of IoT can really works if there are development done in remote area also. It is a right time to start with urban first then slowly to the remote and rural area…" **(Participant 5)**; "…. technology perspective plays the main part in embarking to a new style of life. Infrastructure has to be ready first…" **(Participant 2)**
Security	Very Important	"...security is the key issue and very challenging in IoT implementation. However, the most important thing is the awareness of the user on the security..." **(Participant 4)**; "….Absolutely, security is the key factor…" **(Participant 5)**
Governance & Management	Very Important	"….Participation and involvement of management in an organization is very important, and based on my experience, without the involvement of management of a project is incapable of being implemented. It's the same in IoT's. Awareness and support from management can be especially helpful in financial terms for IoT budget applications, as well as after IoT projects are implemented for enforcement purposes and so on. The involvement of the management will determine the extent to which a project will be successfully implemented…" **(Participant 3)**; "…..Management especially at the highest level should take a very crucial part in every single detail to support IoT. Management should plan well in order to make sure that IoT is facilitate and it's ready to every single individual in company/organization…" **(Participant 1)**
Policy and Law	Important	"….Yes. ICT security policy should always support the implementation of IoT to ensure the effective use of ICT, To force everybody to make it. People in comfort zone always think that they don't need all this technology because they still can do their job with the traditional way…." **(Participant 4)**

FINDINGS



IoT Acceptance Readiness Level by Factors

FUTURE WORK

Includes more participants to get more various knowledge and experience

Expanding to other organization & not limited to government agencies

Develop a readiness model as reference in IoT implementation

Thank You

Email
nbs162003@gmail.com /
norjanah@mod.gov.my

Phone
03-20715368