BRAIN DRAIN PHENOMENON IN MALAYSIA – ANALYSIS OF THE ENGINEERS' INTENTION TO MIGRATE ABROAD USING THE EXTENDED THEORY OF PLANNED BEHAVIOUR

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By

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DEDICATION

I dedicate this project to my beloved parents, Ramoo and Suppu Letchume, my lovely wife, Regi and my two lovely children, Mehkann and Sarrannya.

ABSTRACT

BRAIN DRAIN PHENOMENON IN MALAYSIA – ANALYSIS OF THE ENGINEERS' INTENTION TO MIGRATE ABROAD USING THE EXTENDED THEORY OF PLANNED BEHAVIOUR

Balu Ramoo

The phenomenon of brain drain in Malaysia is becoming critical, thus the country's talent environment in the near future is not expected to be in a healthy state. Among the high skill workers in Malaysia, the rate of migration among the engineers is alarming. Therefore, the main purpose of this study is to determine the key salient beliefs that policy makers could target in developing behavioural intervention policy to reduce the Malaysian engineers' intention to migrate abroad.

At present, literatures in the area of international migration have hardly discussed any behavioural intervention policy which could directly attempt to change individuals' intention to migrate. This study used Theory of Planned Behaviour (TPB) to elicit the engineers' salient beliefs and predict the behavioural factors that explain the intention to migrate. This study has added the feeling of psychological ownership over a country (POC) as an additional predictor of the engineers' intention. The sample size for this study was 402 Malaysian gen-Y engineers. The analyses were performed using Covariance-based Structural Equation Modelling procedure.

The findings confirmed the utility of hypothesized extended TPB model in predicting the engineers' intention to migrate. The results also revealed that the engineers' attitude and subjective norms influenced the intention to migrate positively and significantly. In addition, the engineers' POC has significant negative association with the intention. Meanwhile, the effect of perceived behavioural control on the intention was fully mediated by attitude. The analyses also identified five behavioural beliefs, four normative beliefs and two control beliefs as significant determinants of attitude, subjective norms and perceived behavioural control respectively. The findings of this study expand the existing scholars' knowledge on the salient beliefs that influence skilled workers' intention to migrate abroad. The study further provides useful implications for policy makers to develop appropriate behavioural intervention policy to reduce the behaviour of migrating abroad. It has provided a number of recommendations in changing the behavioural, normative and control beliefs of the engineers, such as the need to highlight the issues of Malaysian skilled workers being underemployed or unemployed abroad.

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APPROVAL SHEET

This thesis entitled **"BRAIN DRAIN PHENOMENON IN MALAYSIA – ANALYSIS OF THE ENGINEERS' INTENTION TO MIGRATE ABROAD USING THE EXTENDED THEORY OF PLANNED BEHAVIOUR"** was prepared by BALU RAMOO and submitted as partial fulfilment of the requirements for the degree of Doctor of Philosophy at Universiti Tunku Abdul Rahman.

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It is hereby certified that **Balu Ramoo** (ID No: **12ABD06071**) has completed this thesis entitled *"BRAIN DRAIN PHENOMENON IN MALAYSIA – ANALYSIS OF THE ENGINEERS' INTENTION TO MIGRATE ABROAD USING THE EXTENDED THEORY OF PLANNED BEHAVIOUR"* under the supervision of Assistant Prof Dr Chong Yee Lee (Supervisor) from the Faculty of Business and Finance and Prof Dr Cheng Ming Yu (Co-Supervisor) from the Faculty of Accountancy and Management.

I understand that the University will upload softcopy of my thesis in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

Yours truly,

……....

(Balu Ramoo)

DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

Name: BALU RAMOO

Date: 30 August 2018

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LIST OF ABBREVIATIONS

ADP	American Degree Program
ASEAN	Association of Southeast Asian Nations
BB	Behavioural Belief
BEM	Board of Engineers Malaysia
BRIC	Brazil, Russia, India, and China
CB	Control Belief
CB-SEM	Co-variance Based SEM
CBT	Cognitive Behavioural Therapy
CFA	Confirmatory factor Analysis
CFI	Comparative Fit Index
CFT	Career Fair Incentive
CVI	Content Validity Index
D2	Mahalanobis Distance
E&E	Electrical and Electronics
EFA	Exploratory Factor Analysis
EU	European Union
EVT	Expectancy-value Theory
FTZ	Free Trade Zone
Gen-Y	Generation Y
HBM	Health Belief Model
ICT	Information and Communication Technology
MCAR	Missing Completely at Random
MI	Multiple Imputation
MIDA	Malaysian Investment Development Agency
MIMIC	Multiple Indicators and Multiple Causes
MLE	Maximum Likelihood Estimation
MNC	Multinational Companies
NB	Normative Belief
O&G	Oil and Gas
OECD	Organization of Economic Cooperation and Development
PAF	Principal Axis Factoring
PBC	Perceived Behavioural Control
PC	Principal Components

PLS	Partial Least Square
POC	Feeling of Psychological Ownership over a Country
PwC	PricewaterhouseCoopers
RCT	Randomized Controlled Trials
REP	Returning Expert Program
RMSEA	Root Mean Square Error of Approximation
SN	Subjective Norms
STAR	Scholarship Talent Attraction and Retention
TalentCorp	Talent Corporation Malaysia
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
TTM	Trans-theoretical Model
UK	United Kingdom
UNHWI	Ultra-High Net Worth Individual
US	United States
VB-SEM	Variance Based SEM

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Brain drain is a term coined to indicate movements of skilled human capital – professionals with at least a bachelors' degree – generally from developing countries to developed countries. The rate of brain drain among workers with tertiary degree is much more alarming than low skilled workers. For example, compared to year 1990, the international migration rate among the skill workers was 130 percent higher in 2010 (Kerr, Kerr, Ozden & Parsons, 2016). Meanwhile, the growth of migration rate among low skilled workers during the same duration was only 40 percent.

According to Kerr et al. (2016), developed countries benefited most from international migration. It estimated that about 85 percent of highly skilled global migration from developing countries were working and living in Organization of Economic Cooperation and Development (OECD) countries. Improvement on the attainment of higher education among developing countries' population has enabled the countries to produce large number of professionals. However, the demand for high skilled workers in the countries is limited. Such excessive supply of skilled workers, accompanied by attractive income offered by developed countries has caused more skilled workers to migrate abroad (Beine, Docquier & Rapoport, 2008).

Bhagwati and Hamada (1974) argued that the loss to society due to brain drain was generally greater than the gain that the nation can receive from migrants. For example, when the high-skilled workers left the country, the government has to forgone the taxes that could be collected from the workers who have migrated abroad. Furthermore, the return of public investment on developing local human capital will be lost if the workers have migrated. The scenario is worsening when the migrated workers choose to remain in foreign country or the host country restricted the transfer of money into the home country. In addition, when skilled workers like engineers and scientists migrate abroad, the growth in the home country is affected by the shortage of experts that can adopt and develop new technologies (Docquier, 2014). Does this means that the problems of brain drain is specific to developing countries only? Let's view the discussion of brain drain phenomenon globally and in Malaysia in the following sub-chapters.

1.2 Brain Drain: A Global Phenomenon

Brain drain happens in OECD countries as well. For example, in year 2000, about eight million or approximately 10 percent of skilled people originated from OECD countries such as United Kingdom (UK), Germany, Italy, South Korea, Mexico and Poland migrated to other OECD countries (Dunnewijk, 2008; World Bank, 2011). Nevertheless, the outflow of skilled labour in OECD countries was offset by the arrival of migrant skilled workers (Docquier & Rappoport, 2011). For example, Canada and Germany have been experiencing a positive net inflow of skilled migration even though the outflow

of their own professionals was high (OECD-United Nation Department of Economic and Social Affair [OECD-UNDESA], 2013).

On the other hand, the absolute number of outflow skilled workers in emerging countries; Brazil, Russia, India, and China (BRIC) are high due to the size of their population. Brain drain however is not of major issue for BRIC countries because the proportion of high skilled emigration to the total stocks of professionals in these countries is small. For example, the proportion was 2.2 percent in Brazil, 3.8 percent in China, 4.3 percent in India, and 1.5 percent in Russia (World Bank, 2011).

Contrarily, brain drain issue is severe in some countries like African, Latin American and Caribbean. African countries such as Kenya, Mozambique and Ghana had been experiencing high ratio of outflow migrant due to the lack of career opportunities for professionals and political instability (Docquier & Rapoport, 2012). In Latin American and Caribbean countries, such as Guyana, Panama and Venezuela, the outflow of workers had exceeded 50 percent (Ozden & Schiff, 2006). Smaller countries in the region like Haiti and Jamaica were facing serious shortage of semi and high skilled labours where approximately 80 percent of people with post-secondary qualifications have migrated and living in US.

The incidence of brain drain is also high in the Association of Southeast Asian (ASEAN) countries, except Myanmar (4.0 percent), Thailand (2.4 percent) and Indonesia (2.1 percent) (World Bank, 2011). Strong family

attachment and close cultural integration among Thai people was a major reason for low rate of brain drain in Thailand (Bhumiratana, Songkasiri, Commins, & Grimley, 2009). ASEAN countries that could not develop much job opportunities for skilled workers were recording high rate of brain drain: Laos (37.4 percent), Vietnam (27.1 percent), Cambodia (18.3 percent) and Philippines (13.7 percent) (World Bank, 2011). Moreover, immigration rules that allow citizens to migrate abroad easily to certain developed country had also encouraged local people to move from ASEAN to countries like US (Rodis, 2013). Interestingly, although Singapore is not spared from brain drain issue, the country's economy is not seriously affected. This is because the issue was counterbalanced by the country's strong ability to attract foreign high skilled workers to work in Singapore (Yeoh & Lin, 2012).

In brief, the negative effect of brain drain in large countries is less significant. On average, less than five percent of their professionals have migrated to other countries. Moreover, improvement on the provision of higher and professional education has enabled large countries to produce a large scale of tertiary educated workforce and high skilled professionals. However, this is not the case for smaller and fast emerging economies like Malaysia. The phenomenon of brain drain in the country with a population close to 30 million is quite serious and could be detrimental for its future economic development.

1.3 Phenomenon of Brain Drain in Malaysia

The high prevalence of outflow migration among professionals in Malaysia is not a new phenomenon, and is rising due to globalisation and rapid advancement in science and technology (Commander, Kangasniemi & Winters, 2004). For example, the number of Malaysian skilled labour outflow had increased from 184,014 in 2000 to 276,557 in 2010 (Table 1.1). According to the latest figure published by OECD-UNDESA (2013), the number has increased to 342,639 in 2013. Table 1.1 also shows that more than 90 percent of high skilled emigrants from Malaysia are working in developed and/or high income nations where the official language is English, except Brunei.

Table 1.1: The Estimated Number of Malaysian Skilled Workers Working in Selected Foreign Countries

Migrated country	Year	
	2000	2010
Singapore	66,452	121,662
Australia	38,620	51,556
United States	24,085	34,045
United Kingdom	12,898	16,609
Canada	12.170	12, 807
Brunei	6,438	10,208
New Zealand	4,221	6,708
Other countries	19,130	22,962
Total	184014	276,557

Source: Adapted from Ozden, Parsons, Schiff and Walmsley (2011).

Malaysia aims to move away from the second-world chasm and has developed a national vision to reach high-income nation status by 2020 (Azman, Sirat, & Pang, 2016; Bris & Caballero, 2015). However, the nation is lacking of skilled human capital due to the migration of its skilled workers and inability to attract foreign skilled workers. It was estimated that slightly more

than 10 percent of highly skilled workers from Malaysia had migrated abroad (World Bank, 2011). The figure was nearly two times of the world average ratio (OECD-UNDESA, 2013). Unlike developed countries, the substantial loss of outbound high skilled Malaysian professionals cannot be counterbalanced by the inbound of foreign labours. Majority of the inbound workers in Malaysia were low skilled labours (Bris & Caballero, 2015; TalentCorp, 2012).

In order to attract Malaysian professionals to return home from abroad, various policies and initiatives have been undertaken by Malaysian policy makers. For example, Talent Corporation Malaysia (TalentCorp) was established in 2011 to retain the existing skilled workers in the homeland and to attract the return of Malaysian skilled emigrants from abroad (TalentCorp, 2012). The programs implemented by TalentCorp include Returning Expert Program, (REP), Scholarship Talent Attraction and Retention (STAR) and Career Fair Incentive (CFT). Various tax incentives were given to the returnees and also to the employers who participate in these programs.

However, from 2011 to 2016, the TalentCorp's programs only managed to attract about 4,000 Malaysian professionals to return and serve the home country (TalentCorp, 2017). In contrast, in between 2010 and 2013, the number of Malaysian professionals who have migrated abroad and gave up their citizenship status had reached to 15,221 persons (OECD-UNDESA, 2013). In 2014 and 2015, about 4,000 Malaysian professionals had taken up foreign citizenship (Nadaraj, 2016). The author claimed that these figures are just a

drop in the ocean compared to the actual number of Malaysian professionals who have migrated abroad and have yet giving up their citizenships. Despite the various measures taken by the authorities, why the brain drain phenomenon remains high in Malaysia? Does the phenomenon really affecting the country's growth?

1.4 Problem Statement

The outflow of high skilled labours from Malaysia is alarming while the inflow of high skilled foreign labours is not encouraging. The adverse effect of brain drain on Malaysian economic - a high middle income country – was documented in Harnoss's (2011) study. In the study, Malaysia's GDP per capita was expected to decline by an average of 0.7 percent to 1.6 percent annually. Harnoss further suggested that the effect of brain drain on Malaysian economic would be worsening in future if effective measures that can tackle the issue are not implemented.

Studies on brain drain issue in Malaysia have primarily focused on determining the factors that cause brain drain and the consequence of brain drain to the country's economic (for examples, see Harnoss, 2011; Chandar, Jauhar & Abdul, 2015; Choong, Keh, Tan, Lim, & Tho (2013); Foo, 2011; Hugo, 2011; Jauhar, Yusoff & Khoo, 2009; Quah, Zainal & Chai, 2014; Tyson, Jeram & Azlan, 2011; World Bank, 2011; World Bank, 2015; Yeow, Ng, Chin & Boo, 2013). The factors identified include lack of high skilled jobs and career prospects, social injustice, lower salary, lower living standard, and concerns of the country's safety and security.

The studies' results in fact did provide useful implications to Malaysian government to design policies that aimed to combat the brain drain issue. As a result, the government has implemented various policies to initiate the reformation of national economic structure. For example, Government Transformation Program (GTP), New Economic Model (NEM) and Strategic Reform Initiatives (PEMANDU) were implemented to raise the people's living standard (TalentCorp, 2012).

However, the statistics published in OECD-UNDESA's (2013) report shows that the brain drain issue in Malaysia is not subsiding, instead continue to rise. Furthermore, some of the programs implemented by the government were negatively criticised. For example, Dr. Lim Kim Hwa, an economist in Malaysia, argued that the incentives that had been activated to attract the return of Malaysian professionals abroad had drained the country's income amount to MYR8.4 billion annually through direct or indirect expenditure (Mok, 2014). The above issues raise the question on the effectiveness of the existing polices in tackling the brain drain issue. The policies seem to be too costly and less effective in reducing the number of migrants from Malaysia. Therefore, there is a need to implement a new approach that could tackle the issue of brain drain in Malaysia.

Amir et al. (2005) and Anderson and Stamoulis (2006) suggested that more economical and effective intervention policies should be developed and implemented to reduce the brain drain phenomenon. On top of the existing macro policies that are relevant to economics, social and political determinants,

behavioural economics approach was suggested. The authors' idea was further supported by World Bank (2015) where it has urged Malaysia to implement new approach that can reduce the country's brain drain. This study therefore has focused on developing behavioural intervention policies that could change Malaysian's beliefs and attitudes toward migration. This study also aims to fill the literature gap by developing a behavioural model that can explain respondents' migration intention from behavioural perspective, which is still limited in migration literature.

Specifically, this research studies the behavioural factors that could drain Malaysian engineers to migrate abroad. One of the professions that is highly affected by brain drain in Malaysia is engineers. As shown in Table 1.2, there is a serious shortages among skilled workers in the field of engineering. In a survey by Hays (2016), it found that the employers in Malaysia perceived that there was a shortages of close to 20% of engineers in the junior and middle level management. In another survey by TalentCorp and the Institute of Labour Market Information and Analysis (Talentcorp-ILMIA, 2017), engineering professional was categorised as critical occupations in some important sectors in Malaysia such as oil and gas (O&G) and electrical and electronic. The report also identified certain type of engineers that have high demand in the country due to brain drain. These engineers, as to name a few, are product engineers, software design engineers, semiconductors engineers and integrated circuit engineers.

Table 1.2: Shortages of Skilled Workers in Various Fields in Malaysia

Various Fields	Junior to mid management	Senior management
Sales	24%	18%
Engineering	19%	13%
Accountancy & Finance	12%	13%
Marketing	12%	12%
Human Resources	10%	10%
Banking & financial Services	6%	3%
Legal	5%	3%
Property/Facilities management	4%	6%

Source: Adopted from Hays (2016)

The outflow of engineers can cause serious economic impact in developing countries that still on its infant stage on adopting and adapting advance technology (Docquier, 2014; Naim & Iftikhar, 2010). Developing countries need sufficient engineers to absorb new knowledge and to develop advance technologies that can create value added activities and income. Otherwise, the shortage of engineers could cause a country confined to the status of a middle income country (Jeffrey Cheah Institute on Southeast Asia [JCI] and the Malaysian Economic Association [MEA], JCI-MEA, 2017).

In view of the challenges faced by Malaysia in retaining the engineers, a critical evaluation on the engineers' intention to migrate abroad is required. At present, research on brain drain of engineers in Malaysia particularly in behavioural perspective is limited. In filling up the literature gap, it is vital to determine why some engineers have the intention to migrate abroad while others do not, so that appropriate behavioural intervention policy can be proposed.

TalentCorp had reported that many young Malaysian high skilled workers (also known as gen-Y workers, who were born between 1980 – 1994) were leaving the country due to their perception of better opportunities that could be offered by job markets abroad (Cheah, 2014). Other reasons include the desire to seek new knowledge and experiences outside their home countries (Sebastion, 2013). Therefore, current study has focused on studying Malaysian gen-Y engineers' intention to migrate abroad using behavioural economics approach.

In assessing the gen-Y engineers' intention, the present study has used Theory of Planned Behaviour (TPB) to predict and explain their behavioural intention. The main advantage of TPB is it allows the current study to identify Malaysian professionals' beliefs and attitudes that have shaped their behaviour towards migration. The theory explained that the salient belief factors can influence respondents to activate certain behaviour, like intention to migrate abroad. As a result, appropriate behavioural intervention policies to reduce the engineers' intention to migrate abroad can be proposed by using TPB as the basic theory. The model is parsimony in nature with three direct measures – attitude, subjective norms (SN) and perceived behavioural control (PBC) – and their respective indirect measures – behavioural belief (BB), normative belief (NB) and control belief (CB) – that predict the behavioural intention. The three indirect measures can assess the gen-Y engineers' beliefs regarding the behaviour of migration.

This study also investigates the behavioural response generated by the feeling of psychological ownership over one's country (POC) – whether the gen-Y engineers would be less intended to migrate if the influence of POC is strong. The rate of brain drain in Malaysia is high among the nation's ethnic minorities, particularly the Chinese and Indian because they feel the minorities were not given equal treatment as the majority ethnic (Choong, et al, 2013; Quah, et al, 2014; World Bank, 2011). If the government can increase the minority's POC over Malaysia, will the gen-Y engineers' intention to migrate decrease?

According to Olckers and Plessis (2012), and Sousa and Goodhue (2003), strong feeling of psychological ownership over an organization could increase employees' intention to remain in the same organization. Therefore, if the feeling is extended to the country level, it could possibly reduce the engineers' intention to migrate abroad. Since there is lack of knowledge on the effect of POC on intention to migrate abroad, the current study could fill up another literature gap by explaining the relationship between the two variables. In other words, the original TPB model is extended by adding the POC construct to predict the gen-Y engineers' intention to migrate abroad.

1.5 Research Questions

After reviewing the problem statements, the following questions were raised:

i Does the extended TPB model able to predict the Malaysian gen-Y engineers' intention to migrate abroad?

ii Which constructs of TPB model could influence the engineers' intention to migrate abroad?

iii Can psychological ownership feeling over Malaysia affect the engineers' intention to migrate abroad?

iv Which salient beliefs can the policy makers target so that the engineers' intention to migrate abroad can be lowered?

1.6 Research Objectives

The general objective of this study is to determine the key salient beliefs that policy makers could target in interventions to reduce the Malaysian gen-Y engineers' intention to migrate abroad. The specific objectives are as follows:

i To assess the utility of the extended TPB model in predicting the Malaysian gen-Y engineers' intention to migrate abroad;

ii To evaluate the effect of the three direct antecedents in the TPB model (attitude, SN and PBC) on the engineers' intention to migrate abroad;

iii To evaluate the influence of psychological ownership feeling over Malaysia on the engineers' intention to migrate abroad; and

iv To identify the salient beliefs that policy makers could target to change the engineers' intention to migrate abroad.

1.7 Significance of the Research

Despite vast studies in the field of migration and ample knowledge on the factors that influence the highly skilled workers' intention to migrate

abroad, the brain drain phenomenon keeps rising, particularly in developing countries. Researchers like Castles (2000) and Arango (2004) have argued that existing research in migration have been overly focusing on the determinants of brain drain from macro perspective; economics, politics and social factors. The authors argued that such approaches could not explain why only some professionals are migrating while many others do not. Instead, they have called for research in migration from a behavioural perspective. However, such studies in the context of international migration are limited. The present study indeed has enriched the migration literature by extending the current research scopes that have been focusing on the macro perspectives to behavioural studies. This study explores the reasons why certain people have high intention to migrate by understanding their behaviour and beliefs towards migration.

Anderson and Stamoulis (2006), Amir et al. (2005) and World Bank's (2015) report have highlighted the need to have in-depth understanding on the high-skilled labours' behaviour towards migration so that more economical and effective intervention policies can be developed in reducing brain drain. However, probably due to failure in identifying appropriate theoretical framework or the complicated tasks involved, such behavioural intervention policies were hardly discussed or proposed in the literature of migration. The current study has utilised the full TPB model that involves the direct and indirect predictors that can identify the cognitive attitudinal and belief factors that could affect the respondents' intention to migrate abroad. In particular, the determinants of the salient belief factors could provide researchers with sufficient knowledge to test new approach in developing behavioural

intervention policy to stem brain drain. Moreover, this study also expands the utility of TPB model in developing intervention policy, not only in the field of migration, but in general.

The current conceptual framework has extended the TPB model by including an additional variable, POC. Previous studies such as Olckers and Plessis (2012), and Sousa and Goodhue (2003) have identified employees' feelings of psychological ownership over their organization as one of the important factors that contribute to organisations' ability to retain talent employees. The current study attempts to expand the role of psychological ownership in retaining the skilled workers, from an organizational perspective to a country perspective. An understanding on the relationship between POC and intention to migrate may provide a new insight into the role of POC in reducing the phenomenon of brain drain of a country.

Overall, the conceptual frameworks of this study; in terms of research model, methodology, and data analysis method, are useful to academicians who are interested to carry out further research in brain drain phenomenon. By understanding the behavioural factors that affect migration intention, future researchers could improve current study's frameworks in migration study.

Though Malaysian government has implemented various policies to stem the incidence of brain drain in the country, the issue remains critical (World Bank, 2011, 2015). The policies were not only criticised as less effective but also as costly (Mok, 2014). Meanwhile, the shortages of engineers

have significant impact on the country's ability to adopt to new technology. The findings of this study could provide the empirical evidence on the extent to which the Malaysian gen-Y engineers are intended to migrate abroad. Since there is lack of effective policy to tackle brain drain issue in Malaysia, the current study explores a new approach in the form of behavioural intervention policy as an alternative to the existing ones. This study's findings could be informative to the relevant agencies, such as TalentCorp, to develop behavioural intervention programs to change the engineers' significant beliefs that caused them to have high intention to migrate abroad. The approach is in line with the recommendation by the World Bank (2015) that Malaysia should consider policy that start at a smaller scale and able to test the effectiveness of such program.

In addition, by establishing the effect of POC on the gen-Y engineers' intention to migrate, the policy makers can consider of enhancing the feeling of ownership over Malaysia among the engineers with high intention to migrate abroad. As stated by Cox (2013), when a person has positive feeling and possessive towards his country, the feeling of ownership will be stronger. Therefore this study will provide some policy recommendation to the Malaysian policy makers on how to instil strong feeling of psychological ownership over Malaysia, in order to retain the engineers in the country.

In summary, the research will help researchers in general and policy makers in Malaysia to understand and evaluate the engineers' behavioural intention to migrate abroad, all from the psychological perspective. This is in

line with the purpose of behavioural economics which is to understand human's behaviour in making optimal decisions.

1.8 Scope of the Study

The focus of this study is to use TPB model to elicit and determine the salient beliefs that influence the Malaysian engineers' intention to migrate abroad. The engineers were required to assess their intention to work and stay abroad for at least a year (long term migration) and should be enforced within the next two years. Due to the critical shortages of engineers in the country, the scope of this research thereby is limited to engineers and do not include other professions. Unlike shortages of engineers, shortages of other professions in Malaysia such as accountant do not really have big impact on the country's economic (Bris & Caballero, 2015; Naim & Iftikhar, 2010). In regards to the medical practitioners, unlike a decade ago, currently there is an oversupply of doctors and nurses in Malaysia (Wong & Kadir, 2017).

In addition, only the gen-Y age group of engineers in Malaysia would be surveyed because they have higher tendency to seek new knowledge and experiences at abroad (Sebastian, 2013; Cheah, 2014). TalentCorp (2017) has stressed that if the current generation of young adults continue to migrate abroad, it could have huge impact to the future development of Malaysia.

This study does not intend to study the engineers' actual behaviour - those who have actually migrated. This is because the purpose of this study is to suggest behavioural intervention policy that could target the engineers with

high intention to migrate, and not those who had already migrated abroad. According to Mok (2014) and World Bank (2015), it is less effective and more costly to develop intervention policy to encourage the professionals who had migrated abroad to return home. Instead a more effective behavioural intervention policy can be developed by targeting the engineers who have high intention to migrate abroad.

Moreover, this study also analysed the influence of POC on the engineers' intention. Since strong psychological ownership feeling over an organization can lower the intention to leave that organization (Olckers & Plessis, 2012; Sousa & Goodhue, 2003), similarly, strong feeling of POC over Malaysia is expected to lower the engineers' intention to migrate.

1.9 Definitions of Terms

For the purpose of this research, the following definitions are provided to ensure a common understanding of terms used within this research that commonly have varied definitions.

Brain Drain. Beine, et al. (2008, p. 631) referred to brain drain as the "International transfer of resources in the form of human capital and mainly applies to the migration of relatively highly educated individuals from developing to developed countries". Therefore, brain drain in this study is defined as the migration of highly-skilled workers as measured by their level of educational attainment, typically at the level of Bachelor's degree or higher.

Behavioural Intention. It is defined as "a person's estimate of the likelihood or perceived probability of performing a given behavior" (Fishbein & Ajzen, 2010, p. 39). In this study, it is defined as the likelihood that the engineers will migrate abroad for at least a year in the next two years.

Attitude. Ajzen (1991, p. 188) defined attitude as "the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question". For the present study, attitude can be best defined as the degree to which the engineers appraise the behaviour of migrating abroad for at least a year, favourably or otherwise.

Behavioural Belief (BB). It is the belief about the positive or negative consequences a person might experience if he or she performs a given behaviour (Fishbein & Ajzen, 2010). Therefore BB for the present study can be described as the outcomes, weighted by their importance, which the engineers believe they will achieve when they migrate abroad.

Subjective Norm (SN). The term refers to "the perceived social pressure to perform or not to perform the behaviour" (Ajzen, 1991, p. 188). In this study, it is defined as the extent to which the engineers' significant others influence or pressure them to migrate abroad.

Normative Beliefs (NB). According to Fishbein and Ajzen (2010, p. 20), it refers to "the beliefs people form based on whether they would think 'important others' would think of them performing the behaviour". Hence, in

this study, NB measures the important referents that the engineers believe will influence their decision to migrate.

Perceived Behavioural Control (PBC). It "refers to the perceived ease or difficulty of performing the behaviour and is said to reflect past experience as well as anticipated impediments and obstacles" (Ajzen, 1991, p. 188). Hence, PBC for the present study can be referred as to the extent the engineers' perceive of ease or difficulty in migrating abroad.

Control beliefs (CB). They are "beliefs about personal and environmental factors that can help or impede a person from carrying out the target behaviour" (Fishbein & Ajzen, 2010, p. 21). CB in the present study is defined as the engineers' belief regarding the factors that could facilitate or hinder them in migrating abroad.

Salient beliefs. According to Sutton, et al. (2003, p. 235) salient beliefs "are those that first come to mind when respondents are asked open-ended questions". In this study, it refers to the beliefs in regards to the behaviour of migration that first come to mind when the engineers are asked during the structured interviews.

Psychological Ownership feeling over a Country (POC). Olckers and Schaap (2013) describes psychological ownership as the psychological experience received by a person when he or she possesses certain feelings of ownership towards a target. Hence, POC is viewed from a country's

perspective, which can be described as the engineers' psychological ownership feeling over their country, Malaysia.

1.10 Organization of the Thesis

The structure of this thesis is organized in five chapters. Chapter one discusses the background of study which is composed by a few sub-chapters: introduction, problem statement, research objectives and questions, significance of the study, and identifying the scope of research. Chapter two presents the literature review related to brain drain phenomenon and discusses on theoretical framework that could be used to solve the highlighted problems. The current study's research conceptual frameworks of modelling, research methodologies, and data analysis method and development of hypotheses are presented in chapter three. Descriptive and inferential findings to confirm the hypotheses are presented and discussed in chapter four. Finally, the chapter presents and discusses the research findings between the variables. Chapter five discusses the accomplishment of research objectives followed by academia and policy implications, recommendations to policy makers, limitations and conclusion.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Research on migration and brain drain has been widely carried out in many developing and developed countries by using economic and socio-politics theories such as the New Classical Theory of Migration, The New Economics of Labour Migration Theory and Migration Network Theory. The implications of the application of such theories on macro policies are costly and less effective (Amir et al., 2005; Anderson & Stamoulis, 2006; World Bank, 2015). On the other hand, studies that used economic behavioural approach is less common and indeed the study results can provide useful indications to more economical and effective policies.

This chapter begins by introducing the concepts of migration and brain drain. Different behavioural theories were then discussed and critically analysed so that an appropriate theory can be chosen to solve the problems and reduce Malaysian gen-Y engineers' intention to migrate abroad. The used of research tools and factors that could influence the implementation of intervention programs were reviewed as well. In this way, current author could recommend more effective methods on the development of the behavioural intervention programs that could reduce the engineers' intention to migrate abroad.

2.2 Concepts of Migration and Brain Drain

2.2.1 Migration

In order to discuss the issues of migration at global level more coherently and to enhance the coordination among countries, International Organization for Migration (2011) has developed a common definition for migration and other related terms. Generally, migration may apply to people who travel across an international border, or within a state, irrespective of the length and purpose of the movement. However, such definition can also refer to people who has travelled legally or illegally or can be a displaced migrant, asylum seeker, refugee, and cross-border commuters.

United Nations Educational, Scientific and Cultural Organization (UNESCO, 1998) meanwhile has defined migration as follows.

> "… the crossing of the boundary of a political or administrative unit for a certain minimum period of time and includes the movement of refugees, displaced persons, uprooted people as well as economic migrants".

Under the definitions provided by UNESCO (1998), tourist is not considered as a migrant because they do not have any intention to stay or reside in an area outside their home area for a particular time period. It also excludes movement made by business people who wants to meet business partners or customers and has no intention to reside in the visited area for a certain time period. Migration is also distinguished or categorized by the purpose and the

duration of people's movement. Appendix A summarises the various types of migration and migrant, which were adopted from UNESCO (1998).

Since the aim of this study is to evaluate the behavioural factors that may influence the Malaysian engineers to migrate abroad, migrant is defined then as a person who has the intention to work and reside in an area outside the country for a period longer than one year. The definition is consistent to UNESCO's (1998) definition of long-term emigrant which involve the movement of one person to another country and reside abroad for more than one year. Migration that takes place for less than one year is not accounted in this study because short-term migration could benefit the home country. Beine et al. (2008) stated that professionals who return home after working abroad for a short time period could bring back skills and experiences that they have gained from abroad. In other words, short-term migration could be viewed as brain gain, not brain drain.

2.2.2 Brain Drain

Research on brain drain had started since 1960s because migration of skilled workers between countries was a normal phenomenon in the 1950s and 1960s. Migration of scientists from UK to US in the 1950s sparked the interest of some British academicians to investigate this issue (Kwok & Leland, 1982). In 1963, the Royal Society of UK prepared a report to alert the UK government of the growing number of outflow skilled labours. The terminology of brain drain was then created, a term that reflect the movement of skilled workers to a foreign country. Kwok and Leland (1982) defined brain drain as a behaviour

performed by skilled professionals who has left their home country to pursue more promising opportunities elsewhere.

Brain drain can occur between two countries (geographical brain drain), or between industries or organizations. For Beine et al. (2008), geographical brain drain involves the transfer of human resources, whom are relatively highly educated, from developing to developed countries. The definition of geographical brain drain, in relative to organizational or industrial brain drain, is appropriate for this study because the study's purpose is to analyse the Malaysian gen-Y engineers' intention to migrate to other countries. The engineers are highly skilled workers who possessed at least an academic bachelor's degree.

2.3 Past Studies on Brain Drain in Malaysia

A number of studies related to the phenomenon of brain drain in Malaysia have emerged in the last decade (see Table 2.1). Although research on the brain drain issue in Malaysia was relatively new, various approaches and strategies and sources of data have been used by authors to explain factors that had affected the individuals to migrate abroad. For example, Harnoss (2011) assessed the impact of brain drain on Malaysian economy while Chandar et al. (2015) analysed the factors that influence the Malaysian postgraduates' intention to migrate abroad.

Despite the application of different study approaches, the brain drain issue in Malaysia is not well understood yet. The number of Malaysian

professionals who are migrating abroad keeps rising. World Bank (2015) has commented that existing policies in reducing brain drain in Malaysia were mostly at macro level. The policies were implemented at general without much effort to target specific individuals with high intention to migrate. Hence, the report has suggested new approaches to tackle the issue in the country, and one of the approach is related to behavioural economic perspective. According to the report, such policies could be more effective in changing the behaviour of individuals with high intention to migrate.

To date, limited research has been carried out to understand the Malaysian professionals' behaviour towards migrating abroad. Detail understanding of the engineer's behaviour, especially on their attitude and beliefs perspectives could help policy makers to develop behavioural intervention programs. This study then, intends to fill up the literature gap and aims to provide useful indications to policy makers to design and implement more effective behavioural intervention strategies that could overcome the brain drain issue in Malaysia.

A number of studies have suggested various macro environment factors that could possibly influence the outflow of high skilled workers from Malaysia (see Table 2.1). The factors can be grouped into three perspectives: economic, socio-cultural and politic. The following sub-topics shall elaborate each perspective more in-depth.

Table 2.1: Selected Past Studies on Brain Drain Phenomenon in Malaysia

Author/s (year of publication) (study's objective)	Types of Data	Analysis Method	Remarks
Arnoss (2011). (to estimate the economic costs of brain drain among Malaysian)	Malaysian economic and migration time series data ranged from 1980 to 2010	OLS Regression	The cost of skilled emigration flows such as xxx, yyyy was estimated to be between 0.7% and 1.6% of GDP per capita.
Chandar, et al. (2015). (to investigate the causes of brain drain from Malaysian postgraduate students)	Questionnaire survey data that were collected from 170 post graduates	OLS Regression. R^2 = 42.4%	Low salary, lack of career prospect, and poor quality of life were important determinants. Low job satisfaction on the other hand, was not of main concern.
Choong, et al. (2013) (to analyse why gen-Y working adults intended to migrate abroad)	Primary data was collected from 432 gen-Y working adults by using questionnaire	OLS Regression. R^2 = 43.3%	Lack of career prospect, social injustice, unattractive compensation, and low quality of life were influential factors.
Foo (2011) (to [a] estimate the trends of stock flows among Malaysian-born emigrants and	Census data on bilateral migration from sources like World Bank and OECD	Poisson regressions	There was an increase in the high-skilled migrants to countries like Singapore.
[b] to determine factors that can affect the migration of Malaysian high-skilled labours)	A total of 194 responses were collected from questionnaire survey	OLS regression	Career prospect, salary, GDP per capita, distance between countries, common English language and length of stay are major determinants.
Hugo (2011) examined the characteristics of Malaysian migrants in Australia	Secondary data taken from Department of Immigration and Citizenship of Australia	Descriptive analysis	Dominated by non-Bumiputeras, majority were Malaysian Chinese who were highly educated or high income earners.

Continue next page …

Table 2.1 Continued

Author/s (year of publication) (study's objective)	Types of Data	Analysis Method	Remarks
Ismail, et al. (2014) (to review some best practices in HRM that could possible attract migrated talents to return and serve the nation).	Reviewed literature on the strategies that had been practiced by South Korea, Taiwan, China, and India to attract the return of migrated talents	Qualitative content analysis	Suggestion - to keep record of Malaysian diaspora abroad and home government should provide financial support for research works, and to create a conducive environment for R&D activities.
Jauhar, et al. (2009) (to investigate the intention to migrate among current and future Malaysian accountant)	Questionnaire data provided by 150 students and professional accountants	OLS Regression	Important factors include higher salary and benefits, international exposure. While standards of living, job opportunities and ease of immigration procedures were not important.
Lim, et al. (2014) (to assess the determinants of migrant intention of professional engineers in Malaysia)	Data was collected from 104 Electrical and Electronic professional engineers from manufacturing firms in Penang.	OLS Regression. R^2 = 37.3%	Job satisfaction, job engagement, and organization engagement were significant were statistical significant variables. Social welfare and human security were not important factors.
Quah, et al. (2014). (to review the literature of push and pull factors that could affect Malaysia's brain drain).	Literature review	Qualitative content analysis	The major factors are sense of social injustice, lack of general safety and security, unsure political situation and poor livability conditions
Tyson, et al. (2011) (to explore the role of education and the changing socio-economic on brain drain in Malaysia)	Interviews, observation and review of a movie and a theatre performance	Qualitative analysis - content analysis	Malaysian education and political economy such as discrimination, lower quality of universities and political repression were main determinants of brain drain.
Wahab (2014) (to identify the factors that influence students' intention to work locally or abroad)	Questionnaire survey with 100 undergraduates	OLS regression	Influential factors include family influence, low salary, low job satisfaction, weak economic condition, poor working condition and lack of job opportunity.

2.3.1 Economic factors

The most common economic indicators suggested by past researchers were low prospects in career development and low salary. According to World Bank (2011), lack of career prospect was among the top ranking factors that could cause brain drain in Malaysia. The World Bank statement is supported by Chandar et al. (2015), Choong et al. (2013), Foo (2011) and Wahab's (2014) studies. Being paid marginally in relative to payment that they could get from developed country and unattractive fringe benefits was other economic factors that have pushed Malaysians to migrate abroad (see studies carried out by Chandar et al., 2015; Choong, et al., 2013; Foo, 2011; Jauhar, et al. 2009; Wahab, 2014; World Bank (2011). As a result, many Malaysian professionals choose to migrate to high income countries such as Singapore, Australia, US, UK, and Canada.

2.3.2 Socio-cultural factors

From Table 2.1, most of the authors suggested that at least one socio-cultural factor could influence or cause Malaysian's intentional or actual behaviour on migration. For example, Choong et al. (2013), Quah et al. (2014) and Tyson et al. (2011), asserted that the Malaysian minority ethnics like Chinese and Indians felt that social injustice was happening in Malaysia. Tyson et al. (2011) explained that Malaysian undergraduates of minority background felt they were discriminated by the country's education institution. For example quota system was applied in selecting students for the admission of certain programmes. The finding was supported by Choong et al. (2013) and

Quah et al.'s (2014) studies. Probably this is why more than 90 percent of emigrants from Malaysia were either Chinese or Indian ethnics (Hugo, 2011).

Another socio-cultural factor that has been highlighted in literature is related to lower quality of life in Malaysia compared to other countries. In studies carried out by Chandar et al. (2015), Choong et al. (2013) and Quah et al. (2014); many Malaysians were not satisfied with the safety and security environment in the country and thereby they have the intention to move to developed countries which they perceived would promises better quality of life. Other socio-cultural factors which could influence Malaysians to migrate abroad are opportunity to experience foreign culture and to enhance relevant technical and/or managerial skills (Jauhar et al., 2009) and family influence (Wahab, 2014).

2.3.3 Political factors

One of the push factors for migration is related to political environment in Malaysia. Tyson, et al. (2011) had provided an in-depth insight on political environment in Malaysia and its impact on migration. The authors claimed that political repression happened in the country, in which certain policies implemented did not favour the local minorities. Furthermore, Quah et al. (2014) asserted that the political environment in Malaysia was undermined by race and religion sentiments, which cause unhappiness among certain quarters, particularly the country's minority ethnics. This results in the migration of its professionals, mostly the minorities.

In summary, past studies of brain drain in Malaysia had identified that economic, socio-cultural and political factors have major contribution on brain drain issue. However, studies from other perspectives such as behavioural economics are limited.

2.4 Theoretical Perspectives on Migration

2.4.1 Migration Theories in the Field of Economics and Social

A number of theories can be used to explain the phenomenon of migration in the last two centuries. For example, Ravenstein had used Law of Migration (which was established in 1885) to explain the phenomenon of migration within Europe and migration from Europe to United States of America (Lee, 1966). Ravenstein believed that the migration was primarily driven by economic indicators: unemployment and low wages. In 1966, Lee extended the neo-classical framework by highlighting the "plus" and "minus" of economic factors in the home and host countries, or known as migration selectivity in the Neo-classical Theory. Lee claimed that individuals can overcome the obstacles that can prohibit them from migrating by using their own ability and resources.

The works of Ravenstein and Lee however, were criticised as being too simplistic and descriptive in nature (Grindle, 1986; Morrison, 1982; Portes, 1983). The critics added that the Law of Migration by Ravenstein has ignored the fact that each person may respond or react differently to certain stimuli, and in other words, the theories couldn't explain why people react differently.

Sjaastard (1962) attempted to improve the Neo-classical Theory by using human capital approach to explain how a person makes a decision by counterbalancing the factors that could affect that person to migrate. The theory assumes that labours will behave rationally in making decision and their behaviour is influenced by their level of education and work experience. A more recent economic model was introduced by Borjas (1990, 1991), which explains that an individual's decision to migrate is based on the discrepancy of expected net earnings between the home and host countries. The factors that influence the net earnings are related to the person's education level, skills, talents, and cost that may occur to activate the migration move.

Clark, Hatton, and Williamson (2007) had improved the model by Borjas (1990, 1991) by adding the types of migration costs that could lower the cost of migration and increase a person's migration behaviour. For example, individuals who are sponsored by family members who has been living abroad is more likely to migrate. However, Bodvarsson and **v**an den Berg (2013) argued that the human capital approach proposed by Borjas (1990, 1991) and Clark et al. (2007) has overly emphasized on the role of labour markets which determine the individuals' expected net earnings. Bodvarsson and **v**an den Berg (2013) also argued that psychological costs such as emotional issue that may arise from the separation from family members and friends were not taken into account.

The New Economics of Labour Migration Theory by Stark (1991) was primarily developed to challenge the neo-classical theory of migration. Stark

argued that the migration decision is primarily driven by the motivation to maximize household's utility rather than individual. Stark (1991) explained that a family could reduce the risks of all members being unemployed in the home country by sending only one or two family member to work abroad. Stark also explained that the absent of effective credit and insurance market in the low income countries can influence the decision to migrate as well. Households who feel that they could not insure themselves from the risk of being unemployed would chose to migrate if the employment status in the migrated country can be insured or warranted.

Nevertheless, the argument by Stark (1991) may not be applicable in explaining the current phenomenon of brain drain in Malaysia. First, the unemployment rates in Malaysia in the last few years were generally low, below four percent (Ministry of Finance, 2017) while the average unemployment rates in Australia, UK, and US were above five percent (International Labour Organization, 2014). Second, the credit and insurance markets in Malaysia are considered matured and sophisticated. According to the World Economic Forum (2016) report, Malaysia is ranked 13th globally in financial market development.

Migration Networks Theory by Massey et al. (1998) is a theory that explains the effect of sociology factors on the person's intention to migrate abroad such as support given by individuals' family members, friends, or other related persons who have migrated abroad (migration networks). The support includes assisting the potential migrant to find a better job or accommodation

in the host country. However, researchers like Cook and Sheeran (2004), de Jong (2000) and Sheeran (2000) argued that many receiving countries like Australia, New Zealand and Canada have tightened their immigration policy and become more selective in accepting international migrants. As a result, even when an individual has a large migration networks, it does not guarantee them for smooth access and better employability opportunity in the countries.

Overall, theories mentioned above have limitations. For example, the theories could not explain clearly why only some people reacts differently (to or not to migrate) given the same stimuli, such as the offered of better paid jobs in a foreign country. Based on the theories, some policies that aim to combat brain drain issue have been designed by assuming all people in a local area will react cohesively toward certain incentive, which is not necessarily true. Perhaps this explains why policies on migration were too costly for implementation and were achieving low rate of success in Malaysia.

In moving away from the traditional migration frameworks, a number of studies have introduced new frameworks to explain the reasons for migration. Sirkeci and Cohen (2016) explained that one of the main determinants of migration is human conflicts at micro, mezzo and macro levels. Based on the concept of transnationalism, the existence of security and insecurity over different time and space contributes to the movement of human between nations. The framework developed by in the study, which was based on the environment of insecurity and conflict, provides a new dimension in investigating the reasons for migrating abroad. Meanwhile, Sirkeci et al. (2012)

identified the shift in the cultural beliefs of Turkish migrants as the factor that cause them to return to Turkey from Germany. The study used cultural of migration as its conceptual framework to explain the phenomenon. The framework explains that people's decision to migrate is influenced by their cultural beliefs and the social patterns related to migration.

Though the frameworks used in the two studies are useful in explaining the determinants of migration from different perspectives, the studies did not view the context of migration from behavioural perspective. Hence, they did make any attempt to suggest useful strategy to change the beliefs posed by the potential migrants.

Alternative policy need to be undertaken to complement the existing policies which have been focusing on economics and social indicators. Amir et al., (2005), Anderson and Stamoulis, (2006), and World Bank, (2015) had proposed that behavioural based intervention policy should be activated. According to them, as a complement to the macro level policies, the individuals' positive beliefs toward migration should be changed using appropriate behavioural intervention tools. In developing such policies, understanding the behaviour of individuals from psychological perspective is important – particularly on the individuals' beliefs and attitudes. The following sub-topic will then discuss some behavioural psychological theories that could be applied to solve brain drain issue.

2.4.2 Application of Behavioural Psychological Theories in Migration Studies

Migration studies in the field of behavioural psychology are very limited. Although a number of studies have attempted to explain the cognitive behavioural and psychological factors that could cause the studied respondents' migration intentional and actual behaviour, they did not identified any appropriate model that could be best adopted or adapted.

Wolpert's stress-threshold model (1965), as cited in Zanker (2008), explains that internal migration can happen if the utilities that could be gained by an individual at a new place is higher than the utilities that the person can obtain in current location. However, Wolpert's model assumes that people is behaving rationally and this is not necessarily correct because some people make decisions based on imperfect knowledge and information. Studies that used the Wolpert's Stress-threshold model are very limited. Perhaps this is because according to Zanker (2008), the model is somehow quite complicated and the measurement of the level of utilities is not clearly defined and thereby not easy to be tested.

Meanwhile, Expectancy-value Theory (EVT) explains that few stages are involved before a final decision can be made (Fishbein, 1967). First, an individual needs to set a goal and identifies alternative behaviours that should be performed so that the goal can be attained. Then, the individual will analyse the consequences that may arise from behavioural expectation (E_i), and estimate the values (V_i) that would be gained if the goal (i) is achieved. Finally, the individual will sum up the resulted multiplication of values and expectancy

for all the goals ($\sum EiVi$). The outcome that gives the highest value is expected to be selected.

De Jong (2000), de Jong and Fawcett (1981), and de Jong et al. (1983) had used EVT in their studies to predict intentional behaviour. The values that can be derived from certain factors such as wealth, status, and comfort could drive migration behaviour. However, the studies did not develop a conceptual framework that could be used to explain respondent's migration intentional behaviour. Probably this is because the basic theory (EVT) itself does not explain the salient constructs that can act as antecedents to intentional behaviour, which will eventually leads to actual behaviour (Fishbein & Ajzen, 1975). Instead, EVT only explains that a person will try to maximize certain goal by estimating the values of various outcomes that could be gained. Therefore, Fishbein and Ajzen argued that EVT is less suitable for study that needs to develop relevant behavioural intervention policy that could either perpetuate or discourage a specific behaviour.

Theory of Reasoned Action (TRA) model was developed by Fishbein and Ajzen (1975) due to the lack of relevant theories or models that could explain the effect generated by individuals' attitudes on their intentional and actual behaviour. Positive attitude would be formed if the studied person perceives that the outcomes generated from the behaviour would enable the person to achieve certain goal (Fishbein & Ajzen, 1975). Subsequently, the respondent's intention to perform the behaviour will increase and then, the person will perform the actual behaviour. Another antecedent variable, SN will

increase or decrease an individual's behavioural intention when influential peoples such as parents, friends or working colleagues think that the person should perform the behaviour (see Figure 2.1).

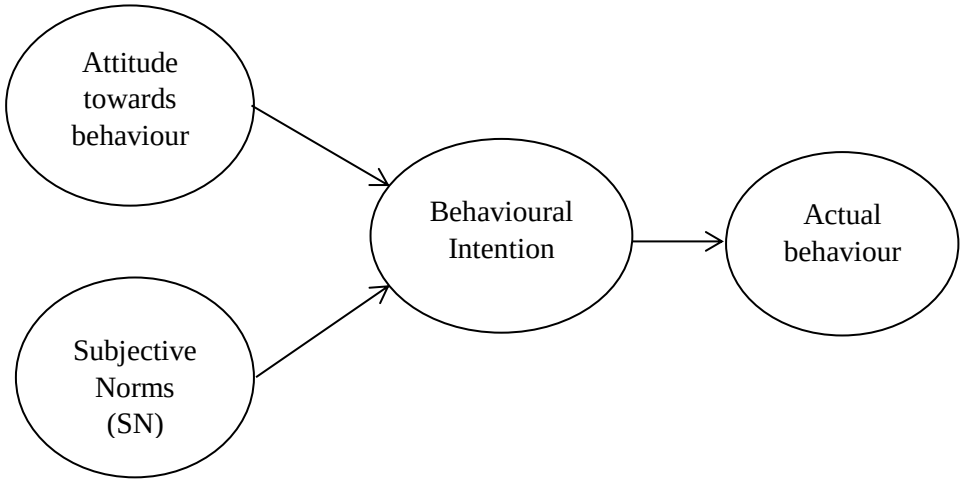

Figure 2.1: The Theoretical Framework of Theory of Reasoned Action
Source: Fishbein and Ajzen (1975)

Using TRA model, McHugh (1984) had examined the effect of attitude and SN of people who were residing in two United States of America's counties (Allegheny and Champaign) on their intention to migrate to other US counties. The study result supported the theory's proposition that the constructs of attitude and SN could affect the respondents' intentional behaviour. Overall, research on migration that used TRA model is limited. Probably, this is because the theory is only valid if the respondents can have full control over their behaviour and they must have the necessary resources and skills which can enable them to perform certain behaviour. As a result, Ajzen (1991) extended the TRA model and developed Theory of Planned Behaviour (TPB) by adding an additional variable, perceived behavioural control (PBC) to

measure the effect of generated by the respondents' perceived resources and skills. The model is elaborated in Section 2.5 of the present study.

Another behavioural theory that has been used in migration study is Health Behavioural Model (HBM). It was developed by Hochbaum, Rosenstock and Kegels in 1952 to identify the psychological factors that had caused the respondents to feel reluctant in seeking medical treatment for some serious diseases (Rosenstock, 1974). The model was applied by Groenewold, de Bruijn, and Bilsborrow (2012) to assess the influence of Western African's professionals' attitudes and beliefs on their migration intentional behaviour. The utility of HBM model in migration study overall is limited. Armitage and Conner (2000) argued that the predictive power of HBM is relatively weak because the six constructs were poorly defined. The argument was consistent with Zimmerman and Vernberg's (1994) suggestion. The latter study's result showed that TRA had a better predictive power than HBM. Therefore, HBM is less appropriate in meeting the main aim of the present study which is to identify the salient beliefs of the engineers in regard to migration.

In summary, economic, social, and most of the behavioural and psychological theories discussed may not be appropriate for this study because the theories could not clearly explain why only some people have the intention to migrate abroad while others do not. Moreover, the theories do not provide any clear guidelines on the development of any behavioural intervention programs that could change individuals' behaviour. In assessing the intention of Malaysian engineers to migrate abroad, the present study proposes the use of

TPB to predict and explain their behavioural intention. TPB is considered more appropriate than other models mainly because it allows researchers to suggest appropriate behavioural intervention policies to policy makers to either encourage a positive behaviour or discourage a negative behaviour. The TPB model is explained in details in the next section.

2.5 Framework of Theory of Planned Behaviour (TPB)

In response to criticism, Ajzen (1991) extended the TRA model that assumed individuals have the ability to perform all the intended behaviours as they have volitional control over their behaviour. In TPB model, PBC construct was added to measure the elements that can be controlled by individuals such as time, effort, skills and other resources so that behavioural intention and actual behaviour can be performed. If individuals perceive that they have less control over the skills or resources required to perform a specific behaviour, the intention to perform certain behaviour and actual behaviour could be negative (Ajzen, 1991). The full model of TPB is shown in Figure 2.2.

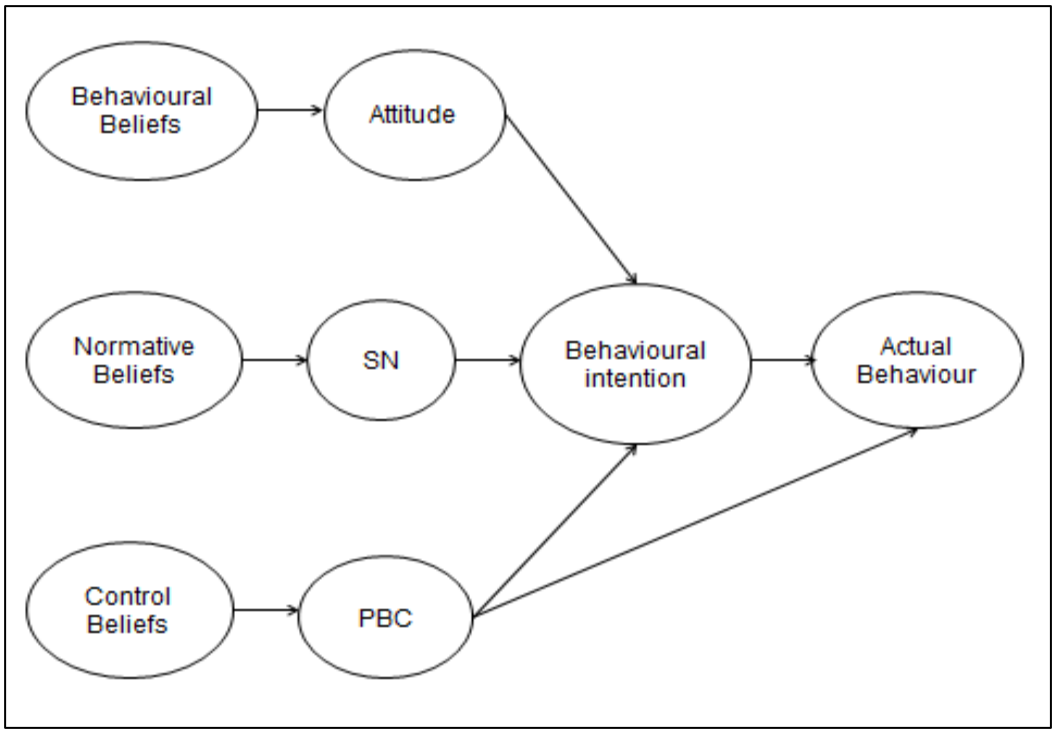

Figure 2.2: The Theoretical Framework of Theory of Planned Behaviour
Source: Ajzen (1991)

The construct of intention, which predicts the actual behaviour, is in turn predicted by its three antecedents – attitude, SN and PBC. Meanwhile, the three antecedents are explained by their corresponding beliefs; behavioural beliefs (BB), normative beliefs (NB), and control beliefs (CB). In fact, the three belief factors are developed from the EVT model, which was explained in sub-chapter 2.4.2. Each belief (BB, NB, and CB) is a composite value (*EiVi*), which composed of expectation (E_i) of certain goals and the values (V_i) attached to each goal.

To elaborate, behavioural belief (BB) is measured by the strength of behavioural belief and the evaluation of belief outcomes; normative belief (NB) is measured by the strength of the normative belief and the motivation to

comply with the norms. Meanwhile, control belief (CB) is measured by the respondent's control strength and the perceived power of the control.

When a question arises on the relative importance of the three antecedents on intention, Ajzen (2010) explained that comparison is not possible. The importance of the antecedents depends on many factors such as individual characteristics, behaviour of interest, and environmental factor. Therefore, in developing a new framework using TPB, it is important to note that weightage should not be attached to the three antecedents of intention. Instead, Ajzen mentioned that the relative importance of the three constructs can be determined by their respective coefficients from regression analysis.

Another question that arises in the utility of TPB model is its effectiveness in identifying and developing appropriate behavioural intervention policies. A number of studies have provided evidence on the successful intervention policies based on this model. From a meta-analysis carried out in eighteen studies that applied interventions, Webb and Sheeran (2006) recognized that about 50 percent of the studies achieved the intended results – changes in the individuals' intentions and actual behaviour. The factors that undergone the interventions included all the three belief constructs (BB, NB and CB) as well as their respective targeted components (attitudes, SN and PBC). This implies that TPB can be a very useful model to answer the research questions posed in this study.

2.5.1 Literature of TPB in Migration Studies

The application of TPB in migration related literatures are limited. Recently, a few studies had used TPB in analysing the respondents' intention to migrate or work abroad (in Engle et al., 2015; Remhof et al., 2014; Suwandi, 2015; Weerasinghe & Kumar, 2014). The summary of the four studies are provided in Table 2.2.

In analysing undergraduates' intention to take up international assignment when offered by their future employers, Engle et al. (2015) and Remhof, et al. (2014) had focused on identifying the cognitive behavioural factors that could be used to encourage undergraduates to work abroad. Using data from 896 undergraduates from five countries (Croatia, Germany, Russia, Turkey and the USA.), Engle et al. used TPB to determine the influence of attitudes, SN and PBC on their intention to accept foreign assignments. The study result showed that about 41 percent of the variation in the behavioural intention variable could be explained by the three antecedents of behavioural intention in the TPB model. Individually, all the three antecedents were statistical significant. Engle et al. thereby concluded that TPB is useful in predicting the intention of the undergraduates to work abroad.

Table 2.2: Selected Past Studies that Utilised TPB to Predict Intention to Migrate/Work Abroad

Author / Location, sample size	Purpose	Analysis technique, IVs, MVs and DV	Significant determinants	Important parameters
Suwandi (2015) / Turkey. N = 209	Indonesian who had resided in Egypt was examined on their intention to work as female migrant domestic workers	SEM IVs : ATT, SN and PBC DV : Intention to be MDW	Only SN is statistically significant (sig.) on its effect on behavioural intention	
Remhof et al. (2014) / Germany. N = 518	To examine the utility of the TPB on respondent' intention to accept an offer to work abroad	SEM IVs : Openness and Extraversion MVs - Sensation seeking (ATT-S), Achievement motivation (ATT-M), uncertainty tolerance (ATT-T), SN, motivational CQ (PBC) and self-efficacy (PBC)	ATT-S, SN and motivational CQ (PBC) were sig. ATT-M, ATT-T, and self-efficacy (PBC) non-sig.	R^2 = 39%
Engle, et al. (2015) / Croatia, Germany, Russia, Turkey and the USA. N = 896	Mediating role of TPB constructs on the intention to work abroad	SEM IVs : ATT, SN, PBC and Gender DV : Intention to accept an offer to work abroad	All 3 were sig. for all the 5 countries and pooled data, except PBC in Russia.	R^2 for Croatia, Germany, Russia, Turkey, U.S., and Total are 22%, 30%, 30%, 42%, 50%, 42%
Weerasinghe and Kumar (2014) / Sri Lanka. N=597	Used the TPB to estimate respondent's behavioural intention to pursue overseas employment.	OLS regression and logistic regression IVs : ATT, SN, PBC, self-efficacy and resource facilitating condition DV : Intention to work abroad	Only ATT and self-efficacy sig in both models. SN sig only in UG model.	R^2: 65% and 60%

Meanwhile, Weerasinghe and Kumar (2014) used multiple regression analysis to estimate undergraduates and graduates' intentional behaviour in Sri Lanka to work overseas. The constructs of attitude and PBC were found to be statistical significant in influencing respondents' behavioural intention. However, SN was only an important determinant for undergraduates' sample, and not for the graduates. In Suwandi's (2015) study, Indonesian who had resided in Egypt was examined on their intention to work as female migrant domestic workers (MDW). Among the three antecedents, only SN could predict the behavioural intention of Indonesian who had resided in Egypt to become a domestic worker.

The four studies had used TPB to predict respondent's behavioural intention to either mgrate or work abroad by including additional variables. For example, Suwandi (2015) added five demographical factors while Weerasinghe and Kumar (2014) included two variables: self-efficacy and resource facilitating conditions as additional predictors of intention to work abroad. Nevertheless, none of them has suggested any behavioural intervention policy that can be used to strengthen the respondents' perception on their attitude, SN, PBC and behavioural intention. In other words, the salient beliefs that possibly lead the respondents to behave differently towards the TPB constructs were not identified in any of the studies. In summary, the studies have only partly confirmed the applicability of the TPB model in the literature of migration because the full TPB model was not tested.

Current study attempts to fill the literature gap by testing the direct and indirect effects that could be generated by attitude, SN, and PBC; and the constructs' beliefs respectively on behavioural intention. In this way, current study conceptual model could provide more useful indications to Malaysia's public sector to develop appropriate behavioural intervention policy.

2.5.2 Evaluation on the Application of TPB Model in Migration Study

One of the reasons for the wide use of TPB in behavioural studies is due to the advantages that the model has in relative to other behavioural theories or models. Among them, TPB is designed to be context-free. This implies that the model can be used to explain and predict the behavioural intention and actual behaviour in various fields and situations. For instance, the TPB model was found to have good predictive power in the following field of studies; Business (Vabo & Hansen, 2016); Finance (Husin & Rahman, 2016); and Transportation (Donald, Cooper & Conchie, 2014). Therefore, in the present study, the model should be able to predict Malaysian engineers' intention to migrate abroad.

In any psychological study, deep understanding on people's behaviour is necessary to develop intervention program. By predicting and explaining the determinants that could encourage or discourage the target population's behaviour, policy makers can develop appropriate intervention programs that can alter respondents' behaviour. This can be done by using the TPB model as the basic model in research. This also explain why the model is still applicable in recent studies and widely used to develop behavioural intervention policy

despite being introduced more than two decades ago (Ajzen, 2015; Armitage, 2015).

Fishbein and Ajzen (2005) explained that interventions based on TPB have advantage over other methods when the behavioural change is desired by third parties (such as government) and not by the individuals or respondents themselves. Moreover, the intervention can be applied to a larger group of people, such as the group of engineers. In contrast, intervention program such as Cognitive Behavioural Therapy (CBT) is only applicable to a small group of people and also when the changes are required by the individuals.

TPB has considerably a good predictive power in estimating respondents' behavioural response. In studies done by Jan and Wallace (2017), the three antecedents of intentional behaviour: attitude, SN, and PBC had explained about 73% of the variances in the participants' intention to purchase halal food in UK. In the study by Lee, Chian, Hwang, Chi and Lin (2016), the variance in the intention to exercise daily among pregnant women was 59%. Nevertheless, based on a meta-analysis involved 85 case studies, the average variance tabulated by Armitage and Conner (2001) was approximately 39 percent. According to the authors, such levels of variance should be acceptable because human behaviour is quite unpredictable.

Another important advantage of TPB model is that the predictors of behavioural intention are not just limited to the three antecedents constructs: attitude, SN and PBC. The model is flexible, in which additional predictors can

be included and supported theoretically (Conner & Armitage, 1998). For example, Husin and Rahman (2016) extended the TPB model by adding new variables: religiosity, exposure, awareness and knowledge respondents' intention to participate in family Takaful scheme. Meanwhile, Lee et al. (2016) extended the TPB model by adding consumers' environmental consciousness and the environmental ethics to predict the intention to buy green products in Taiwan.

The examples presented above discussions had justified that extending the TPB model should be done if the additional variables can solve the research problems. In the present study, to solve the third research question, the construct of POC is added so that the overall level of explanation or predictive power on the engineer's behavioural intention to migrate can be improved.

Although TPB could predict and explain behavioural intention and actual behaviour, the model is not without any limitations. The model assumes that people act rationally based on available information to make decision. Cook and Sheeran (2004) and Sheeran (2002) argued that in some situations, people could act unconsciously or irrationally. However, this argument may not necessarily valid in the context of this study. By nature, a skilled worker like engineer will act rationally by sourcing and analysing available information before reaching the migration decision. Unlike some other behaviours like consuming alcohol or child abusing, decision to migrate is not performed out of a sudden. Hence, the assumption of rational act is still appropriate in this study.

TPB was also criticised for its inability to explain how the changes in the intention and behaviour can be achieved (Armitage & Conner, 2001; Hobbis & Sutton, 2005; Sniehotta, Presseau, & Araújo-Soares, 2014). Nevertheless, Ajzen (2015) and Fishbein and Ajzen (2005) clarified that the TPB based intervention programs have been developed and implemented successfully in various context. The authors suggested that the intervention program should target the underlying beliefs that cause the behaviour. The intervention program is discussed in more details in Section 2.7 of the current study.

Overall, TPB has proven to be one of the best theories to predict and explain the behavioural intentions. The content-free nature of the model allows the present study to assess the intention of Malaysian engineers to migrate abroad. In addition, the TPB is credited for having a fewer, but much more specific components and antecedents in explaining and predicting individuals' behavioural intention. Such attributes allow the present study to suggest intervention strategies that could solve the brain drain problems among Malaysian engineers.

2.5.3 The Conceptual Framework of TPB

Behavioural intention is defined as the chances that a person will perform certain behaviour (Fishbein & Ajzen, 2010). Behavioural intention can be explained by three constructs that act as antecedents: attitude, SN and PBC (see Figure 2.2 in page 39). Attitude shows the degree of favourable or unfavourable feeling that a person has if certain outcome related to the study

subject can be materialised (Ajzen, 1991). Subjective norm (SN) reflects the degree of perceived pressure that a person will receive from important others to perform certain behaviour (Ajzen, 1991). Perceived behavioural control (PBC) denotes the degree of perceived ease or difficulty that an individual needs to anticipate if the person is going to perform the behaviour (Ajzen, 1991).

The three constructs; attitude, SN and PBC in turn are explained by their respective expectancy value of belief or a set of salient beliefs about the behaviour – behavioural belief (BB), normative belief (NB), and control behaviour (CB). According to Sutton et al. (2003), salient beliefs reflect a person's initial belief of the outcome that could be generated if certain behaviour is performed. The effect of BB takes place when migrants are expecting some returns or risks when they have migrated. For example, many migrants believe that they would experience better working life if they migrate to certain place. NB is related to the degree of pressure that the respondents believe they would receive from people who are important or influential to them (such as family members, friends, relatives or working colleagues, subordinates and superiors) if certain behaviour is taken.

Meanwhile, CB shows the level of belief that the respondent has on the ownership of necessary resources if they were to perform certain behaviour. For example, if individuals perceived that they have the required work skill that can meet a company's requirement which is located elsewhere, the effect of PBC would be then positively intensified and thereby their intention to migrate would increase. In brief, the construct of attitude, SN, and PBC is

expecting to generate direct effects on behavioural intention, while the three antecedents are expected to be influenced by their underlying salient beliefs; BB, NB and CB respectively.

The TPB's proposition of direct effects of the three antecedents on intention are supported by various studies. Among them, Ayob, Low, Jalil and Chin (2017), Chen and Hung (2016), Donald, Cooper & Conchie (2014), Ferdous and Polonsky (2013), Husin and Rahman (2016), Jan and Wallace (2017) and Jirotmontree (2013). The studies suggested that positive attitude will significantly increase the respondent's intention to perform certain behaviour, or both constructs are positively related. Meanwhile, many past studies' results showed that the construct of SN could generate direct effect on respondents' behavioural intention (Donald et al., 2014; Ferdous & Polonsky, 2013; Horng, Su & So, 2013; Jirotmontree, 2013; Lee et al., 2016; Salleh & Laxman, 2013; Vabo & Hansen, 2016). Lee et al. (2016), for example, suggested that pregnant women's intention to exercise regularly increased if a certain level of pressure was given to them by their family members or peers.

Mixed results were found in studies that examined the relationship between PBC and behavioural intention. In studies by Ayob et al. (2017), Chen and Hung (2016), Husin and Rahman (2016) and Vabo and Hansen (2016), PBC was found to significantly affect the participants' intention to perform the behaviour of interest. On the other hand, studies carried out by Jan and Wallace (2017), Jirotmontree (2013), and Wu et al. (2013) showed that PBC did not influence respondents' behavioural intention. For example, Jan

and Wallace (2016) found that the consumers' intention to purchase halal food was not influenced by their perceived positive control over the behaviour of buying the food.

Ajzen (2015) and Fishbein and Ajzen (2010) stated that PBC's influence on the behavioural intentional depends a lot on the behaviour in question. If the studied respondents have low self-control in some addictive behaviour such as smoking and gambling, the effect that can be generated by PBC on their intentional behaviour thereby would be marginal.

Ajzen (2015) and Montano and Kasprzyk (2002) stressed that although the constructs of attitude, SN and PBC can predict the change of intentional behaviour directly, the indirect effects which were created by BB, NB and CB should be measured as well because they provide the explanations of the roots that have made respondents to behave in certain way.

Respondents' attitude towards certain behaviour will intensify if the outcomes of the behaviour comply with their initial positive behavioural beliefs (BB). In Green (2013), for instance, if teachers believe that by teaching the value of nutrition to students, they would be able to enhance the students' awareness; positive attitudes on teaching thereby would be formed. The degree of NB will affect the way respondents react to pressure that they will receive or NB is an antecedent for SN. For example, many teens believe that their intention to eat healthy food and to participate in physical activities were influenced by their peers (Muzaffar, Chapman-Novakofski, Castelli & Scherer,

2016) The way the teens react to the pressure received from the peers would correlate to their belief. If they believe their peers who are obese do actively exercising, the teens have stronger SN.

There are enough evidence to support the antecedent effect created by CB on PBC and eventually on behavioural intention. For example, Han and Kim (2012) suggested that when respondents believe it would be costly to stay overnight in a green hotel, the non-monetary benefits as promoted by the hotel may have little effect on the targeted respondents' intention to stay in the hotel.

In summary, behavioural intention can be predicted by three constructs; attitudes, SN and PBC and the effects that can be generated by each constructs can be intensified by the respective salient beliefs: BB, NB, and CB. The theory's propositions have been supported by many studies and therefore, it would be wise to use the TPB full model to guide the development of current study's conceptual framework. Furthermore, as discussed in sub-chapter 2.5.2, researchers should extend the TPB if the examination on the additional variable can solve all the research problems comprehensively. The following sub-chapter discusses the characteristic, roles, and effect of additional variable, the psychological ownership feeling over a country (POC) on intentional behavioural.

2.6 Psychological Ownership Feeling over a Country (POC)

Pierce, Kostova and Dirks (2001) stressed that POC is often perceived as sharing the similar characteristics as other constructs, such as commitment

and identification in the context of organization behaviour. Although the authors agreed that there might be some overlapping between the three concepts, POC indeed is different from commitment and identification (see Table 2.3).

Table 2.3: Comparison between Psychological Ownership and Other Similar Constructs

Dimension of distinctiveness	Psychological Ownership	Commitment	Identification
Conceptual core	Possessiveness	Desire to remain associated	Use of element of organization's identity to define ones' self
Theoretical anchoring	Psychology of possession	Social membership	Social identity theory
Questions answered for individuals	What do I feel is mine?	Should I maintain membership?	Who am I?
Type of states	Affective/ cognitive	Affective	Cognitive/perceptual
Motivational bases	• Efficacy • Self-identity • Need for place	• Security • Belongingness • Beliefs and values	• Attraction • Affiliation • Self-enhancement

Source: Adapted from Pierce et al. (2001)

Pierce et al. (2001) asserted that in many cases, individuals tend to have strong feeling of ownership over various targets – tangible objects and intangible entities – and form a strong link between the object and themselves. For example, children may have a very strong attachment to their toys; students tend to strongly identified themselves as student of a particular school; employees possess strong feeling over their organization; and researchers strongly attached themselves to their study result or innovation created by them.

Quoted from Pierce et al. (2001, p. 86), psychological ownership is defined as "… that state where an individual feels as though the target of ownership or a piece of that target is theirs". Similarly, in the context of ownership feeling over a country, Cox (2013) explained that some individuals may have a very strong attachment to their country of origin, and therefore, the citizens may have high tendency to link themselves to their home country. In the study of migration, the role of national identity is less discussed in literature.

2.6.1 The Role of National Identity in Migration

Based on the available resources, only four studies have discussed the role of national identity on influencing the respondents' behavioural intention (see studies carried out by Leong & Soon, 2011; Mattes & Mniki, 2007; Ng, 2011; Nguyen, et al., 2008). In determining South African undergraduates' intention to migrate upon their graduation, Mattes and Mniki (2007) used the feeling of patriotism towards South Africa as a measurement for national identity. The result showed that the feeling of lower patriotism and intentional behaviour was statistical significant.

Meanwhile, in Nguyen et al.'s (2008) study, nearly 70 percent of the surveyed nursing students in Uganda responded that they will continue to serve the home country because they should show their gratitude to the country and society as the home government had sponsored their education. However, the study did not disclose and explain the measurements that had been used to measure the construct of national identity.

In examining the strategies that had been taken by Singapore government to tackle the issue of shortages of high skilled workers in the country, secondary sources showed that strong national identity could be a prime reason that had discouraged some foreign skilled workers to migrate to Singapore (Ng, 2011). However the paper did not provide any empirical evidence on the influence of national identity on the home people's intention to stay or migrate abroad.

In another study carried out in Singapore as well, Leong and Soon (2011) used national pride as one of the predictors that could affect young Singaporeans' intention to migrate. The study found a significant negative relationship between national pride and the intention to work abroad. This indicates that when citizens are proud of their country and feel that their country is better than others, the probability of continuing to remain in home country is higher.

In summary, factors such as the feeling of patriotic, national pride and responsible to the country could lower the citizens' intention to migrate. However, the studies did not provide a clear explanation of how the national identity was measured.

2.6.2 Psychological Ownership as a Close Proxy of National Identity

According to Cox (2013), the strength of national identity is best measured by POC. However, POC is conceptually different from the existing two constructs that have been widely used to represent national identity –

patriotism and nationalism. Cox (2013) stated that patriotism and nationalism measure the extent to which individuals are attached to their country, and the extent to which individuals perceive about their country's superiority than others respectively. POC on the other hand, should be measured by the extent to which individuals feel the country belongs to them. Cox (2013) further argued that individuals with higher feeling of ownership tend to have higher level of national sentiment, compare to the degree of feeling generated by the constructs of patriotism or nationalism. Can the concept of POC be used in the context of this study? The following sub-topics discuss the applicability of the POC concept in the study of brain drain.

2.6.3 The Role of Psychological Ownership in Retaining the Talents

The concept of psychological ownership has been used in studies that examined methods to retain employees. Van Dyne and Pierce (2004), for example, asserted that psychological ownership could develop employees' positive attitudes towards the worked place and thereby would be more likely to retain in current workplace. Pierce et al. (2001) added that the degree of psychological ownership can influence employees to develop the organizational citizenship behaviour, which refers to a person's feeling to prioritize the well-being of worked organization. When a worker's organizational citizenship behaviour grow, the probability of the person to remain with the organization will increase as well. It can be said that strong feeling of psychological ownership over the organizations is expected to increase employees' long term commitment to their organizations.

Meanwhile, Olckers and Plessis (2012) stressed that workers with strong psychological ownership behaviour would have high potential to perform high level jobs and probably beyond the management's expectation. The study had suggested that psychological ownership differs from other related concepts such as organizational commitment. A strong feeling of psychological ownership could lead employees to feel that they possess the company, which is deemed more influential than commitment.

In brief, instilling the feeling of psychological ownership among employees is a more powerful tool than organizational commitment if an organization intends to retain its employees. In the context of this study, a high degree of POC is possible to retain the gen-Y engineer's in Malaysia, thus lower their intention to migrate.

2.6.4 The Application of Psychological Ownership Concept in Brain Drain Studies

The application of the POC concept is very much limited in brain drain literature. In comparing the intergroup attitude between Finland's citizens and immigrants living in Finland, Brylka, Mahonena, and Jasinskaja-Lahti (2015) analysed the role of POC. Their study results have two important implications in regards to the concept of POC. First, POC could strengthen individuals' feeling of possessiveness towards the country, and they have no desire to share the country with foreigners. Secondly, immigrants who have stronger feeling of ownership on the host country would likely to retain in the host country.

Although Brylka et al.'s (2005) study has enriched the brain drain literature by highlighting the importance of instilling ownership feeling among local citizens and immigrants, the study did not attempt to determine the effect of POC on local citizen's migration intentional behaviour. Current study has filled the literature gap by measuring the effect of POC on Malaysian engineers' intention to migrate abroad.

2.6.5 Developing the Feeling of Psychological Ownership

The routes to psychological ownership answer the question 'How psychological ownership is developed?' It explains the elements that can enhancing individuals' feeling of ownership over a target. The understanding of the routes is important in developing the intervention programs that could change the Malaysian engineers' intention to migrate abroad. Pierce et al. (2001) have discussed three routes to the development of this feeling.

2.6.5.1 Controlling the target

If individuals can have some control over the target, they are said to have the capacity to do some improvement over that target (Furby, 1978; Rudmin & Berry, 1987). For example, a person who owns a house will have stronger feeling of ownership over the house than a person who rents the house. The owner of the house has more freedom to renovate it, thus have better control than the tenant. In the case of POC, if individuals have the right to vote in the country's general election or have freedom to voice out their concerns, they may possess higher feeling of ownership over their country (Cox, 2013).

2.6.5.2 Coming to know the target

Furby (1978) explained that when a person become interested or involved with the target, they will start to accumulate more knowledge regarding the object or the entity. By having more information and understanding about the target, they will develop greater attachment with the target. A chef, for example, may develop the feeling of ownership over the kitchen he is working with after some time. Through his active involvement in the kitchen, and the knowledge gained regarding the apparatus and utensils inside the kitchen, the chef may have stronger feeling of possessing the kitchen, though he doesn't own it legally. In the context of a nation, Cox (2013) stated that if a citizen has strong knowledge regarding the history of his country, he is expected to have strong POC. Furthermore, reading current news in the newspaper or listening to news on television regarding one's country may also enhance the feeling of ownership.

2.6.5.3 Investing on the target

According to Locke (1988), as cited in Cox (2013), when a labour invests his time and energy in creating something, he may feel that he owns what he has created. In the same context, for example, when a lecturer develops a new module for her college, she may feel that she owns the module as a result of her passion, effort and time. Similarly, at a national level, when a person participates in the country's national service training for few months, he will probably develop the strong sense of ownership over his country. Act like standing and singing the national anthem could also develop a strong feeling of ownership among the citizens (Cox, 2013).

In summary, to instil the feeling of ownership over Malaysia, it is important that the engineers should have the feeling of certain control over the country, have ample knowledge, and are able to participate in or contribute to national activities.

2.7 Intervention Policies to Change Behavioural Intention and Behaviour

As discussed earlier, TPB is not spared from criticism. Armitage and Conner (2001), Godin and Kok (1996), Hobbis and Sutton (2005) and Sutton (1998) had argued that unlike other behavioural models, TPB did not provide much guidelines on the development of intervention programs to change behaviour. They further contended that other intervention programs like Cognitive Behavioural Therapy (CBT) and Trans-theoretical Model (TTM) has been used extensively in the field of health to cause changes in patients' behaviour. Do the critics imply that the TPB-based intervention is less effective?

Fishbein and Ajzen (2005) explained that intervention program based on TPB model is possible and feasible to change intention as well as the actual behaviour. They added that CBT and TTM are more appropriate when the desired changes in the behaviour are initiated by the individuals who want to change but could not materialise the change by themselves alone. They need other people, such as therapists or consultants, to assist them to change their behaviour.

This study aims to provide useful suggestions to policy makers to plan some intervention programmes that can reduce the engineers' intention to migrate. In other words, the change of current respondents' behaviour is not initiated by the engineers themselves and it's the government that wants to change the engineers' behaviour. Therefore, the application of CBT and TTM models is not feasible for this study. Furthermore, Fishbein and Ajzen (2005) argued that intervention programs based on CBT and TTM are only effective in changing individuals' actual behaviour, and not their intentional behaviour. Relatively, TPB is more practical to change both behavioural intention and the actual behaviour.

Fishbein and Ajzen also argued that TPB based intervention programs are applicable both to a large group of people as well as to a single individual, while intervention program that applies CBT is more appropriate for an individual or a smaller group of individuals. As the purpose of the current study is to change the migration intention of large number of engineers, TPB-based intervention policy thereby is deemed more appropriate.

In summary, developing intervention programs by using TPB is therefore more cost effective than using other behavioural models to change the engineers' behavioural intention to migrate. In order to recommend suitable intervention programs at the end of current study, the procedures involved in developing the intervention programs are reviewed next. The important factors that determine the effectiveness of the programs and the tools used are also reviewed and identified.

2.7.1 Developing Behavioural Intervention Program Using TPB

In the process of developing the appropriate intervention program to change either the behavioural intention or the actual behaviour, Ajzen (2002, 2011) and Fishbein and Ajzen (2005) had recommended the following steps. First, behaviour of interest has to be clearly defined followed by identifying the target population. Next, the three belief factors – BB, NB and CB – must be identified. Figure 2.3 shows that an effective intervention program should first target the three beliefs in order to alter their immediate cognitive factors – attitude, SN and PBC respectively. Only then the outcome of the program which is to either change the intention or the actual behaviour can be achieved.

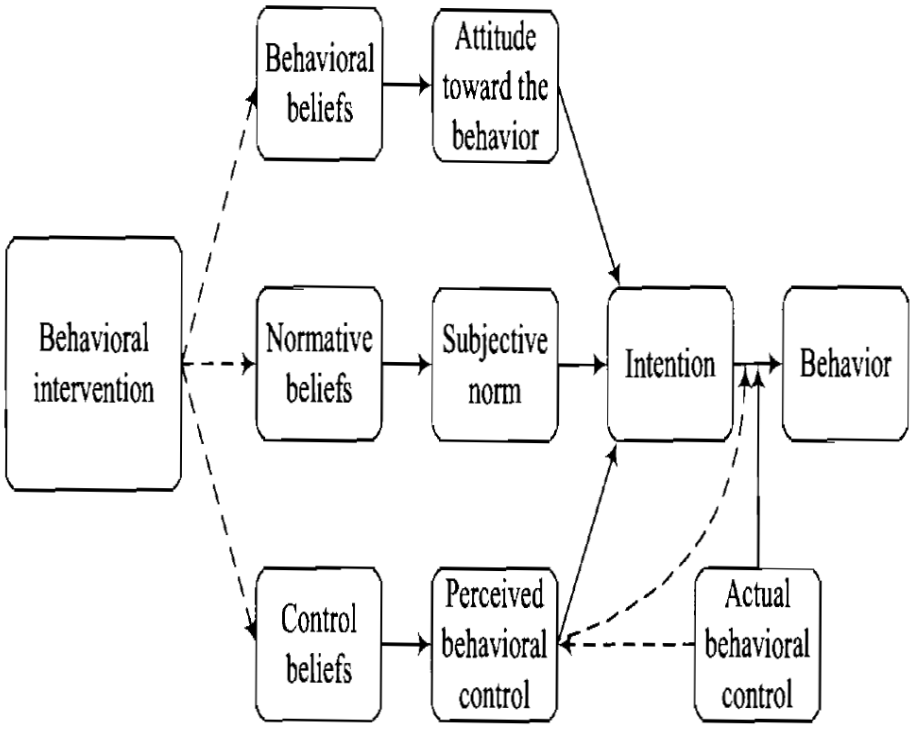

Figure 2.3: Expected Effects of a Behavioural Intervention of a Theory of Planned Behaviour.
Source: Ajzen (2011, p.76)

Fishbein and Ajzen (2005) explained that to construct the three belief factors, individuals' salient beliefs must be first identified through preliminary interviews with the relevant participants. These are the immediate beliefs that come to the participants' mind regarding the behaviour of interest. According to Ajzen (2011), these beliefs are the one that actually form the respective cognitive factors (attitude, SN and PBC) of an individual, which in turn influence the behavioural intention. In current study, the salient beliefs of the engineers in regard to migration were elicited from 20 engineers, which is further discussed in Section 3.6 of Chapter Three.

Once the beliefs are elicited, questions related to the beliefs should be incorporated into a questionnaire and distribute to the respondents. Using quantitative analysis, a researcher should identify which among the three cognitive constructs could significantly explained the variation of the respondents' behavioural intention. Fishbein and Ajzen (2005) added that those significant constructs should be targeted in order to change the intention to perform the behaviour. For instance, if the engineers' intention to migrate abroad is significantly influenced by their attitude and PBC, the researcher should aim to target the antecedent of attitude and PBC, which are BB and CB respectively.

In changing the beliefs, Ajzen (2011) argued that if the participants already have strong belief, there is no reason to change that belief anymore. However, if the degree of respondents' salient belief is moderate or low level, intervention program can be planned to change their salient belief. Next,

Fishbein and Ajzen (2005) stressed that to change the moderate or low level salient belief, researchers can target both components of a belief construct – the strength of a belief and its scale value. For example, a behavioural belief (BB) is composed by the strength of the perceived outcome that could be generated if certain behaviour is performed and how much individuals value that outcome. The intervention program that aims to change BB therefore can either target on any one or both components.

The above review provides useful information on the procedures involved in developing behavioural intervention program (summarised in Figure 2.4). In recommending behavioural intervention programs to solve the brain drain phenomenon in Malaysia, the current study will use these procedures.

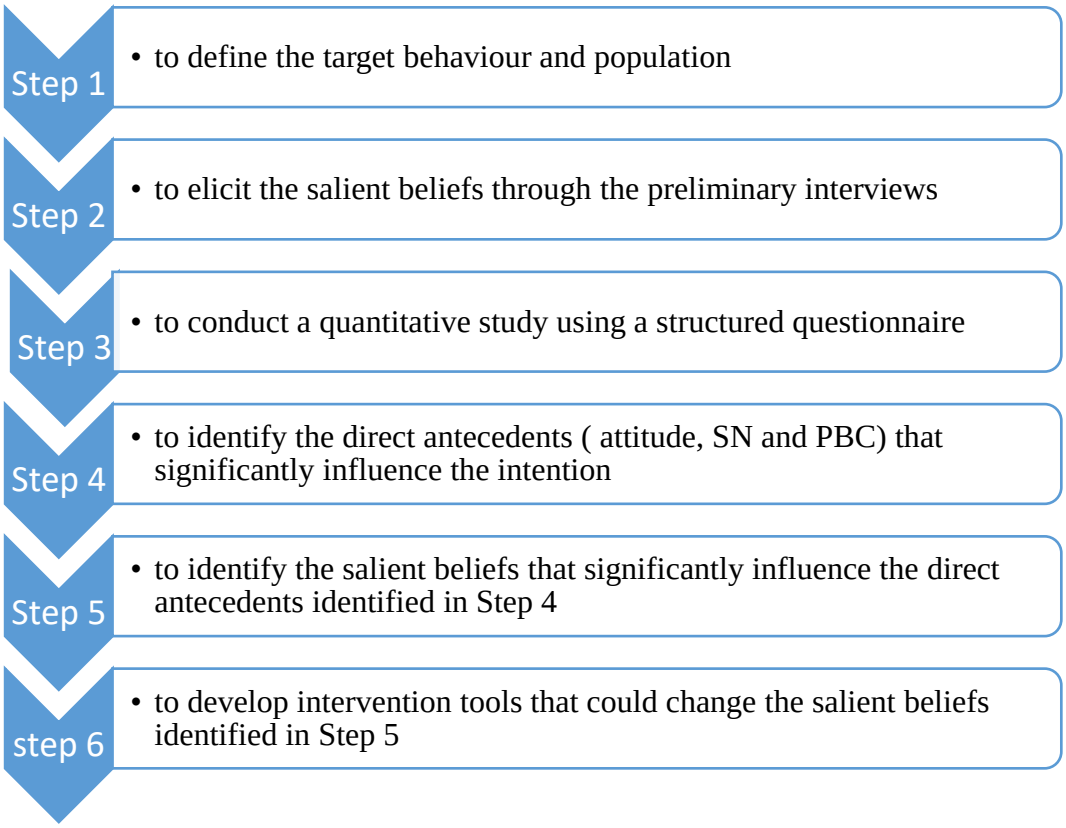

Figure 2.4: Steps in Developing Behavioural Intervention Program
Source: Adapted from Ajzen (2011) and Fishbein and Ajzen (2005)

A number of studies have implemented TPB-based intervention programs to change the respondents' intentional or the actual behaviour in various contexts. Based on the review done by Hardeman et al. (2002) on the development of TPB based intervention programs, nearly half of the literatures recorded a success in changing the behavioural intention of the targeted group compared to the controlled group. Comparatively, studies that did not use the full TPB model (where the salient beliefs were not elicited) have lower successful rate. Therefore, the authors had recommended future researchers to use the full TPB model to assess the respondents' salient beliefs before evaluating the effect of their attitude, SN and PBC on intentional and actual behaviour. The review by Hardeman et al. (2002) provided further evidence on

the need to elicit the participants' salient beliefs using the interview technique prior to the development of TPB-based intervention programs.

2.7.2 Tools in Designing Intervention Program

A number of tools in designing TPB-based intervention programs were either applied or suggested in the literatures (see Table 2.4). For example, to enhance students' nutritional intakes and psychical activities, Angelopoulos et al. (2009) developed a new manual for teachers and workbook for students to inform them of the benefits of healthy lifestyles. Meanwhile, Giles et al. (2014) proposed seminars to raise student's awareness on the important of breastfeeding.

Table 2.4: A Summary of Past Studies on the Use of Intervention Program

Author/s and Purpose	Intervention program	Target sample	Target variables and results	Interpretation of main findings
Angelopoulos et al. (2009) analysed the effectiveness of school level nutrition and physical activities intervention program on obesity and blood pressure.	A 12-month programme was implemented in the school's curriculum. The materials in the program were students' workbook and teachers' manual.	321 primary school students in intervention group (IG) while another 325 served as the control group (CG).	Significant increases in IG for time spent to physical activities and dietary behaviour but not in CG. An increased in the daily consumption of fruits, lower consumption of total fat and sweets, and increased consumption of dairy products in the IG subjects.	The intervention program was successful in increasing the physical activities and dietary behaviour among the primary school students involved in the program.
Borzendowski (2014) designed and evaluated an educational intervention based on TPB that targeted a more appropriate use of high beams headlamps.	In study 1, beliefs and attitudes about night time driving and high beam use are identified from 117 undergraduates in U.S. In study 2 – A 50 minute lecture about visual perception and challenges faced by drivers at night was presented and act as intervention tool.	12 participants attended the lecture. Another 34 participants (control group) did not receive any lecture.	No significant differences in the high beam usage between the IG and CG.	The intervention used in this study did not effectively enhance drivers' knowledge of their visual limitations at night. It was argued that it is possible that there was no more room for the educational intervention to improve attitude.
Giles, et al. (2014) analysed the effectiveness of a TPB–based breastfeeding intervention in Northern Irish Schools	The intervention involved two sessions of 35-min classroom lectures. Questionnaires were administered immediately, after 1 month and again after 6 months.	RCT was conducted in 42 post-primary schools. The seminar emphasized the naturalness of breastfeeding, role of the family network and benefits to mother and child.	An effective intervention was recorded as more females' intended to breastfeed, led to more favourable attitude and SN. However, participants' PBC over breastfeeding was non-significant.	TPB was effective in the school-based intervention to increase the participation of females in breastfeeding.

Continue next page …

Table 2.4 Continued

Author/s and Purpose	Intervention program	Target sample	Target variables and results	Interpretation of main findings
Heath and Gifford (2002) explained university students' public transportation use after the implementation U-pass in Canada	A universal bus pass (U-pass) program was introduced with lower pricing	175 undergraduates from a university in western Canada participated in both phases.	After the implementation of the U-pass, significant changes in some constructs were recorded. Overall, there was a drop in the positive beliefs towards car use, but increased in belief towards bus use. In addition, the control belief towards the scheduling of bus became more significant.	In changing certain behaviour, policy makers should facilitate participants with some effective programs.
Kothe, et al. (2012) developed an intervention program to increase fruit and vegetable intake of young adults in Australia.	The intervention consisted of a 30 day program where participants were sent emails consisted of messages related to the benefits of consuming fruit and vegetable	166 undergraduate students completed the survey. One group received 27 emails while another group only received 9.	ATT, SN, PBC, intention to consume and actual consumption. All 5 factors increased significantly. No significant difference between the high and low frequency group.	The intervention program is successful. The frequency of intervention is not significant.
Tomasone, et al. (2014) analysed the intervention of healthcare professionals' (HCPs) to prescribe leisure time physical activity (LTPA) to disabilities in Canada	Intervention - A nationwide seminar 'Changing Minds, Changing Lives' (CMCL), to increase LTPA-discussion among the healthcare professionals.	97 HCPs completed the questionnaire survey.	Immediately after the intervention, there were significant rise in the attitude, SN, PBC, and intentions towards LTPA discussion. However, the results were not supported at 1 and 6-months follow-up. PBC was found to be the strongest predictor.	There was significant improvement immediately after the intervention but not over the long term. Intervention should be implemented at regular intervals.

Continue next page…

Table 2.4 Continued

Author/s and Purpose	Intervention program	Target sample	Target variables and results	Interpretation of main findings
Warner and Forward (2016) applied three types of messages to assess road safety interventions in Sweden	The intervention: Either factual only, or emotional only or both.	930 High School students; emotional message to 265 students, factual message to 215 students, both messages to 254 students and 160 who did not receive any message.	ATT, SN, PBC, and intention to get a lift from someone who is drunk Scenario 1: Factual message and combination – ATT and SN were significant. Scenario 2: Only in combination message, ATT was significant.	Combination messages have the largest effect on the variables. Some people response in a different way to same information – Some students are influenced strongly by emotional messages while some by factual messages. The intervention program was effective.

Kothe et al. (2012) used emails as a tool to communicate with the participants on the important and benefits of consuming fruits and vegetables. In Warner and Forward (2016), various tools of interventions were used to create awareness on the road safety among students. In one of them, the authors invited the father of a boy who was killed in a road accident to share his experience of losing a young child. The authors also showed the participants a documentary about a story on alcohol related traffic accident.

In contrast, the intervention program discussed in Heath and Gifford (2002) differ from the others. The study analysed university students' intention and their actual use of public transportation after a universal bus pass was introduced in Canada. The introduction of the pass, which offered a lower bus fare, act as the intervention tool.

Meanwhile, Adewuyi and Adefemi (2016) and Korda and Itani (2013) revealed that the use of social media can be an effective communication tool in changing intentional and actual behaviour. It has the capacity to reach large audience at low cost, encourage interaction between the target audiences and in turn is able to provide peer supports. They added that the use of multiple social media channels can help policy designer to reinforce the messages and also to reach different group of audiences.

In summary, the above review provides some insights on how an intervention program can be developed. An effective intervention program that intends to change intentional or actual behaviour can include appropriate

information to educate the participants. The educational program can take many forms, such as classroom lectures, seminars, workshops and etc. All these methods involved a face to face interaction between the program implementers and the participants. A less common method discussed in the literature was the use of email to reach a large number of target participants (Kothe et al., 2012). However, the use of this method do not give chance for the implementers to communicate directly with the participants, and could affect the effectiveness of the program. Another method mentioned in the literature was the use of emotional message that could be effective to certain group of people (Warner, & Forward, 2016). Therefore, in developing an appropriate intervention program, policy makers should consider all the options before deciding the best program. In some cases, they can combine a number of programs to cater to different types of people.

2.7.3 The Factors that Influence the Effectiveness of the Intervention Program

In designing and implementing the intervention programs, policy makers should ensure that the outcome of the programs can achieve the desired goals – to either change the participants' intentional or actual behaviour. The review of the literatures has identified various factors that could determine the effectiveness of the programs.

First, the use of Randomized Controlled Trials (RCT) to test the effectiveness of intervention programs was strongly recommended (Haynes, Service, Goldacre, & Torgerson, 2012). RCT is basically comparing the effectiveness of two or more interventions in changing a specific behaviour of

interest. It is done by implementing different intervention to different groups extracted randomly from a population. Haynes et al. (2012) stressed that the method is useful to evaluate the cost effectiveness of the implemented program.

The summary in Table 2.4 revealed that a number of studies have applied the RCT method to compare the results between the treatment group and controlled group. Among them, Angelopoulos et al. (2009), Borzendowski (2014), Giles et al. (2014) and Warner and Forward (2016) treated the treatment group with at least a program while the controlled group did not receive any. In Zoellner, Porter, Chen, Hedrick, You, Hickmam and Estabrooks (2017), the effectiveness of a new behavioural and health literacy program designed to lower the consumption of sugar (intervention group) was compared with existing program that targeted psychical activities of the participants (controlled group).

Besides the RCT method, other factors could improve the success of intervention programs. For example, Tomasone et al. (2014) explained that to have a sustainable effect on the outcome, the program must be implemented and checked on a regular basis. Otherwise, people may go back to their previous behaviour which may not be desirable. Meanwhile, Warner and Forward (2016) and Zoelnner, et al. (2016) found that the success of the interventions can be increased if more than one type of programs are implemented. They stated that different type of programs may have different effect on the outcome.

Another important factor to consider in developing the appropriate program is to check whether there is enough room to change the individuals' belief regarding the behaviour of interest. In Borzendowski's (2014) study, a newly designed program that aimed to educate undergraduates on the usage of high beam headlights failed to provide any significant outcome. The author explained that the reason could be because the undergraduates already have strong behavioural beliefs toward the behaviour of interest.

In summary, the success of an intervention program on changing the individuals' intentional or actual behaviour is highly depends on the policy makers' understanding of the respondents' salient beliefs. The review of intervention program has provided useful guidance to current author to collect data related to salient beliefs and ways to provide recommendation to the policy makers on developing intervention programs that can reduce the Malaysian engineers' intention to migrate abroad.

2.8 Research Gap

Current study's review of past studies has revealed a number of research gaps that exist in the literature of brain drain. First, the shortages of engineers in Malaysia is at critical level. However, research on brain drain among engineers in Malaysia, particularly among the gen-Y category, is limited. In filling up the literature gap, it is vital to determine why only some engineers have the intention to migrate abroad while others do not, so that appropriate behavioural intervention policy can be proposed.

Second, the theories and models used in the analysis of brain drain are mostly from macro perspectives. Hence, they could not clearly explain why only some people reacts to certain stimuli designed to change the behaviour towards migration while others do not. As a result, there are only limited studies that used behavioural theories or models to analyse the behaviour of migration. However, the studies did not suggest any development of behavioural intervention policy that can be used to change the individuals' beliefs toward migration.

Next, even though a number of studies did use behavioural models such as TPB to predict the intention to migrate abroad, they do not make any attempt to elicit the participants' salient beliefs that possibly cause the respondents to behave differently. Determining the salient beliefs is one of the most important function in developing effective behavioural intervention policy. Therefore, the past studies have only partially confirmed the applicability of the TPB model in the literature of migration.

Lastly, constructs related to national identity such as patriotism and nationalism have been identified as important determinants of brain drain, particularly among the minorities. However, the role of POC, which is considered a better measurement of national identity, has not been explored in the literature. Since there is lack of knowledge on the effect of POC on intention to migrate abroad, the current study intend to fill up the literature gap by explaining the relationship between the two variables.

2.9 Chapter Summary

The review of literature has informed the following findings. First, there is lack of brain drain studies in Malaysia from the perspectives of behavioural and psychological factors. Secondly, measuring the indirect effects created by salient beliefs on behavioural intention could provide very useful indicators to policy makers to further understand the root causes that have affected the target population to react positively or negative towards the direct predictors. In this way, the policy makers can plan policies that can influence the respondents to form beliefs which will be favourable to the policy makers. Thirdly, among the behavioural theories, TPB is most appropriate model to analyse gen-Y engineers' intention to migrate. Moreover, the TPB is so flexible that additional variables can be included in current conceptual framework so that the research questions of the study can be solved comprehensively. The inclusion of POC could probably explain on why there is a high rate of migration among the Malaysian minorities. The next chapter is discussing current study's research methodology.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter begins with the development of a conceptual framework to evaluate the Malaysian gen-Y engineers' intention to migrate abroad. This is followed by specifying the hypotheses that will be tested so that the objectives of the study can be accomplished. The chapter also discusses the various research methodologies that can be considered, evaluated and applied in the study so that the outcome of the results can be optimised.

3.2 Conceptual Framework

As this study intended to study why gen-Y engineers have the intention to migrate, the variable that measures the actual behaviour in the TPB framework is omitted. According to Wood, Quinn, and Kashy (2002), if the studied respondents are not performing the actual behaviour frequently, it would be more appropriate to assess their behavioural intention that could act as the representation of their actual behaviour. Wood et al. (2002) further argued that for behaviour that is performed once, changing the target's intentional behaviour is more effective then changing the actual behaviour. As in the case of migration, the behaviour is most probably only performed once in a life time. Therefore, the dependent variable of this study is behavioural intention or intention to migrate, not the actual behaviour of those who have

migrated. Other than that, the variables of full TPB model which includes the construct of salient beliefs - BB, NB, and CB – are measured. The construct of POC is added into the extended TPB model as well to solve research question three (see figure 3.1).

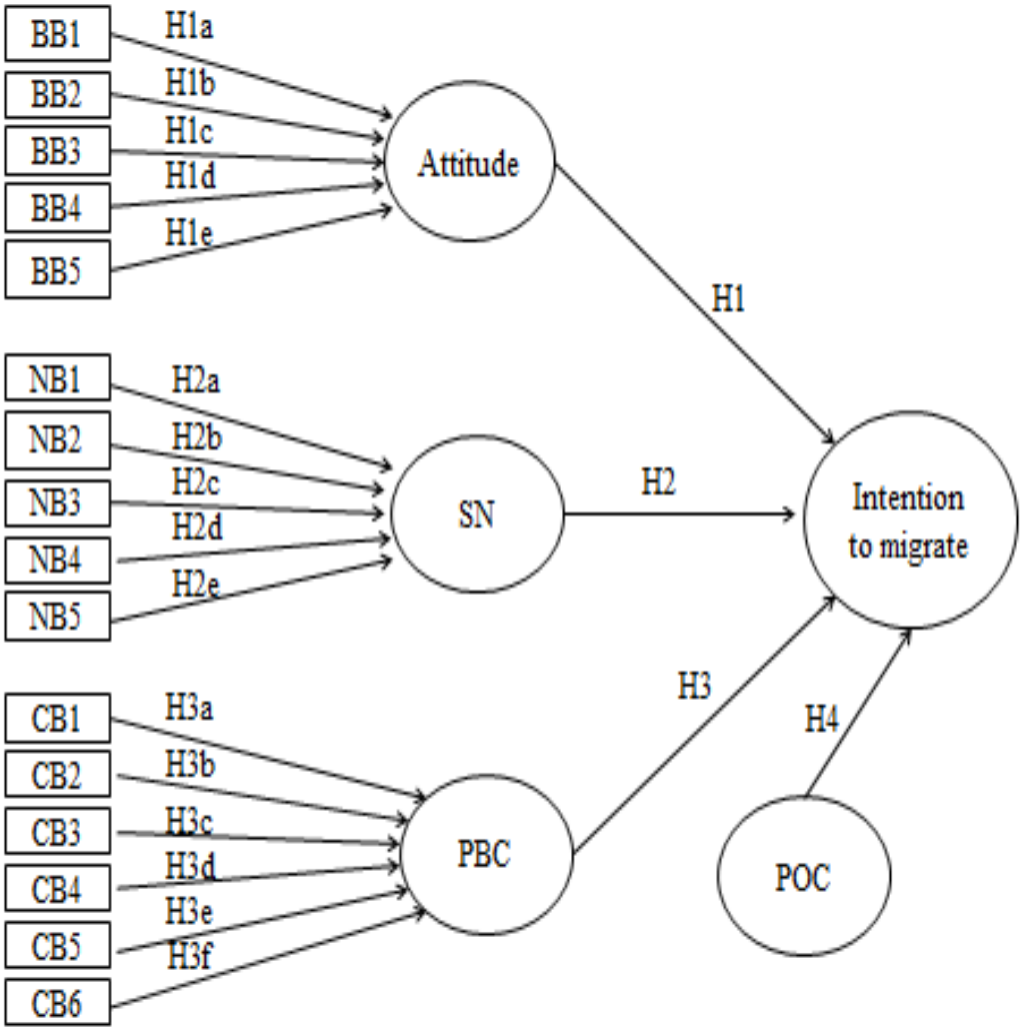

Figure 3.1: Current Study's Conceptual Framework

The definitions of the constructs of current conceptual framework are as follows. Intention to migrate is defined as the likelihood that the engineers will migrate abroad for at least a year in the next two years. Attitude reflects the degree of favourability on the outcomes that the engineers perceived they will

gain if migration takes place. Subjective norms (SN) shows the degree of pressure that engineers perceived they will receive from people who are influential and important to them. Perceived behavioural control (PBC) refers to how much the engineers believe that their own resources capacity and confidence level could ease the difficulty that may need to face for migration.

Using Sutton et al.'s (2003) definition, salient beliefs shows a person's initial belief of the outcome that could be generated if certain behaviour is performed. The concept of BB can be explained as the belief about the positive or negative consequences that the respondents might experience upon migration. Similarly, the NB shows the degree of the engineers' initial belief of the pressure that they will receive from important referents if they were to migrate abroad. Most respondents will form initial beliefs of the mental and physical resources that they could have been possessing. For example, if the respondents believe that they are a qualified engineer, they will be more confidence on the items measured by PBC. This explanation is meant to describe the concept of CB.

In other words, this study is measuring the direct effects generated by the constructs of attitude, SN, PBC, and POC on behavioural intention; and the effects generated by the three salient beliefs (BB, NB, and CB) on attitude, SN, and PBC respectively.

The numbers of item that have been used to measure each salient belief construct; BB, NB, and CB are determined by current study's preliminary

investigation (the detail is discussed in sub-chapter 3.5.2). In brief, the preliminary study has identified five items that can be used to measure the construct of BB: better standard of living (BB1), safe and secure environment to live (BB2), better job opportunities (BB3), opportunity to learn new skills (BB4), and better opportunity for children's education (BB5). Meanwhile, the construct of NB are measured by the pressure given by five important referents – parents (NB1), spouse (NB2), friends (NB3), colleagues (NB4), and superiors at workplace (NB5). The construct of CB on the other hand are measured by six items: monetary cost to migrate (CB1), current job skills (CB2), networks abroad (CB3), relevant language skills (CB4), ability to adapt to new culture (CB5) and ability to find jobs (CB6).

3.3 Hypotheses Development

To measure the direct effects generated by the construct of attitude, SN, PBC, and POC, four main hypotheses were developed. In addition, sixteen sub-hypotheses were developed to measure the indirect effects generated by the three salient belief constructs, BB, NB, and CB. The details are discussed in the following sub-chapters.

3.3.1 The Effect of Attitude, SN, PBC, and POC on Engineers' Intention to Migrate Abroad

The findings in the past studies have showed mixed results. Not all the three antecedents of behavioural intention – attitude, SN and PBC – had generated statistical significant relationship on respondents' intention to perform the studied behaviour. The results are consistent with the argument given by Ajzen (1991), that the degree of effect that can be created by each

TPB antecedent construct can be influenced by the background of the respondents. For example, people who lived in a society that adopts individualist culture behaviour could be less influenced by the pressure given by other people. In other words, SN may be less effective in influencing the change of intentional behaviour among individualism community compared to collectivism society.

Studies carried out by Ayob et al. (2017), Chen and Hung (2016), Donald et al. (2014), Ferdous and Polonsky (2013), Jirotmontree (2013), Salleh and Laxman (2013), and Wu et al. (2013) showed that the construct of attitude was positively correlated to behavioural intention. In migration literature, Engle et al. (2015), Remhof et al. (2013) and Weerasinghe and Kumar (2014) asserted that when the respondents have positive attitude on the outcomes that would gain if migration takes place, their intention to work abroad would increase.

It is important to note that favourable attitude may be generated if the perceived outcome can benefit the respondents, either mentally or physically. For example, Remhof et al.'s (2013) noted that respondents who feel that they may be able to experience better life-style elsewhere were more likely to demonstrate positive attitudes towards migration, and as a result, their intention to migrate increases.

The study respondents, gen-Y engineers are expected to form positive attitude towards migration if the outcomes that could be gained from migration

is beneficial to them. For example, if they feel that certain foreign country can provide a safer and secure environment to them; positive attitude would be formed towards migration and thereby they would be more eager to migrate. Therefore, current author hypothesised a positive relationship between the constructs of attitude and the engineers' intention to migrate would be established.

> H_1: Respondents' positive attitude on the perceived outcomes that may be generated by migration will affect the Malaysian engineers' intention to migrate positively.

Subjective norm (SN) is meant to measure how the gen-Y engineers react on the pressure given by people or societies who are important to them. For example, respondents may feel pressurised if their family members or colleagues or friends have migrated abroad. Many past studies' results showed that SN can affect behavioural intention (Donald et al., 2014; Lee et al., 2016; Muzaffar et al., 2016; Vabo & Hansen, 2016). Vabo and Hansen (2016), for example, suggested that consumers' intention to purchase domestically produced goods in Norway increased if a certain level of pressure were given to them by their important referents.

In the migration literatures, most of the results were in favour of the positive effect of subjective norms on the intention to work abroad. For instance, Suwandi's (2015) study showed that SN was the only significant determinant of the Indonesian female respondents' intention to work as a migrant domestic workers in Turkey. Meanwhile, in Engle et al.'s (2015) and Remhof et al.'s (2014) studies, pressure given by other people did significantly

influenced the undergraduates intention to work abroad upon their graduations. As Malaysian culture is more of collectivism, Sumaco, Imrie, and Hussain (2014) found that local customers who booked hotels were influenced by their important others. For the same reason, the Malaysian gen-Y engineers are expected to have stronger attachment with their family members or people who are important to them. Being lived in a collectivism community and driven by Asia's conventional culture, pressure given by other people could be an important determinant in affecting the respondents' intention to migrate. Therefore, the second hypothesis is:

> H_2: The effect generated by the construct of SN will change the Malaysian engineers' intention to migrate abroad positively.

Past studies' results showed that respondents' behavioural intention to perform certain behaviour will increase, if it is easy for the respondents to perform certain act. For example, to discourage people from driving own vehicle, Donald et al.'s (2014) study found that the respondents' intention to use public transport would increase if they were confidence that that the public transport will not delay them from performing daily responsibilities such as working. Similarly, other studies like Ayob et al. (2017), Husin and Rahman (2016), Lee et al. (2016) and Muzafar et al. (2016) have established significant positive relationship between PBC and behavioural intention.

Contrarily, some studies results showed that PBC could not affect respondents' intentional behaviour (Jan & Wallace, 2017; Jirotmontree, 2013). In Jan and Wallace (2017), though the consumers in UK perceived to have a

relatively higher control of purchasing the halal food, PBC has no significant effect on their intention to perform the behaviour. According to Fishbein and Ajzen (2010), the effect of PBC on the behavioural intention depends a lot on the behaviour in question. If the studied respondents have low self-control in some addictive behaviour such as smoking and gambling, the effect that can be generated by PBC on their intentional behaviour thereby would be minimal.

Even though the influence of PBC on intention to work abroad was not clearly established in the literature, current author predicts that Malaysian engineers do have strong control over their behaviour. This is because skilled workers such as engineers are predicted to have high confidence level or possess certain resources such as working skill. By being a confident person or predicting that everything could be in self-control, their intentional behaviour therefore could react positively. The next hypothesis is then,

> H_3: Perceived positive behavioural control (PBC) would affect Malaysian engineers' intention to migrate positively.

The role of national identity could influence a person's intentional behaviour. For example, in Mattes and Mniki (2007) study, patriotic undergraduate had less tendency to migrate. Based on their findings, both Leong and Soon (2011) and Ng (2011) have recommended the Singaporean government to instil a strong national identity or patriotism behaviour among their students to reduce the student's intention to migrate abroad.

From the past studies' results, this study predicts that POC could act as a good predictor of national identity, in which by instilling a strong feeling of ownership over Malaysia, the engineer's likelihood to remain in the home country would increase. In brief, a strong effect of POC is expected to reduce engineers' intention to migrate abroad. Hence, the current study has the following hypothesis to be tested:

> H_4: The high degree of POC amongst Malaysian engineers will affect Malaysian engineers' intention to migrate negatively.

3.3.2 The Effect of Individuals' Beliefs (BB, NB, and CB) on Attitude, SN and PBC

Behavioural belief (BB) shows the degree of initial beliefs that the gen-Y engineers have on the outcomes that they would possibly gain if they have migrated abroad. The degree of BB would intensify their attitude towards the outcomes positively or negatively. For example, if in the engineers' mind, they will be able to learn new skills once they have worked abroad, favourable attitude on that outcome will be intensified. However, if individuals do not belief that an outcome of a behaviour is good or favourable, the level of change in attitude could be marginal. The respondents' behavioural intention would then change marginally too.

Past studies showed that BB can change the person's attitude significantly. In Close, Lytle, Chen and Viera's (2018) study, office workers' beliefs that eating healthful diet food is beneficial has significant positive effect on their attitude towards eating such food. The effect of BB on attitude was supported by other researchers as well, such as Muzaffar et al. (2014) and

Pabian & Vandebosch (2014). From the studies' result, the current study therefore predicts that,

> H_{1a}: The degree of belief of better standard of living abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively;
>
> H_{1b}: The degree of belief of the possibility to experience safe and secure environment when living abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively;
>
> H_{1c}: The degree of belief of having better job opportunity abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively;
>
> H_{1d}: The degree of belief of having better opportunity to learn new skills abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively; and
>
> H_{1e}: The degree of belief of getting better education opportunity for their children abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively;

Normative belief (NB) shows the degree of pressure that the gen-Y engineers believe they would receive from their important referents if they have migrated. The expected level of belief will affect the way the respondents react to pressure that they will receive, which in turn will intensify the SN effect. For example, many workers believe that their work performance would be monitored by their peers and superiors (Stenius, Hankonen, Haukkala and Ravaja, 2015). As such belief has been instilled in the workers' mind, they were more receptive in receiving the pressure given by their peers and superiors. The result in Stenius et al. (2015) showed that NB has significant positive influence on the workers' SN. In the study by Darabi, Kaveh, Farahani, Yaseri, Majlessi and Shojaeizadeh (2017), adolescent girls' SN

regarding the nutritional behaviour was significantly influenced by the significant others such as their teachers, class mates and parents.

From the review of literature and being lived in a collectivism society, this study is predicting the effects generated by NB on SN will exist as follows:

> H_{2a}: The degree of belief on the pressure that will be given by the respondent's parents will affect Malaysian gen-Y engineers' reaction on SN positively;
>
> H_{2b}: The degree of belief on the pressure that will be given by the respondent's spouse will affect Malaysian gen-Y engineers' reaction on SN positively;
>
> H_{2c}: The degree of belief on the pressure that will be given by the respondent's friends will affect Malaysian gen-Y engineers' reaction on SN positively;
>
> H_{2d}: The degree of belief on the pressure that will be given by the respondent's colleagues will affect Malaysian gen-Y engineers' reaction on SN positively;
>
> H_{2e}: The degree of belief on the pressure that will be given by the respondent's work superiors will affect Malaysian gen-Y engineers' reaction on SN positively;

Control belief (CB) shows the degree of belief that the gen-Y engineers have on their own capacity or personal resources so that they can migrate easily. For example, if engineers believe that they have the financial support to work abroad, the effect of PBC would be positively intensified which in turn increase their intention to migrate.

This hypothesis was supported by studies carried out by Close et al. (2018), Darabi et al. (2017) and Stenius et al. (2015). For example, Darabi et

al. (2017) suggested that the belief among adolescent girls that they have better control of having nutritional breakfast at home increased their perceived positive behavioural control over nutritional food.

As high skilled workers are perceived to have higher control on CB (for example, in regards of the belief of having the required job skill and ability to adapt the new culture), the effect generated on the engineers' PBC over the behaviour of migration will become stronger. Subsequently, the current hypotheses are as follows:

H_{3a}: The degree of belief of having better control over the financial support needed to fund the migration will affect Malaysian gen-Y engineers' reaction on PBC positively;

H_{3b}: The degree of belief of having better control over the job skills that may be required in overseas labour market will affect Malaysian gen-Y engineers' reaction on PBC positively;

H_{3c}: The degree of belief of having large number of family members or friends living abroad will affect Malaysian gen-Y engineers' reaction on PBC positively;

H_{3d}: The degree of belief of having better control on the ability to converse in foreign language will affect Malaysian gen-Y engineers' reaction on PBC positively;

H_{3e}: The degree of belief of having better control on the ability to adapt oneself to new culture will affect Malaysian gen-Y engineers' reaction on PBC positively;

H_{3f}: The degree of belief of having better control on the ability to find the right job will affect Malaysian gen-Y engineers' reaction on PBC positively;

3.4 Research Philosophy and Approach

In choosing appropriate research methods, factors such as the type of research questions, the phenomenon underlying the study and the philosophical stance of the researcher may influence the choice of a research paradigm (Hair et al., 2006). TPB is an established model that has been used in various research disciplines in many countries; therefore exploratory study to determine the constructs' validity as well as the validity of the items are not necessary.

Instead, current hypotheses were developed based on a theory's explanation or by using deductive approach. Positivism philosophy indeed has been widely adopted in migration studies (for example, in Engle et al., 2015; Remhof et al., 2014; Suwandi, 2015). This study is using positivism approach as well. Ontologically speaking, positivists believe that causal effects can be observed, measured and tested. Generalizations then can be made which will be extrapolated to explain any future occurrence of the studied behaviour (Jennings, 2001).

In brief, this study believes truth exists and can be uncovered by using quantitative methodology; related behavioural data of the studied constructs can be collected and the relationship between the extended TPB constructs and the intention to migrate abroad can be tested to confirm current study's hypotheses.

Cross-sectional data is appropriate to answer the research questions posed in the present study because as it does not intend to investigate whether

the respondents do actually migrate or not, a repetition of survey therefore is not required. As discussed in sub-Chapter 3.2, changing the engineers' intention to migrate is more important than changing their actual behaviour. Since the behaviour of migrating abroad is very rarely to be performed repeatedly in a life time, it is would be then very difficult to change people's attitude if the person has migrated. In summary, longitudinal study is not necessary for the current research.

3.5 Research Design

The study comprised of two surveys: preliminary study and the main survey. In the preliminary study, a small group of sample were interviewed to elicit their beliefs or the items that can best measure the salient constructs: BB, NB, and CB. The belief items then were used to measure the salient constructs in the main survey. Before carrying out the main survey, a pre-test was carried out to examine the instructions' clarity, the sequence of questions, the length of the questionnaire, etc. A pilot test was then was organised to gather further feedback for the improvement of the questionnaire that had been modified after the pre-test. The details are well discussed in the following sub-chapters.

3.5.1 Target Population

Generally, there is no consensus definition for the various generations exist in this century. Nevertheless, in defining them, McCrindle (2009) classified them into four categories: builders who were born from year 1925 to 1945, baby boomers (1946 to 1964), gen-X (1965 to 1979) and gen-Y (1980 to 1994). Similarly, Buckley, Viechnicki and Barua (2015) had provided the same

definition for their gen-Y respondents. Adopting the authors' definition, this study defines gen-Y as those who were born between 1980 and 1994.

Engineers of this study is defined as people who are holding Malaysian citizenship and possess at least a tertiary degree of Bachelor of Electrical Engineering, Bachelor of Electronic Engineering, Bachelor of Mechanical Engineering or Bachelor of Computing Engineering.

3.5.2 Preliminary Investigation to Elicit the Engineers' Response on Their Salient Beliefs

In determining the measurement items of the three salient belief: BB, NB, and CB that should be examined in the main survey, a preliminary study was carried out first. Past studies had been eliciting the respondents' salient beliefs' items by interviewing a small sample from the target population (Close et al., 2018; Darabi et al., 2017; Muzaffar et al., 2014; Pabian and Vandebosch, 2014; Stenius et al., 2015). According to the founder of TPB, the items for each of the salient belief construct are context-specific (Ajzen, 1991). In other words, recent studies should not replicate other studies' measurement items for salient beliefs unless the characteristics of the respondents are similar to another study. This study had carried out the preliminary study because the items that had been used to measure engineers' salient belief, especially in Malaysia is very limited in literature.

Two open-ended questions that aimed to measure each salient beliefs for BB, NB, and CB were forwarded to the participants; and the questions have been used in many past studies (Burkhalter et al., 2009; Close et al., 2018;

Gavaza, 2012; Pabian and Vandebosch, 2014; Stenius et al., 2015). To measure the BB construct, the participants were requested to provide the advantages and disadvantages that they believed will be materialised once they have migrated abroad. For example, in Burkhalter et al.'s (2009) study, participants had voiced their beliefs of the advantages and disadvantages that they would expect to gain or loss when their smoking habit is stopped.

The salient beliefs for NB were elicited when the participants were requested to express their beliefs on who are the people (such as parent, spouse, partner, friends, colleagues, or work supervisors) whom they think will approve or disapprove their migration behaviours. In the study by Zoellner, et al. (2017), the students who had involved in the preliminary study have given a list of people who they think would approve or disapprove their behaviour of consuming sweet-sweetened food and beverages.

Next, the participants were required to express their salient beliefs for CB. The measurement items were related to the engineers' beliefs of the resources that were personally posed and their confidence in performing certain behaviour such as ability to find the right job abroad. During the interviews with focus groups, Close et al. (2018) had requested the participants to provide their beliefs of factors that would encourage as well as discourage them to eat healthy food. A similar method was used in the study by Pabian and Vandebosch (2014) in eliciting students' control belief over the behaviour of cyberbullying.

In details, current author had asked the following six questions in the form of open-ended questions to elicit the engineers' prompt beliefs in regards to their intentional behaviour.

i What are the advantages that you believe that you will gain if you have migrated abroad for at least a year in the next two years?

ii What are the disadvantages that you believe that you will gain if you have migrated abroad for at least a year in the next two years?

iii Who are the people that you believe will support your decision to migrate abroad for at least a year in the next two years?

iv Who are the people that you believe will not support your decision to migrate abroad for at least a year in the next two years?

v What are the factors (such as personal resources, supports from other people, and own confidence in performing something) that you believe could facilitate you to migrate abroad for at least a year in the next two years?

vi What are the factors (such as personal resources, supports from other people, and own confidence in performing something) that you believe could prohibit you to migrate abroad for at least a year in the next two years?

In this preliminary investigation, 20 engineers were selected by using a non-probability sampling technique (or convenience sampling) for individual interview. Collecting truth responses from people who were willing to be interviewed would be more valuable than surveying people who were selected by using probability approach but could give only marginal response. Each participant was allowed to voice their salient beliefs without being influence by other participants, which is in line with positivism paradigm, positivist should secure the objective truth.

Prior to the interview, engineers who were working at the Bayan Lepas Free Trade Zone in Penang and Shah Alam Industrial estate in Selangor were approached and informed of the interviews and its purpose. The two locations were selected because they were among the areas where most of the local and foreign manufacturing companies were operating in Malaysia. The respondents' profile is summarized in Table 3.1.

Table 3.1: Demographic Characteristics of the Participants

Characteristics	Number of participants and the relative percentage for each characteristic
Gender	
Male	12 (60 %)
Female	8 (40 %)
Age (Mean)	30.6 years old
Ethnic group	
Chinese	16 (80 %)
Indian	2 (10 %)
Malay	2 (10 %)
Marital Status	
Married	11 (55 %)
Single	9 (45 %)

For each questions, participants were free to give more than one responses. For example, the participants may list more than one group of people whom they believe will react positively and negatively on their migration intention. On average, each interview took about 30 minutes. After completing the interviews, a content analysis to elicit the engineers' salient beliefs was carried out. Table 3.2 summarizes the salient beliefs of the engineers regarding the behaviour of migrating abroad. The frequency (fq) count or the number of times and the percentage (%) that the same item was mentioned by the participants are shown in the third and fourth columns respectively.

Table 3.2: Salient Beliefs of the Engineers' Migration Behaviour

Belief Constructs	Salient beliefs that were preliminary of the participants' main concern	Fq count	%	Cumulative %
Behavioural beliefs	Standard of living (higher income)	20	25.6	25.6
	Safe and secure environment to live	16	20.5	46.1
	Better job opportunities	14	17.9	64.0
	Opportunities to learn new skills	10	12.8	76.8
	Education opportunity for my children	10	12.8	89.6
	Gain international exposure	5	6.4	96.0
	Better Rights and freedom	2	2.6	98.6
	Opportunity for research funding	1	1.4	100.0
	Total	78	100	
Normative beliefs	Parents	17	25.4	25.4
	Spouse	13	19.4	44.8
	Friends	10	14.9	59.7
	Working colleagues	8	11.8	71.5
	Superiors	7	10.5	82.0
	Children	4	6.0	88.0
	Siblings	3	4.5	92.5
	Fiancé	3	4.5	97.0
	Subordinates	1	1.5	98.5
	Relatives	1	1.5	100.0
	Total	67	100	
Control beliefs	Monetary cost	15	20.0	20.0
	Current job skill	14	18.7	38.7
	Networks abroad	14	18.7	57.4
	Command of language	11	14.7	72.1
	Adapting to new culture	10	13.3	85.4
	Ability to find jobs	8	10.6	96.0
	Getting work permits	3	4.0	100.0
	Total	75	100	

From Table 3.2, for example, all the twenty participants believed that they would achieve higher standard of living if they were to migrate abroad – this is denoted by the table's frequency count of 20 and the percentage of 25.6 out of the total count. According to Ajzen and Fishbein, (2010) and Sutton et al., (2003), only items that have scored more than 10 percent out of the total count could be used to measure the respective salient belief construct in the main survey. Therefore, the five items that were selected to represent the BB construct in the main survey were: better standard of living, safe and secure environment to live, better job opportunities, opportunity to learn new skills, and better opportunity for their children's education.

Similarly, the five items for NB construct or people whom the participants believed to have strong persuasive power on their migration intention are parents, spouse, friends, working colleagues, and superiors. Meanwhile, to measure the third construct, CB, six items were selected: monetary cost to migrate, current job skills, networks abroad, relevant language skills, ability to adapt to new culture and ability to find jobs.

3.5.3 The Measurement Scales

Ajzen (1991) suggested researchers to attach specific weightage to the three antecedent constructs only if the researchers could justify the degree of importance of each construct's to the studied respondents. For example, engineers may have fewer tendencies to comply the pressures given by people who are important or influential to them is their society is individualistic in nature. On the other hand, the construct attitude can be given higher weightage relative to the other two constructs; SN and PBC, if attitude is the main determinant for the studied engineers and has been supported by many studies. In this study, weightage is not attached to each studied construct because of the lack of references that can show the level of importance of each constructs to Malaysian engineers.

Seven-point Likert-scales were attached to the hypotheses' constructs. According to Babbie (1990) and Zikmund (1991), each number of scales are ordinal and carries equal weight. Respondents could give their feedback on the measured items for each construct by selecting one of the seven Likert-scale points. Three different types of denotation for the seven-point Likert-scales

were used in current questionnaire: ranging from strongly disagree to strongly agree, extremely unlikely to extremely likely and very unimportant to very important.

3.5.3.1 The salient belief construct of BB and the Direct construct, attitude

In measuring the salient belief of attitude (BB), respondents were required to assess their beliefs of each outcome that they expect to gain if they were to migrate (b_i) and to evaluate their desirability to achieve that outcome (e_i) (see Table 3.3, items 6 to 10 are related to measurement of b_i while items 11 to 15 are measuring e_i. The outcomes b_i were measured using seven-point Likert scales, ranging from extremely unlikely (1) to extremely likely (7). Meanwhile the evaluation of the outcomes e_i were measured using seven-point Likert scales, ranging from very unimportant (1) to very important (7).

Table 3.3: Development of Measurement Scales for Attitude and Behavioural Belief

Variable	Item	Operationalization of Variables	Sources	Adopted / Adapted
Attitude	ATT1	Migrating abroad is Worthless (1) – Valuable (7)	Bagozzi et al. (2001)	Adopted
	ATT2	Migrating abroad is Unpleasant (1) – Pleasant (7)	Bagozzi et al. (2001)	Adopted
	ATT3	Migrating abroad is Bad (1) – Good (7)	Ajzen (2006)	Adopted
	ATT4	Migrating abroad is Unenjoyably (1) – Enjoyably (7)	Bagozzi et al. (2001)	Adopted
	ATT5	Migrating abroad is Harmful (1) – Beneficial (7)	Bagozzi et al. (2001)	Adopted
Behavioural Belief	b1	I will improve my standard of living at abroad		Author
	e1	Higher standard of living is important for me		Author
	b2	The environment abroad is safer and secure		Author
	e2	Safer and secure environment is important for me		Author
	b3	I will have better job opportunity at abroad		Author
	e3	Better job opportunity is important for me		Author
	b4	I will be able to learn new skills abroad		Author
	e4	Learning new skills is important for me		Author
	b5	My children will have better education abroad		Author
	e5	Having better education for children is important for me		Author

In determining a respondent's BB, NB and CB, Ajzen (2002, 2006) has suggested the use of bipolar scales, such as from -3 to +3 in measuring the two components of a belief item. The purpose is to identify if the respondents has positive or negative belief towards a certain behaviour. Therefore, when the values were entered into SPSS, the Likert scales from 1 to 7 were recoded into bipolar scales, from -3 to +3. For example, as illustrated in Table 3.4, if a respondent perceived that it is likely (scale 6) for him to achieve better standard of living abroad, it will be recoded as +2 in SPSS.

Table 3.4. An Example of Converting the Scales for the Evaluations of the Belief Items

Range of Likely	Likert scale	Bipolar scale
Very unlikely	1	-3
Unlikely	2	-2
Slightly unlikely	3	-1
Neutral	4	0
Slightly likely	5	+1
Likely	6	+2
Very likely	7	+3

The individual scores of related items were then multiplied to derive a single value for each of the BB's outcome ($BB_i = b_i e_i$) which were later used for statistical analysis. For example, in measuring a respondent's behavioural belief outcome for achieving better standard of living (BB1), components of b_1 and e_1 for every cases are multiplied. For example, if a respondent states that he is slightly unlikely (-1) to achieve better standard of living abroad, and achieving that is important for him (+2), his total multiplicative score will be negative two (-2). This indicates that the individual has moderate negative behavioural belief in regards to achieving better standard of living abroad.

The construct of attitude were decomposed to reflect experiential (affective) attitude and instrumental attitude (cognitive). Experiential attitude shows the degree of affective feelings toward a specific behaviour (Bagozzi et al., 2001). For example, items numbered 2 (unpleasant to pleasant) and 4 (unenjoyably to enjoyably) in Table 3.3 were reflecting respondents' affective feeling that may emerge if they have migrated.

Meanwhile, instrumental attitude shows the degree of cognitive evaluation to which people think that a specific behaviour is advantageous to them (Bagozzi et al., 2001). Items numbered 1 (worthless to valuable) and 5

(harmful to beneficial) in Table 3.3 were reflecting the respondents' evaluation of the outcomes that the person will gain if they have migrated. Item numbered 3 is added as an item for attitude to measure the engineers overall evaluation of migrating abroad for at least a year, as suggested by Ajzen (2006).

All the five items are measured by using the seven-point semantic differential scale. Semantic differential scale has advantage over the Likert scale when it is difficult to attach adjectives for all the points within a scale (Presley et al., 2010). For example, it is not possible to identify other adjectives that lie between worthless and valuable, or between bad and good.

3.5.3.2 The salient belief construct of NB and the direct construct, SN

The salient belief of SN (NB) was measured by the strength of the belief (n_i), and the degree of effort that a person is motivated to perform in complying other people's expectations (m_i). A single value for each NBs item (NB_i) is made up by multiplying the score of n_i and m_i. Strength of the belief (n_i) shows the degree of belief that the respondents expect the following people would support the person to migrate abroad for at least a year (see items 5 to 9 in Table 3.5).

The items were measured by using seven-point Likert scales ranging from extremely unlikely (1) to extremely likely (7). The motivation effort to comply other people's expectations (m_i) shows the degree of belief that the respondents expect they will comply with each of the five referents' wishes of them to migrate abroad (see items 10 to 14 in Table 3.5). They too were

measured by using seven-point Likert scales ranging from extremely unlikely (1) to extremely likely (7). Similar to the previous discussion in constructing the BB, the Likert scales from 1 to 7 are recoded into bipolar scales, from -3 to +3.

Table 3.5: Development of Measurement Scales for Normative Belief and Subjective Norms

Variable	Item	Operationalization of Variables	Sources	Adopted / Adapted
Subjective Norm	SN1	Most people who are important to me have migrated abroad	Lapinski and Rimal (2005)	Adapted
	SN2	Most people whose opinion I value have migrated abroad	Lapinski and Rimal (2005)	Adapted
	SN3	Most people who are important to me would support my intention to migrate abroad	Lapinski and Rimal (2005)	Adapted
	SN4	Most people whose opinion I value would approve of my intention to migrate abroad	Lapinski and Rimal (2005)	Adapted
Normative Belief	n1	My parents think I should migrate abroad		Author
	m1	I will comply with the wishes of my parents		Author
	n2	My spouse / fiancé think I should migrate abroad		Author
	m2	I will comply with the wishes of my spouse / fiancé		Author
	n3	My friends think I should migrate abroad		Author
	m3	I will comply with the wishes of my friends		Author
	n4	My colleagues think I should migrate abroad		Author
	m4	I will comply with the wishes of my colleagues		Author
	n5	My superior think I should migrate abroad		Author
	m5	I will comply with the wishes of my superiors		Author

Subjective Norm was decomposed into two norms: injunctive and descriptive norms (Lapinski & Rimal, 2005). Injunctive norms shows the degree of engineers' belief about the positive response such as support that would be given by people who are important to them or whose opinion is valued by them. Items 3 and 4 in Table 3.5 are related to injunctive norms. Descriptive norms on the other hand shows the degree of engineers' belief

about the acts that could have been done by people who are important to them or whose opinion is valued by them (Lapinski & Rimal, 2005). It is represented by items 1 and 2 in Table 3.5.

3.5.3.3 The salient belief construct of CB and the direct construct, PBC

The salient belief of PBC (CB) was decomposed into the strength of the control (c_i) and the engineer's perceived power of ease or difficulty to carry out certain behaviour (p_i). The two components are then multiplied to derive a single value for each CBs ($CB_i = c_i p_i$). The strength of the control were measured by using seven-point Likert scales ranging from extremely unlikely to extremely likely. The respondents are required to evaluate the power of control that they have over the six resources and skills (see items 11 to 16 in Table 3.6).

In addition, respondents were required to examine their perceived power of ease or difficulty to migrate (p_i) by expressing the likelihood that each of the six personal resources and personal confidence level could facilitate them to migrate abroad for at least a year (see items 5 to 10 in Table 3.6). The measurement ranges from seven-point Likert scale of strongly disagree to strongly agree. Similar to BB and NB, the Likert scales from 1 to 7 are then recoded into bipolar scales, from -3 to +3.

This study is measuring the PBC from two perspectives: self-efficacy and perceived control over behaviour (Ajzen, 2006; Armitage & Conner, 2002). Self-efficacy measures the engineers' confidence on how personal

abilities or resources can assist them to migrate. Meanwhile, the perceived control over behaviour measures the degree of individual perceives his control over a specific behaviour. The first two items in Table 3.6 measure the participants' self-efficacy while item 3 and 4 measure their perceived control over the behaviour of migration. Seven-point Likert scales, ranging from strongly disagree to strongly agree are used to measure the items.

Table 3.6: Development of Measurement Scales for Perceived Behavioural Control and Control Belief

Variable	Item	Operationalization of Variables	Sources	Adopted / Adapted
Perceived Behavioural Control	PBC1	I have the resources and time to migrate abroad	Ajzen (2006)	Adapted
	PBC2	I can easily migrate abroad for at least a year	Ajzen (2006)	Adapted
	PBC3	I am confident that if I wanted to, I could migrate abroad at ease	Armitage and Conner (2002)	Adapted
	PBC4	I am in control over my behaviour of migrating abroad	Armitage and Conner (2002)	Adapted
Normative Belief	c1	Having sufficient money will facilitate me to migrate		Author
	p1	I have complete control over the monetary cost		Author
	c2	Having relevant job skills will facilitate me to migrate		Author
	p2	I have complete control over the required job skills		Author
	c3	Having family members abroad will facilitate me to migrate		Author
	p3	I have many family members living abroad		Author
	c4	Ability to speak fluent English will facilitate me to migrate		Author
	p4	I am able to speak fluently in English		Author
	c5	Ability to adapt to foreign culture will facilitate me to migrate		Author
	p5	I am able to adapt to foreign culture		Author
	c6	Ability to find jobs abroad will facilitate me to migrate		Author
	p6	I am able to find jobs abroad		Author

3.5.3.4 The measurement scales for POC

The concept of the POC is relatively new and may overlap with the other two measures of national identity namely patriotism and nationalism. In ensuring that the construct is conceptually distinct from the other two constructs, 14 items that measure the three constructs are included. Factor analysis was performed to identify and distinguish POC from the other two constructs. The result of the factor analysis is discussed in details in Section 4.6 of the following chapter.

In developing the items for POC, the present study used the three routes that lead to POC– control, knowledge and engagement (Cox, 2013). To avoid biasness, two items representing each of the three routes were included for the construct. Item 1 and 4 in Table 3.7 were measuring the control route, item 7 and 10 measured the knowledge route, while item 13 and 14 measured the engagement route. In measuring the constructs of nationalism and patriotism, some of the items used in Kosterman and Feshbach's (1989) study were adapted. Nationalism was measured by four items (items 2, 5, 8, and 11) while another four items measured patriotism (items 3, 6, 9, and 12) as shown in Table **3.7.** The items used to measure the POC were using seven-point Likert scales ranging from strongly disagree to strongly agree.

Table 3.7: Development of Measurement Items for Psychological Ownership, Nationalism and Patriotism

Variable	Item	Operationalization of Variables	Sources	Adopted / Adapted
Psychological Ownership	POC1	I believe my vote counts	Cox (2013)	Adopted
	POC4	My vote has an impact on the country	Cox (2013)	Adopted
	POC7	I stand and participate in the national anthem "Negaraku"	Cox (2013)	Adapted
	POC10	I vote in all major elections in the country	Cox (2013)	Adopted
	POC13	Knowing about what is happening in the country is important for me	Cox (2013)	Adopted
	POC14	I read news about what is going on in the country	Cox (2013)	Adopted
Nationalism	POC2	To maintain our country's superiority, aggressive economic policies are necessary	Kosterman and Feshbach (1989)	Adopted
	POC5	Malaysia should actively influence other countries	Kosterman and Feshbach (1989)	Adapted
	POC8	For the most part, Malaysia is more superior than many other countries in the world	Kosterman and Feshbach (1989)	Adapted
	POC11	I would fight and die for Malaysia	Kosterman and Feshbach (1989)	Adapted
Patriotism	POC3	I am proud to be a Malaysian	Kosterman and Feshbach (1989)	Adapted
	POC6	Malaysia is truly my country	Kosterman and Feshbach (1989)	Adapted
	POC9	I do feel much affection for Malaysia	Kosterman and Feshbach (1989)	Adapted
	POC12	I have great love for my country	Kosterman and Feshbach (1989)	Adapted

3.5.3.5 The measurement scales for intention to migrate abroad

In measuring the behavioural intention to migrate abroad, which is the dependent variable of the current study, Ajzen (1991) has suggested that the use of few items in the construct, instead of one, will increase the internal validity of the construct. According to Bagozzi (1992), intention to carry out behaviour covers three elements: intention, desire and self-prediction.

The first element is quite direct in measuring the intention and is commonly measured as 'I intend to …'. The second element is to measure the

desire to perform a specific behaviour, In measuring the desire, the item generally begins with 'I want to …'. The third element is self-prediction in performing the behaviour of interest in the near future. In measuring an individual's self-prediction, Bagozzi suggested an item that begins with 'I will …'. In measuring the engineers' intention to migrate abroad, the present study have included the three items (see Table 3.8).

Table 3.8: Development of Measurement Items for Intention to Migrate Abroad

Variable	Item	Operationalization of Variables	Adopted/Adapted	Sources
Intention to Migrate Abroad	IMA1	I intend to migrate abroad for at least a year in the next two years	Ajzen (1991)	Adapted
	IMA2	I want to migrate abroad for at least a year in the next two years	Bagozzi et al. (2001)	Adapted
	IMA3	I will migrate abroad for at least a year in the next two years	Bagozzi et al. (2001)	Adapted

3.5.4 Questionnaire Design

Personal data protection statement is attached to current questionnaire for the respondents to be aware of the purpose of this survey, the risk that may involve, their confidentiality right and the assurance that the data would not be used for commercial purpose. Respondents were required to provide their bio-data profile and their responses towards the studied constructs. Respondent's bio-data profile includes gender, age, ethnic group, marital status, and current job status (permanent or under probation) and were measured by using nominal and ordinal scales.

Section II to V in the questionnaire were arranged to compile the items used to measure each studied constructs, attitude, SN, PBC, POC, and intention to migrate. The items for each salient belief: BB, NB, and CB were imbedded

into the respective section of its construct. For example, the items for BB are presented after the presentation of attitude's items. Appendix B shows the questionnaire used for main survey.

3.5.5 Data Collection Method

Online survey method is less feasible for this study because it is difficult to obtain the engineers' contacts. Engineers' associations such as Board of Engineering Malaysia (BEM) or Institute of Engineers Malaysia (IEM) were reluctant to provide their members details due to the enforcement of Personal Data Protection Act in Malaysia. Furthermore, as the method is expected to produce lower response rate, distributing the questionnaire by using face to face method was used.

Prior to the collection of data for pre-testing, pilot study and main survey analysis, ethics approval was obtained from the University Tunku Abdul Rahman (UTAR) Scientific and Ethical Review Committee. When the participants were approached, they were first briefed about the survey. The qualified respondents then were given a consent form to indicate whether they allow the researcher to collect, record, store, use and retain their personal information. The respondents were also being notified that they will not be exposed to any risk and their identity and responses are highly confidential.

Data used for pre-testing and pilot study were collected in January and February 2016 while the main survey data were collected from April 2016 to July 2016. Overall, the collection of data for main survey as well as for pre-

testing and pilot test had taken seven months as a lot of procedures and travelling were involved.

3.5.5.1 Study locations

Most of the engineers were working in a number of industrial zones located in the states of Kedah, Penang, Perak, Selangor, Negeri Sembilan, Malacca, Johore and Pahang (MIDA, 2015). In view of this, the survey locations for the current study consists of a number of industrial zones in those states, such as Bayan Lepas Free Trade Zone in Penang, Kulim Hi-Tech Park in Kedah, Kamunting Industrial Estate in Perak, Shah Alam Industrial Estate in Selangor, Senawang Industrial Park in Negeri Sembilan, Batu Berendam Free Trade Zone in Malacca, Pasir Gudang Free Trade Zone in Johore and Gambang industrial Park in Pahang.

3.5.5.2 Sampling method

It is not feasible to carry out a census to investigate the Malaysian gen-Y engineers' intention to migrate abroad because of the absence of published statistics and database that can be used as reference. Moreover, the number of gen-Y engineers is too many and widely spread in Malaysia. Nevertheless, representative sample were selected so that the collected data can be used to make inferences about the entire population.

In practice, getting a comprehensive list related to gen-Y engineers from companies or industries in Malaysia is very challenging. The list was either not published or not recorded in any of the engineering bodies in

Malaysia such as BEM and IEM. Moreover, most of the companies approached were reluctant to release the data related to their employees. Therefore, this study had adopted the snowballing sampling method to select the main study's respondents.

The process began by approaching a few gen-Y engineers. The engineers were explained the purpose of the survey and upon getting their agreement for participation, questionnaires were given face-to-face so that the researcher could facilitate the respondents in answering the questionnaire. However, the facilitator was not allowed to influence the respondents in giving answers that cannot reflect their belief or opinions accurately.

Upon completing the questionnaire answering, the respondents were requested to introduce their colleagues who are eligible to participate in this survey. Upon getting the respondents' positive reply, the researcher had approached the recommended engineers on the following day, after their working hours. The same procedure was applied in each location until a reasonable number of completed questionnaires were collected from those locations.

As discussed in sub-Chapter 3.5.3, more than 90% of the Malaysian professional emigrants were the minority ethnics of Chinese and Indians. In view of this, the sample for the present study should be based on quota sampling, represented according to the proportion of the rate of migration among the three main ethnic groups in Malaysia – namely Chinese, Malays and

Indians. It was estimated that slightly more than 80 percent of Malaysian emigrants are Chinese ethnics, followed by about 10 percent of Indian ethnics and less than 10 percent of Malay ethnics (World Bank, 2011). Based on the ratio in the Bank's report, the sample of this study was then composed of 320 respondents of Chinese ethnic (80 percent), 40 Malay ethnic respondents (10 percent) and another 40 respondents of Indian ethnic (10 percent).

3.5.5.3 Sample size

To run the Structural Equation Modelling (SEM) analysis efficiently, the size can be neither too small nor too large. By using the formulation of Cochrane (1963), the ideal sample size is 385 and this sample size could ensure the robustness of the model to be less affected by the non-normality in the variables' distribution, so the model's results will be less bias (Kline, 2005).

In testing the fitness of the specified model, the issue of inflated chi-square value can be managed by substituting the chi-square index with other equally reliable indices such as normed chi-square statistic (Chi-sq/df), Root Mean Square Error of Approximation (RMSEA) and Comparative Fit Index (CFI). According to Kline, RMSEA index is not sensitive at all to sample size, thus act as a substitute to chi-square test. Therefore, this study follows the estimation of sample size in research employed by Kline (2005) and the sample size for this study was determined at 400.

3.5.6 Pre-Test and Pilot Study

According to Zikmund (1991), face validity or content validity entails subjective judgment on the accuracy of responses towards predetermined questions by means of logical valuation. The items in the questionnaire ought to acquire input of experts from both academia and industry to warrant content validity (Devellis, 2003). Prior to the pre-testing of the questionnaire, face-to-face discussions with two academic experts and two senior engineers (who worked in manufacturing industry) were consulted to ensure that the local engineers in the home country could understand and comprehend the questionnaire' statements of the studied measurement items correctly. Modifications were undertaken based on the experts' feedback so that the relevance and coherence of measures that can represent the examined concept can be improved (Babbie, 1990; Sekaran, 2003). Therefore, the issues of face validity and content validity that were related to subjective judgment on the accuracy of responses are minimised.

Pre-test was carried out to examine the questionnaire's clarity of instructions, length of questions, ambiguous wordings, and the sequence of questions. The questionnaire was pre-tested on a group consisting of 10 gen-Y participants from various sectors to observe the occurrence of missing data, review their feedback and address the subtle barriers that might inhibit the respondent's interest in completing the questionnaire.

Generally, the respondents were comfortable with the English language used in the survey form and did not request the draft of questionnaire to use

other languages. On average, the participants had taken 18 minutes to complete the questionnaire. Modifications that have been done were shown in Table 3.9 based on respondents' feedback. For example, as some participants were single or unmarried, the word "spouse" reflected on items that measure SN was change to "spouse or fiancé or partner to lower the cases of missing values.

Table 3.9: Changes Made to Questionnaire during Pre-test

Section and Variable	Item no.	Nature of changes
II. Attitude	10	Changed from 'better education for children' to 'better education for my children in the future'
	15	Changed from 'better education for children is important for me' to 'better education for my children in the future is important for me'.
III. SN	6	Changed from 'spouse' to 'spouse/fiancé/partner'
	11	Changed from 'spouse' to 'spouse/fiancé/partner'

Based on the feedback obtained from the pre-test participants, a pilot test followed. Conducting a pilot study is essential to gather further feedback to improve the questionnaire that had been modified after the pre-test. As suggested by Fink and Kosecoff (1998), the pilot test was carried out in an environment that closely resembled the main survey, including the characteristics of the participants. In this way, the detected issues can represent the actual issue that might be faced during the main study. Completing a pilot study successfully however is not a guarantee of the success of the full-scale survey because of the small sample size and thereby the result cannot be generalised (Peat, Mellis, Williams & Xuan, 2002; Van Teijlingen & Hundley, 2002).

The modified questionnaire was distributed to 40 gen-Y engineers who were working in Bayan Lepas Free Trade Zone area in the Penang state and

Kulim High Tech Park in the Kedah state. Twenty five of the participants were males and another 15 were females. For the current study's sample to be represented by the right ethnic proportions, 80 percent Chinese ethnic and 10 percent of each Malay and Indian ethnic is used. Therefore, for the pilot study, 32 engineers of Chinese ethnic, four each of Malay and Indian ethnics were selected.

Reliability test was carried out for the constructs of attitude, SN, PBC and intention to migrate. Table 3.10 showed that the Cronbach alpha's values for all constructs were ranged from 0.885 to 0.976, which are higher than the threshold level of 0.7 (Churchill & Brown, 2006; Francis et al., 2004). Therefore, all the measure items were retained for final survey.

Table 3.10: Reliability Test Using Internal Consistency Method

Scales	Number of Items	Cronbach's Alpha
Attitude	5	0.897
SN	4	0.950
PBC	4	0.944
Intention to migrate abroad	3	0.976

Note. n = 40

Unlike the five constructs (attitude, SN. PBC, POC, and intention to migrate), the degree of reliability for the three belief-based constructs cannot be measured by using the internal consistency method. Within the same belief construct, some people may have mixed belief, positive and negative towards the measurement items that were used to measure a construct (Fishbein & Ajzen, 2010); Francis et al., 2004). For example, in measuring the engineer's BB, some may strongly agree on one of the items: migrating abroad will improve their standard of living but may disagree on another item: migration

could help them to learn new skills. Therefore, getting high internal reliability score could be challenging.

Instead, current author used test-retest approach to determine the reliability of the three constructs, BB, NB and CB, as recommended by Fishbein and Ajzen (2010) and Francis et al. (2004). Participants in the pilot survey were required to complete the same questionnaire survey twice, where the second survey was carried out three weeks after the first survey. The results of the Pearson Correlation analysis are shown in Table 3.11.

The results showed that the items of each component for the three salient belief constructs; BB, NB, and CB, were strongly correlated and statistically significant. As such, the reliability for each belief-based construct was established.

Table 3.11: Reliability Test Using Test-Retest Method

Construct	Items	Pearson's Correlation coefficient (r)
Behavioural belief	Standard of living (higher income)	0.793
	Safe and secure environment to live	0.736
	Better job opportunities	0.929
	Learning new skills	0.859
	Education opportunity for my children in the future	0.951
Evaluations of behavioural outcome	Standard of living (higher income)	0.922
	Safe and secure environment to live	0.910
	Better job opportunities	0.903
	Learning new skills	0.904
	Education opportunity for my children in the future	0.961
Normative belief	Parents	0.961
	Spouse/Fiancé/Partner	0.984
	Friends	0.902
	Working colleagues	0.894
	Superiors	0.888
Motivation to comply	Parents	0.945
	Spouse/Fiancé/Partner	0.979
	Friends	0.956
	Working colleagues	0.920
	Superiors	0.951
Control belief	Monetary cost	0.936
	Current job skill	0.981
	Networks abroad	0.935
	Command of language	0.950
	Adapting to new culture	0.776
	Ability to find jobs	0.878
Perceived power	Monetary cost	0.952
	Current job skill	0.943
	Networks abroad	0.912
	Command of language	0.946
	Adapting to new culture	0.911
	Ability to find jobs	0.912

3.6 Data Analysis Methods

Statistical software such as Statistical Package for the Social Sciences (SPSS) and Analysis of Moment Structure (AMOS), both version 22, were used in this study to analyse the structural equation relationship between the examined construct. Besides that, factor and descriptive analysis were explained in the following sub-topics.

3.6.1 Factor Analysis

This analysis was carried out to develop the concepts for POC and distinguish it from the concepts for nationalism and patriotism. This need to be done because the POC's items were found to be overlapping the items that had been used in literature to measure the constructs of nationalism and patriotism (Cox, 2013). Factor analysis in this study involved two steps. Exploratory factor analysis (EFA) was carried out to identify the items that together had best measured the POC. Then, confirmatory factor analysis (CFA) was carried out to confirm how well the construct fits the data.

EFA itself involves two main steps, extraction and rotation. The purpose of extraction is to identify the items that represent certain constructs. Principal axis factoring (PAF) was used to fit the purpose of exploring the underlying factors theoretically. The second step involved the running of rotation analysis. Since the constructs of POC, patriotism and nationalism are expected to demonstrate some correlations between them, oblique method had been used. This is because the alternative rotation method, orthogonal is more appropriate to be used if the extracted factors are independent of each other (Tabachnick & Fidell, 2001).

According to Hair et al. (2010) the degree of score that can reflect the significant factor loading value can be determined by the sample size. A smaller sample size requires a higher factor loading value to ascertain certain practical significance. For the sample size of 300 and above, the cuts-off point provided by Tabachnick and Fidell (2007) is 0.32. Since the current sample

size is 400, the threshold of the factor loading value for each item was then fixed at 0.32.

3.6.2 Descriptive Analysis

In this study, the data of demographic, independent and dependent variables were analysed by using descriptive analysis methods such as mean, frequency distribution and percentage distribution to obtain an overview of respondent's perception towards the variables of interest. In addition, cross tabulations using contingency table were carried out to examine relationship between the eight demographical variables and the engineers' behavioural intention as this can give a better insight of what were the main characteristics of the engineers whom had higher intention to migrate. Bivariate tests such as t-test, one-way ANOVA and Pearson Correlation were applied to determine whether the differences are statistically significant.

3.6.3 Structural Equation Modelling Analysis

In order to meet the last three objectives of this study, SEM analysis was carried out to test current study's hypotheses outlined. The relationships between the four predictors and the dependent variable are represented by the following equation.

$$ITMA = \beta_1 ATTITUDE + \beta_2 SN + \beta_3 PBC - \beta_4 POC + \varepsilon_1 \qquad (3.1)$$

where,

ITMA	: intention to migrate abroad;
ATTITUDE	: attitude;
SN	: subjective norms;
PBC	: perceived behavioural control
POC	: psychological ownership over a country
$\beta_1, \beta_2, \beta_3$ and β_4	: unstandardized coefficients; and
ε_1	: error term.

From equation 3.1, attitude, SN and PBC are expected to influence the behavioural intention positively while POC is expected to influence the engineers' intention to migrate abroad negatively. To test the hypotheses that relate the three salient beliefs, BB, NB and CB on the constructs of attitude, SN and PBC respectively, the following regressions formulations were examined:

$$ATTITUDE = \gamma_1 BB_a + \gamma_2 BB_b + \gamma_3 BB_c + \gamma_4 BB_d + \gamma_5 BB_e + \varepsilon_2 \quad (3.2)$$

$$SN = \delta_1 NB_a + \delta_2 NB_b + \delta_3 NB_c + \delta_4 NB_d + \delta_5 NB_e + \varepsilon_3 \quad (3.3)$$

$$PBC = \lambda_1 CB_a + CB_b + \lambda_3 CB_c + \lambda_4 CB_d + \lambda_5 CB_e + \lambda_6 CB_f + \varepsilon_4 \quad (3.4)$$

where,

BB	: behavioural belief;
NB	: normative belief;
CB	: control belief
$\gamma_1, \gamma_2, \gamma_3, \gamma_4, \& \gamma_5$	: unstandardized coefficients of the BB items;
$\delta_1, \delta_2, \delta_3, \delta_4, \& \delta_5$	: unstandardized coefficients of the NB items;
$\lambda_1, \lambda_2, \lambda_3, \lambda_4, \lambda_5, \& \lambda_6$	: unstandardized coefficients of the BB items;
$\varepsilon_2, \varepsilon_3, \& \varepsilon_4$	: error terms for the respective regressions.

In TPB related studies, a mixture of multivariate analysis methods were established in the past literatures to determine the causal relationship between the behavioural intention and its predictors. The analyses were Ordinary Least Squares (OLS), SEM, Logit regression and Hierarchical Regression analysis.

SEM analysis is applied in this study because of its advantages. First, SEM allows the model to incorporate measurement error and reduce the biasness in the estimation of the parameters (Lei & Wu, 2007; Salleh & Laxman, 2013). In OLS regression analysis, the model is assumed to be free of measurement error. This may not be practical in social science studies because primary data may subject to few errors. Secondly, SEM analysis is more appropriate when the variables in the model are latern variables (Lei & Wu,

2007). Latern variable cannot be measured directly due to the subjectivity characteristic of the variable. Instead, the variable is measured by its underlying observable items. As the TPB constructs are latern variables, SEM analysis is more appropriate than other multivariate regression analyses.

Within SEM, two popular techniques exist, co-variance based SEM (CB-SEM) and variance based SEM (VB-SEM). The CB-SEM is more appropriate if purpose of an analysis is to confirm a hypothesized model (also referred as confirmatory analysis) (Hair et al., 2014). Meanwhile VB-SEM is more applicable if the research itself intends to develop a new theory. VB-SEM is also widely used when the purpose of the research is only to predict the outcomes. Since the first objective of the present study is to confirm the utility of TPB constructs, CB_SEM technique was used. Although there are various software that can be utilised to perform CB-SEM, AMOS is considered more user-friendly compared to others like LISREL (Hair, Gabriel & Patel, 2014). Therefore AMOS software is used to test all the hypotheses posed in this study.

3.6.4 Multiple Indicators and Multiple Causes (MIMIC) Model

This study is using the extended TPB as the basic model where the direct effects and indirect effects were measured. When the three antecedents of behavioural intention (attitude, SN and PBC) are measured directly, they are represented by their underlying indicators, known as reflective indicators, and the models are known as reflective model. When there is a change in a construct, all the reflective indicators measuring that construct are expected to change as well (Diamantopoulos and Siguaw, 2006). Meanwhile, when the

three constructs are measured indirectly by their salient belief factors, each of the models are known as formative model. The belief factors, also known as formative indicators, are expected to cause the changes in the constructs (Hennessy, Bleakley & Fishbein, 2012).

However, there is an issue in analysing formative model using the SEM technique. Ringle et al. (2012), in Posey, Roberts, Lowry, and Bennett (2014), argued that when using CB-SEM analysis, CFA cannot be performed for a formative model due to insufficient variances and co-variances in the observable items. If the model is to be estimated by itself, it faces an identification issues. Nevertheless, Diamantopoulos and Winklhofer (2001) and Hennessy et al. (2012) clarified that when a construct is measured simultaneously by the formative and reflective indicators, the model becomes identified and CB-SEM method thereby can be applied.

Therefore, in analysing a model that consists of both reflective and formative indicators using CB-SEM technique, Joreskog and Goldberger (1975) recommended the use of MIMIC model. Posey et al. (2014, p. 7) defined it as "a single, mixed model latent construct with both reflective and formative indicators". Using a sample of attitude construct developed for the present study, how the issue of identification can be solved using a MIMIC model is demonstrated. In Figure 3.3, the five behavioural beliefs (BB1-BB5) which measure the attitude indirectly are the formative indicators while the five direct measures, AT1-AT5 are the reflective indicators. If attitude is only measured by the five formative indicators, the model becomes unidentified.

The five behavioural beliefs only produces 15 known variance and co-variance [5(5+1)/2 = 15]. It is insufficient to estimate all the parameters in the model which is 21 (10 covariance, 5 variances, 5 paths and a residual error).

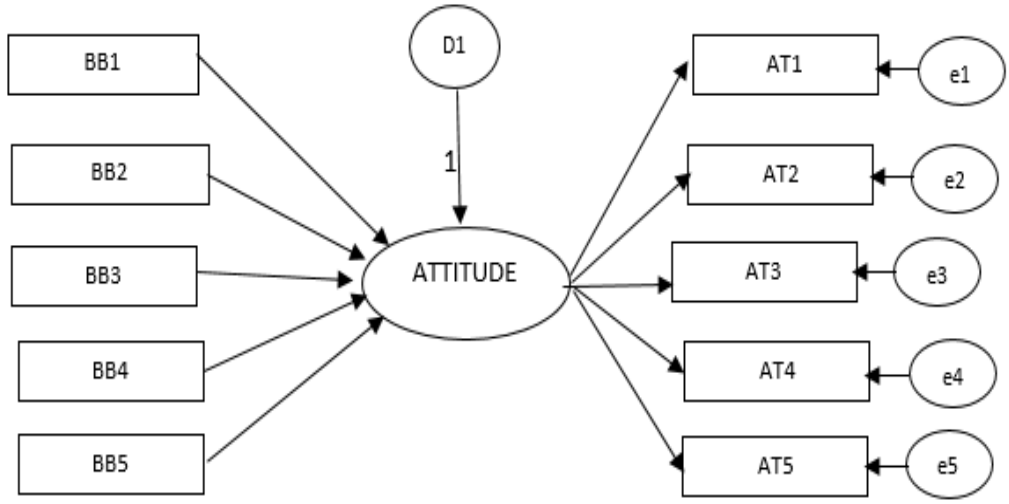

Figure 3.3: An Example of a MIMIC Model

However, when the reflective model with the five direct measures is added into the formative model, the MIMIC model is identified. With a total of 10 observable items, there are 55 variances and covariance, which is more than the 36 parameters that need to be estimated. This demonstrates that the use of MIMIC models in measuring the three TPB constructs can be useful in the present study in overcoming the model identification issues when formative indicators alone are used. Hence, in applying CB-SEM analysis in the current study, the three TPB constructs; attitude, SN, and PBC are represented by MIMIC models.

3.6.5 Structural Equation Modelling Procedures

The SEM analysis is composed by two tests; 1) measurement model that aims to analyse the relationships between the latern variables (attitude, SN, PBC, POC, and intention to migrate) and its observable items; and 2) structural model to test the causal relationships between the independent and dependent variables. In running the measurement model analysis for MIMIC model, some precautions were taken.

The MIMIC model consists of reflective and formative model. In assessing internal consistency for a construct that is modelled reflectively, the indicators among themselves are expected to have high correlations. Therefore, analyses such as composite reliability (CR) and average variance extracted (AVE) in the CFA are widely used. In a formative model, Jarvis, MacKenzie and Podsakoff (2003) clarified that since the observable items are expected to predict the corresponding latent constructs, the indicators should not be internally consistence or have high correlations between them. Otherwise, the items are considered redundant and can lead to the problem of multicollinearity.

As internal consistency tools in CFA such as CR and AVE are inappropriate to measure the internal validity when attitude, SN and PBC are formatively constructed by their belief indicators, the three steps as suggested by Cenfetelli and Bassellier (2009) and Diamantopoulos and Winklhofer (2001) were applied in current study. The steps are discussed at the end of the following sub-chapter.

3.6.5.1 Measurement Model

The measurement model is first build to construct the unobserved variables, known as latern variables. The model explicitly depicts the relationship between latern variables and their respective measurement items, known as indicators. According to Goel et al. (2010), their relationships are determined by CFA method and validated by various fit indices. In other words, CFA facilitates the development of latern variables which are estimated by a combination of indicators with high validity and reliability. As discussed earlier, only the reflective component of a MIMIC model is assessed using the CFA method.

Figure 3.4 illustrates the measurement model for the five latern variables; attitude, SN, PBC, POC, and intention to migrate. Since the number of observable items for POC is not fixed yet, it is assumed that the construct has six observable items. A latern variable is expected to affect its observed variables, thus directional arrows from the latern variable to the observed variables are drawn. For example, PBC, which is a latern variable, is constructed by four measurement items (PBC1 – PBC4). Since the scale of the five latern variables are unknown at this stage, a scale for each of the variable is then assumed to have the factor loading score of one. For instance, the path from ITMA to INT1 is fixed to one, thus the latern construct of intention to migrate use the same scale as INT1 indicator.

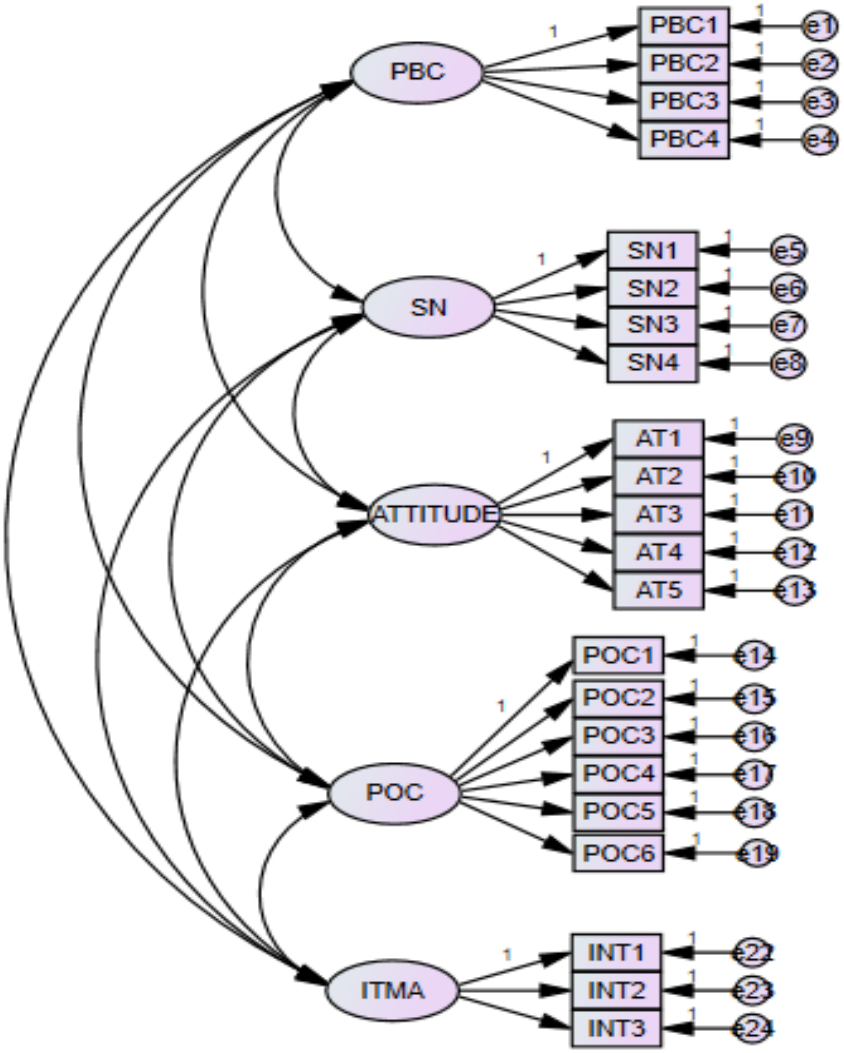

Figure 3.4: Measurement Model of the Present Study

In Figure 3.4, each of the observed variables is associated with its respective error term. For instance, an error term e1 is attached to PBC1. It indicates that PBC1 is only explained by the latern construct PBC partly while the rest is caused by e1, which is unexplained by the model. In the measurement model, all the five latern variables are allowed to correlate, which are demonstrated by double headed arrow curves between them. Co-variances between the variables are expected but they are not hypothesised in the measurement model.

a. Model identification

Before running the SEM analysis, the model must be identified. The model should have enough variances and co-variances from the observed variables so that all the free parameters in the model can be estimated. In order to identify the model, T-rule is applied (Kenny, 2011). According to the rule, the number of variances and co-variances of the observed variables should at least be equal to the number of parameters that need to be estimated. The number of variances and co-variances is represented by p (p+1) / 2, with p as the number of observed variables. As the model in Figure 3.3 has 22 observable items, the number of variances and co-variances would be 253.

The number of parameters that need to be estimated can be calculated by the summation of the number of co-variances between the latent variables, the number of factor loadings, and measurement errors. As there are five latern constructs in the model, the number of co-variances then is computed as 10 (4+3+2+1). Although there are 22 factor loadings, five of them are fixed to one. Hence, the balance is 17. Finally there are 22 measurement errors, one for each observable item. The summation of the three would be then 49 (10 + 17+ 22) which is less than the number of variances and co-variances.

The degree of freedom, measured by the difference in the number of variance and covariance and the number of unknown parameters, is 204 (253 – 49). In summary, the model is said to be over-identified and all the parameters can be estimated appropriately.

b. Model evaluation

The hypothesised model has to be evaluated in order to test if the model fits the data well or not. Otherwise, using the modification indices provided by AMOS, some re-specification of the model is required. A significant chi-square test ($p < 0.05$) is indicating that there is a significance difference in the observed and estimated covariance matrices. This implies that the hypothesised model has a lack of fit. According to Hair, et al. (2005), this result is quite prevalence in SEM because chi-square test is sensitive to larger sample and also the normality assumption. Therefore, other fit indices are always assessed and should be reported.

As recommended by Hair et al. (1995, 2010) and Holmes-Smith (2006), one index from each of the three categories of fits – absolute fit, incremental fit and parsimonious fit – should be referred. Based on the review of literatures on model fits by Hooper, Coughlan, and Mullen (2008), RMSEA is considered the best index for absolute fit. For incremental fit, CFI is the best choice and widely reported in CB-SEM literatures.

Meanwhile, normed chi-square statistic (Chisq/df) is commonly recommended for parsimonious fit (Hu & Bentler, 1999; Kline, 2005). Table 3.12 summarises the thresholds recommended for the four indices that would indicate a significant hypothesised model that fits well into the empirical data.

Table 3.12: Recommended Thresholds for Selected Fit Indices

Category	Model fit Indices	Recommended Thresholds
Absolute	$\chi 2$	$p > 0.05$
	RMSEA	< 0.08
Incremental	CFI	> 0.90
Parsimonious	Normed Chi-square ($\chi 2/df$)	< 3.0

Sources: Awang (2015) and Kline (2005)

If the results of the hypothesized model demonstrate a weak fit, AMOS has incorporated modification indices that suggest some additional paths or correlations between the variables or error terms. Nevertheless, in the process of re-specification of the model, the adding of new paths and/or co-variances should be theory driven or at least the relationships are justifiable (Kline, 2005).

c. Unidimensionality, validity and reliability

To ensure the reliability score for each studied constructs is higher than the threshold value of 0.7, each observable item or indicator should load only on one construct (Hair et al., 1995). Therefore, the unidimensionality of all the latern constructs; attitude, SN, PBC, POC and intention to migrate had to be determined first to minimise the incident of multi-dimensionality, which is a case when an item can be loaded to more than one construct.

In addition, the factor loading score or the coefficient score that measures the relationship between a latern variable and its observed variable should be higher than the threshold value of 0.7 (Hair et al., 1995). Otherwise, the variable should be dropped from the model. However, as POC is a

relatively new construct in the literature, the threshold loading value for each of the POC's item can be as low as 0.5 (Awang, 2013).

The validity of a scale depends on its ability to measure what the scale supposed to measure. In this study, three types of validity are examined: content validity, face validity and construct validity. The content validity and face validity were assessed during the pre-testing stage. The construct validity examines whether the constructs are developed correctly and in accordance to underlying theories. A few conditions must be met in examining construct validity. First, the hypothesized model should fit the data well. Once the model fit is achieved, convergent validity and discriminant validity then need to be tested.

A construct meets the convergent validity if all items included in the model have high loadings and is statistically significant or when the average variance-extracted's (AVE) value is more than 0.6 (which indicates that the variance in a construct can be explained more by the variance in the construct's items rather than the variance in the measurement error).

On the other hand, discriminant validity is essential in ensuring that any two constructs (example, attitude and SN) within a model are two different or independent constructs. In other words, the correlation score between these constructs should be lower than the threshold value, 0.85 (Kline, 2005). Another method to measure the discriminant validity is using the AVE analysis. The two examined constructs can be considered different if squared

correlation between two constructs is less than the AVE estimated (Fornell & Larker, 1981).

Reliability of data can be assessed by two ways – determine the internal consistency of the constructs by measuring the Cronbach's alpha's score or run the CFA analysis. In SEM analysis, Anderson and Gerbing (1988) argued that Cronbach's alpha value alone is not sufficient; the CFA analysis instead should be carried out by assessing the Composite Reliability (CR) and AVE. CR is more reliable than Cronbach's alpha because CR method is based on the assumption than the loading of the items have different weightage (Hair, Black, Babin, Anderson, & Tatham, 2006). The average variance in the items of a latern construct that could be explained by the construct itself is represented by AVE. The CR and AVE threshold values of current study are 0.60 and 0.50 respectively, as suggested by Bagozzi and Yi (1988).

d. Assessing internal consistency for formative model

To ensure the internal validity of the formative construct in the MIMIC model, three steps were applied in this study (Cenfetelli & Bassellier, 2009; Diamantopoulos & Winklhofer, 2001). First, using the multivariate regression analysis, the individual formative indicators are regressed against the key construct developed from the average value of the reflective indicators. In ensuring the internal validity, some of the formative indicators should contribute significantly to the variance in the construct. This procedure is to ensure that at least some of the formative indicators have causal relationship with the construct of interest.

Secondly, using Pearson Correlation analysis, all the formative indicators are inspected for inter-item correlational, and the correlation score between the studied indicators should below than the threshold value of 0.6. Or else, multicollinearity issue arise and this can strongly affect the validity of the formative construct. Finally, to confirm that multicollinearity does not exist in the model, the value of variance inflation factors (VIFs) should be less than 3.3.

3.6.5.2 Structural Model

Once all the latern constructs are confirmed, the causal relationships between the independent variables and the dependent variable then can be established by using structural model analysis. The strength of the causal relationships is estimated by the coefficients for each path (Goel et al., 2010). Figure 3.5 depicts the structural model of current study.

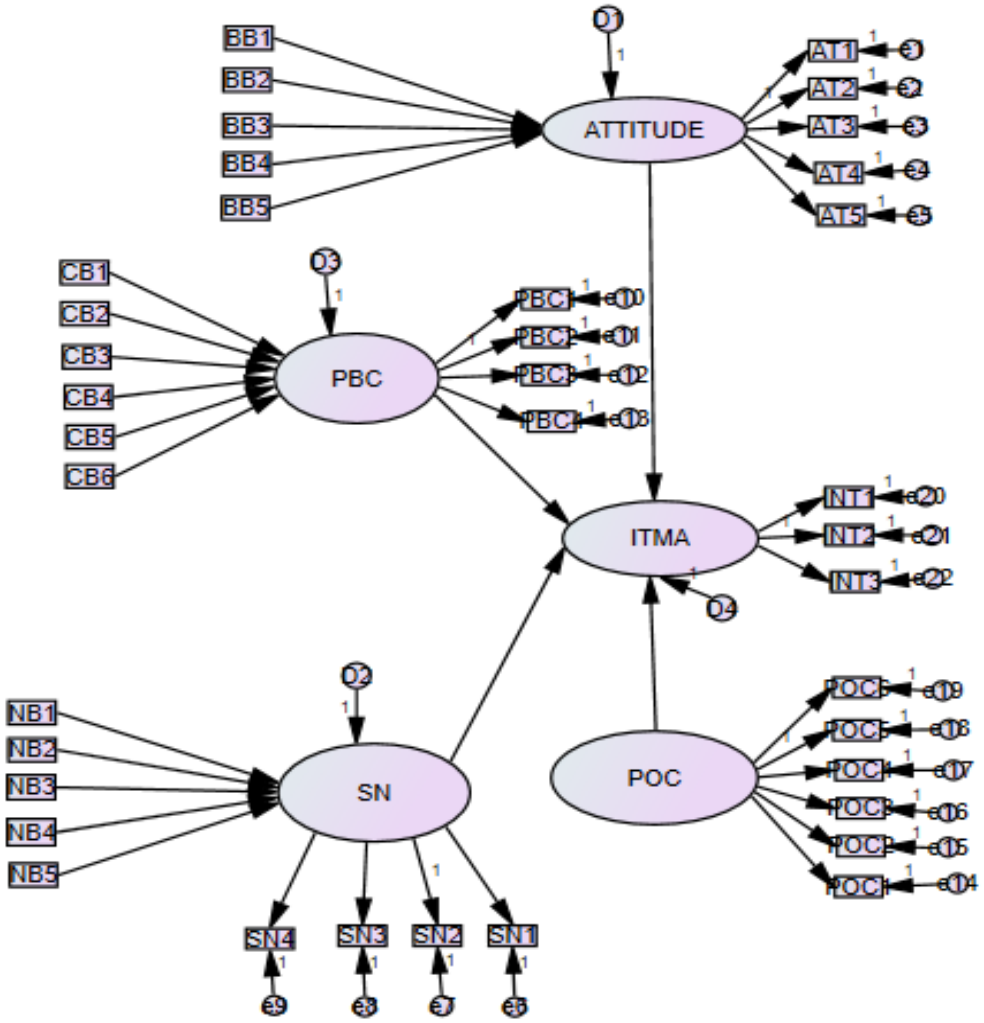

Figure 3.5: Structural Model of the Present Study

The three antecedents of behavioural intention; attitude, SN and PBC are represented by three MIMIC models. The three constructs are endogenous variables, and together with POC, predict the changes on engineers' intention to migrate. The disturbance, D1 represents the variations in the intention to migrate that could not be explained by the four predictors in the model. Meanwhile, the disturbances D2, D3 and D4 represent the unexplained variance in attitude, SN and PBC respectively.

In testing the model's goodness of fit, the same indices (chi-square test, normed chi-square, CFI and RMSEA) and criteria applied for measurement model were used. Once the model has achieved a satisfactory fit, all the hypotheses will be tested at five percent significance level, at one-tail test.

3.7 Ethical Considerations

To ensure this study is ethical, current author has complied the ethical codes of conduct: obtained informed consent from respondents prior to the questionnaire interview, protecting respondents from harm and risk, and respondents' identity and responses are kept private and confidential.

To secure the consent from respondents, current author had relayed all important details of the study, including its aim and purpose in the cover page of the questionnaire (refer to Appendix B1). This is to enable the respondents to better understand of the importance of this study, and thereby would be more willing to provide truthful feedback data that can represent their belief and opinions accurately.

The respondents were also advised that they could withdraw from the study at any point throughout the process. Information given by respondents will be not be commercialised and the current surveyed respondents were treated anonymously as they did not need to disclose their identity and their respective affiliation while answering the questionnaire.

3.8 Chapter Summary

This study adopted quantitative approach by distributing questionnaire to collect quantitative data that can be statistically tested to confirm current study's hypotheses. Preliminary investigation was performed to identify a total of 16 belief factors that may influence the engineers' intention to migrate abroad. The reliability and validity of data were assured by carrying out pre-test, pilot study, and reliability analysis. Next, various analyses such as factor, descriptive and SEM were discussed. Lastly, the ethical considerations impacting respondents of the study were implemented to ensure the study is ethical.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the demographic profile of the sample, followed by the results of factor analysis that can assist current author to identify the items that best measure POC construct. Next, the descriptive results of the predictors and the dependant variable are presented. The contingency of the association between the respondents' demographical factors and their engineers' intention are included. Based on the measurement model, the reliability and the validity results are explained. Finally, statistical results provided by the structural model that can confirm current hypotheses and its interpretation are discussed. The confirmation of current hypotheses is compared to past studies' results so that possible, logical and justifiable reasons can be presented to support the statistical results.

4.2 Response Rate

Although the targeted sample size was 400 Malaysian gen-Y engineers, a total of 420 questionnaires were distributed and collected as sampling and non-sampling error may exist during data collection. Eighteen of them were excluded because the responses could be bias and this may disrupt the interest of this research. Among the eighteen excluded questionnaire, at least 30

percent of missing responses were found in 11 questionnaires. The remaining seven respondents had only ticked neutral scale for all statements of each measurement items shown in Section II to Section VI of the questionnaire. Since it raised a serious doubt on the reliability of their responses, they were removed from the sample. In summary, 95.71% or 402 sets of completed questionnaire were used for statistical analysis (see Table 4.1).

Table 4.1: The Response Rate among Current Study's Respondents

Target sample	Questionnaires				Respond rate (%)
	Distributed	Received	Rejected	Usable	
400	420	420	18	402	95.71

4.3 Data Preparation and Screening

Prior to statistical analysis, data were screened to ensure their usability, reliability and validity (Tabachnick & Fidell, 2013). First, the data were checked for the presence of missing values. Then, checked if outliers within and between variables exist, and followed by the screening of normality on sample distribution.

4.3.1. Assessment of Missing Values

Table 4.2 shows that the cases with missing values are quite low. The items with highest missing values are NB_A1, which measures the likeliness that parents think that the respondent should migrate, and NB_B1, which measure the likeliness to comply with the parents' wishes. The items have eight missing values each, which represents only two percent of the total sample size, 402.

Table 4.2: The Result of Frequency on Missing Data for the Studied Items

Item	Fq (%)	Item	Fq (%)	Item	Fq (%)	Item	Fq (%)
AT1	0	POC4	1 (0.2)	BB_A3	0	NB_B4	0
AT2	0	POC5	1 (0.2)	BB_A4	2 (0.5)	NB_B5	2 (0.5)
AT3	2 (0.5)	POC6	2 (0.5)	BB_A5	0	CB_A1	1 (0.2)
AT4	3 (0.7)	POC7	1 (0.2)	BB_B1	5 (1.2)	CB_A2	0
AT5	3 (0.7)	POC8	4 (1.0)	BB_B2	0	CB_A3	1 (0.2)
SN1	5 (1.2)	POC9	2(0.5)	BB_B3	3 (0.7)	CB_A4	5 (1.2)
SN2	1 (.2)	POC10	1(0.2)	BB_B4	3 (0.7)	CB_A5	3 (0.7)
SN3	2 (0.5)	POC11	2(0.5)	BB_B5	5 (1.2)	CB_A6	2 (0.5)
SN4	1 (0.2)	POC12	0	NB_A1	8 (2.0)	CB_B1	0
PBC1	1 (0.2)	POC13	3(0.7)	NB_A2	6 (1.4)	CB_B2	0
PBC2	1 (0.2)	POC14	0	NB_A3	1 (0.2)	CB_B3	0
PBC3	1 (0.2)	INT1	0	NB_A4	0	CB_B4	3 (0.7)
PBC4	2 (0.5)	INT2	3 (0.7)	NB_A5	5 (1.2)	CB_B5	1 (0.2)
POC1	2 (0.5)	INT3	2 (0.5)	NB_B1	7 (1.7)	CB_B6	0
POC2	1(0.2)	BB_A1	1 (0.2)	NB_B2	6 (1.4)		
POC3	3(0.7)	BB_A2	3 (0.7)	NB_B3	0		

According to Olinsky et al. (2003), reliability issue is not serious if the rate of missing values is below 10 percent. However, to further confirming the outcome caused by missing values, Little's Missing Completely at Random (MCAR) test was carried out to check whether the missing values are randomly distributed or not (Tabachnick & Fidell, 2011). The p-value obtained for the Little's MCAR test is 0.0910, thus the null hypothesis that the missing data are to be MCAR cannot be rejected. Hence, the missing data thereby can be considered as randomly distributed**.**

Following Hair et al.'s (2006) suggestion, the missing values were replaced using the multiple imputation (MI) method, which can retain the original degree of the relationships strength between variables. First, a total of five possible values would be suggested to replace each missing value. Then, the average value would be computed. For example, for item ATT3, the respondent with number 162 did not give his/her feedback on that item. The MI

method created five imputed values: 4, 2, 3, 3 and 3, which gives an average value of 3 that would be then imputed for case 162 to replace the missing value. All the missing values of this study thereby were replaced accordingly.

4.3.2 Assessment of Outliers

Outliers, irrespective of univariate and multivariate, can affect the estimation of the parameters and also the model fit of the data. To solve the univariate outlier issue, standardized values (z-scores) for all measurement items were generated first (Kline, 2005), and the scores are summarised in Table 4.3.

Table 4.3: Standardized Values for all Items that were used in Current Study

Variables	N	Min	Max	Variables	N	Min	Max
Zscore(AT1)	402	-2.31	1.90	Zscore(POC11)	402	-2.02	1.98
Zscore(AT2)	402	-2.21	1.82	Zscore(POC12)	402	-2.00	2.12
Zscore(AT3)	402	-2.24	1.82	Zscore(POC13)	402	-1.97	2.32
Zscore(AT4)	402	-2.34	1.91	Zscore(POC14)	402	-1.99	1.89
Zscore(AT5)	402	-2.28	1.89	Zscore(INT1)	402	-2.00	1.27
Zscore(SN1)	402	-2.10	1.73	Zscore(INT2)	402	-1.90	1.21
Zscore(SN2)	402	-2.12	1.69	Zscore(INT3)	402	-2.01	1.27
Zscore(SN3)	402	-2.07	1.70	Zscore(BB1)	402	-2.20	2.82
Zscore(SN4)	402	-2.30	1.84	Zscore(BB2)	402	-3.05	2.01
Zscore(PBC1)	402	-2.00	2.02	Zscore(BB3)	402	-3.47	2.83
Zscore(PBC2)	402	-2.07	2.13	Zscore(BB4)	402	-2.40	3.17
Zscore(PBC3)	402	-2.00	2.08	Zscore(BB5)	402	-3.14	2.16
Zscore(PBC4)	402	-1.96	1.99	Zscore(NB1)	402	-1.68	2.96
Zscore(POC1)	402	-2.06	1.97	Zscore(NB2)	402	-2.38	3.21
Zscore(POC2)	402	-2.05	1.84	Zscore(NB3)	402	-2.00	4.22
Zscore(POC3)	402	-1.98	2.05	Zscore(NB4)	402	-1.29	3.47
Zscore(POC4)	402	-2.00	1.88	Zscore(NB5)	402	-2.56	2.54
Zscore(POC5)	402	-2.07	1.82	Zscore(CB1)	402	-2.62	3.09
Zscore(POC6)	402	-1.99	1.89	Zscore(CB2)	402	-1.69	3.38
Zscore(POC7)	402	-2.01	1.92	Zscore(CB3)	402	-2.98	3.60
Zscore(POC8)	402	-2.02	1.96	Zscore(CB4)	402	-3.57	3.89
Zscore(POC9)	402	-2.07	2.01	Zscore(CB5)	402	-2.49	2.52
Zscore(POC10)	402	-1.98	1.89	Zscore(CB6)	402	-2.04	3.45

Next, for each variable, their minimum and maximum z-scores were counted. In Table 4.3, the scores for all the items that have been used to measure the constructs of attitude (ATT), SN, PBC, intention to migrate (INT) and POC are within -3 and +3, which indicates that outliers are not found. However, some of the belief items (BB3, BB4, BB5, and other items) have scores less than -3 or more than +3, which indicate the present of univariate outliers for the items.

To confirm the existence of univariate outlier for the belief items, box plots was then developed for all items that have been used to measure the respective construct that are facing univariate outlier problem. For example, Table 4.3 shows that certain items in the construct of BB, NB and CB were considered univariate outliers. This is for current author to identify which cases of item BB3, BB4, BB5, and other items were facing the outlier's problem. From figure 4.1 item BB3 was detected to have three outliers at upper end (cases 269, 320 and 336) while case 248 is a lower end outlier.

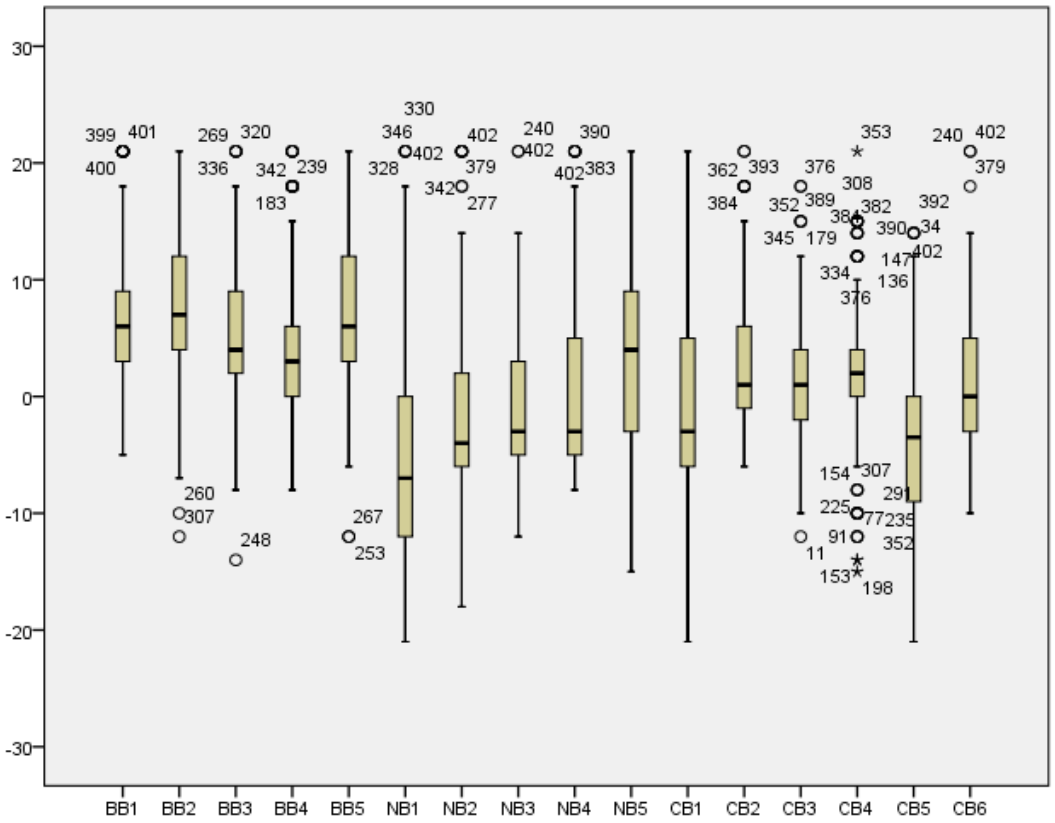

Figure 4.1: Box Plots for Items that were used to Measure BB, NB, and CB

Before removing cases with outliers, current author checked the data and noted that in some cases, the discrepancy between the minimum and maximum z-scores were ranged from -9 to +9. The result shows that some respondents were holding very strong belief toward the measured items. For example, three cases with values of the discrepancy score of +9 were found for item BB1. This implied that the respondents of those cases were very strongly believed that they are expected to experience better standard of living if they have migrated (+3) and to them, better standard of living is very important to them (+3).

In this case, the finding gives a very important implication and thereby it is not appropriate to replace the value with either mean or median value, which could eventually distort the overall result from giving a meaningful data

finding. As suggested by Aquinis et al. (2013), interesting outliers or outliers that can provide very useful indication should be maintained. Furthermore, current author had continued to use Maximum Likelihood Estimation (MLE) method to test the hypotheses and the method is a robust analysis that could detect minor violations in the collected data (Curran, et al., 1996).

Next, the presence of multivariate outliers were assessed using Mahalanobis Distance (D2) values. The values for all the 402 cases were generated by regressing the dependent variable on the seven predictors (attitude, SN, PBC, PO, BB, NB and CB). The generated values were then compared with the critical chi-square value (with $p < 0.001$), which is 24.32 for degree of freedom of seven. The D2 values of current study show that none of the cases has value more than 24.32, which imply that all the cases should be retained.

4.3.3 Assessment of Normality

Two normality tests were examined: univariate normality and multivariate normality which could show whether the data set is distributed normally or abnormally. In determining the univariate normality, the skewness and kurtosis values for each item or variable were generated. Each of the skewness and kurtosis values were ranged within the absolute value of two, and this shows that none of the examined items has normality issues (Hair et al., 2005). Meanwhile, AMOS software provides a summary of Mardia's multivariate kurtosis and its critical ratio that can be used to inspect the present of multivariate normality. For current data, the coefficients for Mardia's

Kurtosis and the critical value is 63.4 and 19.6 respectively which implies the issue of non-normality present in the data.

Nevertheless, Bollen (1989) and Diamantopolous and Siguaw (2000) explained that Maximum Likelihood (ML) estimator is quite robust to violations of normality. As a remedy, Bollen-Stine bootstrapping approach is applied in predicting the relevant parameters of the hypothesised model (Efron & Tibshirani, 1993; Preacher & Hayes, 2004). The method does not require the distribution of data to be normal.

4.4 Respondents' Demographic Profiles

From Table 4.4, about 65 percent of the respondents were male compared to 35 percent female respondents. Such ratio is quite similar to the distribution of engineers' workforce in Malaysia for year 2011; 60 percent male and 40 percent female (Charles, 2011; Ministry of Higher Education Malaysia, 2013). About three quarter of the respondents were aged within 29 to 36. In terms of the engineers' highest level of education, close to 80 percent of them have bachelor degree, while those with masters and diploma were about 10 percent each. None of the respondents obtained Doctorate of Philosophy (PhD) degree.

As suggested in sub-chapter 3.5.6.2 of the previous chapter, the ethnic ratio of 80 percent Chinese, 10 percent Malay and 10 percent of Indian are achieved. The sample for this study consists of 79.6 percent of engineers of

Chinese ethnics, and 10.2 percent each of Malay and Indian ethnics. Majority of the respondents were married and therefore, inspecting the spouse's influence in driving the engineers' intention to migrate could be useful. If spouse was playing an important role, policy makers may need to include the spouse role in the future policy. This effect was hypothesised in this study and the result is presented in the structural model.

Table 4.4: The Distribution of Current Respondents' Demographic Profile

Demographic Profile		Number of Respondents (N= 402)	Percentage
Gender	Male	264	65.7
	Female	138	34.3
Age	21-24	18	4.5
	25-28	85	21.1
	29-32	158	39.3
	33-36	141	35.1
Education	Diploma and below	39	9.7
	Bachelor	316	78.6
	Masters	47	11.7
Ethnic	Malay	41	10.2
	Chinese	320	79.6
	Indian	41	10.2
Marital status	Single	91	22.6
	Married	300	74.6
	Widowed	4	1.0
	Divorced	7	1.7
Number of children	0	110	27.4
	1	91	22.6
	2	157	39.1
	3	36	9.0
	4	7	1.7
	5+	1	0.2
Employment	FT permanent	373	92.8
	FT contract	29	7.2
Type of engineer	Civil	35	8.7
	Computer	47	11.7
	Chemical	37	9.2
	Electrical	64	15.9
	Electronic	109	27.1
	Industrial	42	10.4
	Mechanical	64	15.9
	Telecommunication	4	1.0

On average, the respondents have only two children, which is consistent to birth rate in 2014, as reported by the Department of Statistics Malaysia (2016). About 90 percent of the respondents are employed on permanent basis and a high percentage of them worked as electronic and electrical engineers. Probably this is because electrical and electronic (E&E) sector is one of the key drivers for Malaysia's economic growth (Malaysia external Trade Development Corporation [MATRADE], 2017). The sector contributes nearly 45% of the country's total export, as well as slightly more than a quarter of Malaysia's gross domestic product (GDP).

4.5 Developing the Psychological Ownership Construct – Factor Analysis' Results

Factor analysis is performed to develop and distinguish the concept of POC from the other similar concepts – patriotism and nationalism. The analysis is composed of exploratory and confirmatory factor analyses.

4.5.1 Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) is used to identify the items that can best measure the POC construct. The items were extracted by using the principal axis factoring (PAF) method and oblique method was used in the rotation procedure. The adequacy of the sample size is checked by referring to the KMO statistics. As shown in Table 4.5, the value of 0.925 (which is above the threshold value of 0.6) implies that the sample size of 402 is sufficient to produce reliable factors. The significant value shown in the Bartlett's Test of Sphericity indicates that the matrix is not an identity matrix. It shows that some

of the items have patterned relationship among them, therefore suitable for the data reduction process.

Table 4.5: The Result of KMO and Bartlett's Test for POC's Proposed Items

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.925
Bartlett's Test of Sphericity	Approx. Chi-Square	4584.667
	Df	91
	Sig.	.000

Table 4.6 shows the communality values for all the 14 items. Items which have the initial and extraction score of below 0.4 needs to be removed because the examined items' ability to load significantly on the studied construct is questionable (Tabachnick & Fidell, 2007). In this study, all items that have been used to measure the construct of POC were retained.

Table 4.6: The Communalities Result for POC's Proposed Items

Item	Initial	Extraction
POC1	.492	.483
POC2	.652	.675
POC3	.696	.728
POC4	.522	.539
POC5	.748	.811
POC6	.805	.853
POC7	.667	.754
POC8	.742	.796
POC9	.791	.835
POC10	.662	.667
POC11	.738	.786
POC12	.645	.656
POC13	.710	.715
POC14	.646	.674

Note: Extraction Method is Principal Axis Factoring.

From Table 4.7, out of the 14 factors, first three factors are able to explain about 70.5 percent of variance in the sample data, which is considered reasonable. Furthermore, the scree plot diagram shown in Figure 4.2 support

the result or the plot suggests that the 14 items can be grouped into three constructs.

Table 4.7: The Result of Total Variance Explained for POC's Proposed Items

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.795	55.679	55.679	7.516	53.689	53.689	5.904
2	1.727	12.335	68.014	1.431	10.222	63.911	5.657
3	1.160	8.284	76.298	.927	6.622	70.533	6.143
4	.625	4.463	80.761				
5	.484	3.455	84.216				
6	.367	2.619	86.835				
7	.348	2.488	89.323				
8	.302	2.155	91.478				
9	.262	1.875	93.353				
10	.247	1.761	95.114				
11	.208	1.488	96.602				
12	.188	1.341	97.943				
13	.170	1.211	99.155				
14	.118	.845	100.000				

Note: Extraction Method - Principal Axis Factoring.

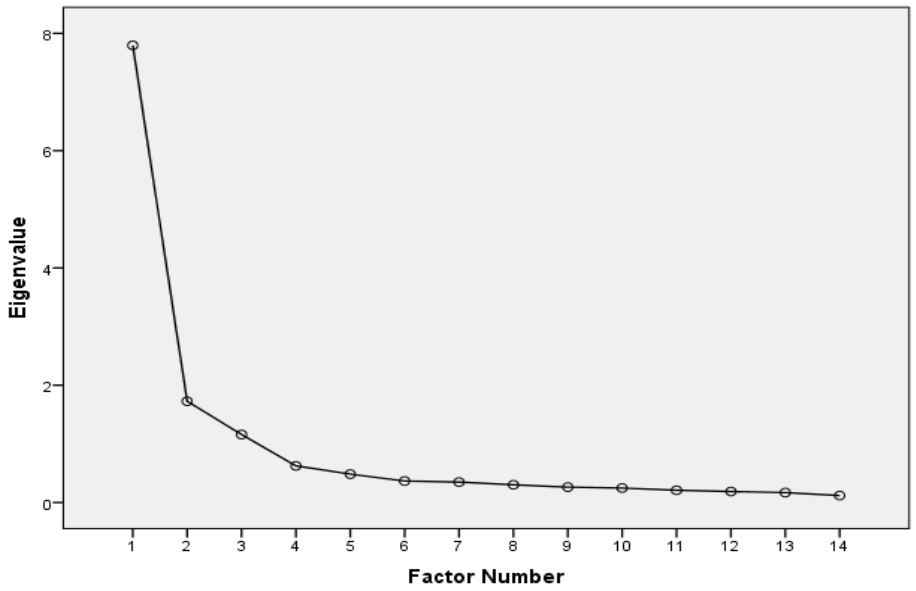

Figure 4.2 Scree Plot

For an item to have a significant loading, the threshold value provided by Tabachnick and Fidell (2007) is 0.32 for sample size larger than 300. From

Table 4.8, item POC10 is loading better in factor 1 (loading value is 0.626) compared to factor 3 at loading value of 0.210. In summary, six items (POC1, POC4, POC7, POC10, POC13 and POC14) have loaded well in factor 1. Meanwhile, Factor 2 has loaded items POC3, POC6, POC9 and POC12 and items POC2, POC5, POC8 and POC11 in factor 3.

Table 4.8: Pattern Matrix for the Items of POC

	Factor		
Item	1	2	3
POC1	.561		
POC2			.735
POC3		.833	
POC4	.762		
POC5			.935
POC6		.929	
POC7	.945		
POC8			.861
POC9		.927	
POC10	.626		.210
POC11			.884
POC12		.726	
POC13	.707		
POC14	.854		

The results above can be explained by viewing Table 4.9. The six items shown in the first factor or Factor 1 can map the dimensions suggested by Cox (2013). The items POC1 and POC4 can represent the dimension of control, while POC7 and POC10 are representing the dimension of engagement. The third dimension in POC, as suggested by Cox (2013), knowledge can be represented by POC13 and POC14.

The second factor or Factor 2 that consists of POC3, POC6, POC9 and POC12 resembles the items that have been used to measure the patriotism construct in Kosterman and Feshbach (1989). In the third construct or Factor 3, the items POC2, POC5, POC8 and POC11 meanwhile show similar

characteristic as items used to measure the nationalism construct. The results were further confirmed by confirmatory factor analysis, which will be discussed in the next sub-chapter.

Table 4.9: Summary of Items and Their Respective Factors: POC, Nationalism, and Patriotism

Factor	Construct	Item	
1	Psychological ownership	POC1	I believe my vote counts in Malaysia
		POC4	My vote has an impact of what happens in the country
		POC7	I stand and participate in the national anthem
		POC10	I vote in all major elections in the country
		POC13	Knowing about what is happening in the country is important for me
		POC14	I read news about what is going on in the country
2	Patriotism	POC3	Malaysia is truly my country
		POC6	I am proud to be a Malaysian
		POC9	I do feel much affection for my country
		POC12	I have great love for my country
3	Nationalism	POC2	To maintain our country's economic superiority, aggressive economic policies are necessary
		POC5	Malaysia should actively influences other countries
		POC8	For the most part, Malaysia is more superior than many other countries in the world
		POC11	I would fight and die for my country

4.5.2 Confirmatory Factor Analysis

To ensure that the items that were grouped into the three constructs; patriotism, nationalism, and POC, can truly measure the respective construct, construct validity tests were carried out. CFA was used to test for unidimensionality as well as convergent validity and discriminant validity. Table 4.10 shows that the standardized loading values for each item are above 0.7. This implies that the items load strongly on their respective construct; patriotism, nationalism, and POC.

Table 4.10: Standardized Regression Weights for the Factors of POC, Nationalism, and Patriotism

Paths			Estimate
POC2	<---	PAT	.828
POC5	<---	PAT	.893
POC8	<---	PAT	.894
POC11	<---	PAT	.880
POC3	<---	NAT	.844
POC6	<---	NAT	.929
POC9	<---	NAT	.915
POC12	<---	NAT	.801
POC4	<---	POC	.716
POC7	<---	POC	.816
POC10	<---	POC	.826
POC13	<---	POC	.865
POC1	<---	POC	.607
POC14	<---	POC	.810

where: PAT is patriotism,
NAT is nationalism, and
POC is the feeling of psychological ownership over a country

Next, the CR and AVE of all the items were measured. In Table 4.11, the CR values for all the three constructs exceed 0.7, while the AVE values are above 0.6, indicate that the constructs achieved the convergent validity.

Table 4.11: Convergent and Discriminant Analysis Results for the Factors of POC, Nationalism, and Patriotism

	CR	AVE	MSV	MaxR(H)	PAT	POC	NAT
PAT	0.928	0.764	0.476	0.931	*0.874*		
POC	0.901	0.606	0.476	0.960	0.690	*0.778*	
NAT	0.928	0.764	0.456	0.976	0.675	0.582	*0.874*

Note: Composite Reliabilty (CR), Average Variance-Extracted (AVE), Maximum Shared Variance (MSV), Patriotism (PAT), Psychological Ownership (POC), Nationalism (NAT)

Besides confirming the convergent validity, discriminant validity test was carried out to ensure the three constructs are not highly correlated with each other or individually independent. In other words, their covariance should have lower values. Table 4.11 showed that the correlation values between any

two different constructs are lower that the square root of the estimated AVE (which is reflected in italic font). This implies that the examined constructs: patriotism, nationalism, and POC are not strongly related or indeed are independent (Fornell & Larker, 1981).

4.6 Descriptive Results of Predictors and Dependant Variable

Descriptive results in this sub-chapter are meant to describe the gen-Y engineer respondents' overall perceptions toward the three predictors (attitude, SN and PBC), their salient beliefs (BB, NB and CB), POC and their intention to migrate abroad.

4.6.1 Attitude

4.6.1.1 Direct measure of attitude

From Table 4.12, the overall mean score for items used to measure the direct effect of attitude is 4.29, out of the seven-point semantic differential scale. This indicates that the engineers have a slight positive attitude towards migration in terms of the outcome they may gain, such as valuable, pleasant, good, enjoyable and beneficial experiences. The descriptive result is consistent with studies carried out by Remhof et al. (2014) in Germany and Weerasinghe and Kumar (2014) in Sri Lanka.

Table 4.12: Descriptive Result for the Items of Attitude

	mean	SD
Attitude	4.29	1.32
For me, migrating abroad for at least a year within the next two years is …		
Worthless – Valuable	4.29	1.42
Unpleasant – Pleasant	4.29	1.49
Bad – Good	4.31	1.47
Unenjoyable – Enjoyable	4.30	1.41
Harmful – Beneficial	4.27	1.43

4.6.1.2 Indirect measure of attitude – Behavioural Belief

The respondents' BB toward migrating abroad is measured by two components. First, the degree of engineers' beliefs of the outcomes (such as better standard of living, safe and secure environment to live, better job opportunities, able to learn new skills, and better education opportunity for my children in the future) that they expect to gain if they were to migrate (b_i) were measured by seven-point Likert scales, ranging from extremely unlikely (1) to extremely likely (7). Second, the degree of engineers' beliefs on the importance of those outcomes in motivating them to migrate abroad (e_i) were measured by seven-point Likert scales, ranging from very unimportant to very important.

Table 4.13 summarises the respondents' feedback in regards to their negative, neutral and positive beliefs on the various perceived outcomes. The respondents believed that the following three outcomes can be gained if they have migrated: better standard of living, safe and secure environment to live, and better education opportunity for children in the future. To illustrate, for example, about 67 percent and 62 percent of the respondents believed other countries could provide safer and better security environments, and better standard of living.

Contrary, the respondents believed that they may not be able to secure better job opportunities or learn new skills if they have migrated abroad. The mean values for both items are negative. Possibly, this shows that the engineers were not mentally confidence that they could secure a better job or able to learn

new skills in other country. The result is consistent with the findings in Qureshi, Varghese and Osella (2013) studies, which explained that many professionals from India who migrated to Britain could not find jobs that mapped their academic qualification or working experience, and ended up in low skill jobs. Similarly, Sirkeci, Acik, and Saunders (2014) stated that many high skilled migrants employed in UK were working in elementary occupation which required much lower skills.

Table 4.13: Descriptive Result for the Components of BB

	Negative belief (percent)	Neutral (percent)	Positive belief (percent)	Mean	Std. Dev.
First component: How likely do you think you will achieve the following outcomes if you migrate abroad for at least a year WITHIN THE NEXT TWO YEARS (bi)?					
Better standard of living (b1)	24.6	13.4	62.0	0.63	1.53
Safe and secure environment to live (b2)	24.3	8.8	66.9	1.09	1.77
Better job opportunities (b3)	41.0	27.1	31.8	-0.13	1.45
Able to learn new skills (b4)	55.1	18.8	26.4	-0.42	1.34
Better education opportunity for my children in the future (b5)	38.1	18.7	43.3	0.11	1.39
Second component: Indicate how IMPORTANT each attributes is in motivating you to migrate abroad for at least a year WITHIN THE NEXT TWO YEARS (ei.)					
Better standard of living (e1)	0.0	3.5	95.9	2.34	0.84
Safe and secure environment (e2)	0.5	5.0	94.5	2.37	0.86
Better job opportunities (e3)	1.0	7.5	91.5	2.17	0.98
Able to learn new skills (e4)	0.8	8.3	90.9	2.03	0.98
Better education opportunity for my children in the future (e5)	0.0	5.0	95.0	2.40	0.81
Average composite score for Behavioural Belief (bi x ei)					
Better standard of living (BB1)	24.7	16.4	58.8	1.68	3.58
Safe and secure environment (BB2)	24.5	13.9	60.6	2.46	4.55
Better job opportunities (BB3)	38.4	33.2	26.7	-0.30	3.33
Able to learn new skills (BB4)	49.9	25.6	24.6	-0.62	2.96
Better education opportunity for my children in the future (BB5)	35.2	22.4	41.0	0.17	3.96
Average mean score of BB				0.68	

Where: Std. Dev. is standard deviation

The result of the second component is shown in table 4.13 as well. Compared to the first component that measure respondents' initial belief, the respondents overall are placing high important on all the five measured outcomes – shown by positive and high mean scores (above +2). In other words, for the engineers to migrate in the next two years, achieving the five measured outcomes are of prime important to them. This is despite in some circumstances, they lacked confidence that they could gain certain outcomes such as better job opportunities and learning new skills abroad.

The composite behavioural belief (BB) score for each of the five beliefs are obtained by first multiplying the scores of the two components, bi and ei, for each cases. Then the values of all the cases are averaged. Better job opportunities (BB3) and learn new skills (BB4) have negative composite values, while the other three composite behavioural beliefs (BB1, BB2, BB5) have positive signs. Overall, the mean score for the average of the five beliefs is +0.615 (which lies between 0 and +1) and this implies that the engineers, on average, display a slightly positive behavioural belief towards migrating abroad.

4.6.2 Subjective Norms

4.6.2.1 Direct measure of SN

Table 4.14 summarizes the results for the direct measure of the engineers' subjective norms which is measured by seven-point Likert scales, ranging from strongly disagree (1) to strongly agree (7).

Table 4.14: Descriptive Result for the Items of SN

	Disagree (percent)	Neutral (percent)	Agree (percent)	Mean	Std. Dev.
Most people who are important to me have migrated abroad for at least a year	41.0	7.8	51.1	4.30	1.57
Most people whose opinion I value have migrated abroad for at least a year	39.8	6.5	53.6	4.34	1.57
Most people who are important to me would support my intention to migrate	42.0	6.0	52.1	4.29	1.59
Most people whose opinion I value would approve of my intention to migrate	34.9	12.2	52.9	4.34	1.45

Where: Std. Dev. is standard deviation

On average, the mean score for the four items is 4.31 out of the seven points scale and this indicates that the engineers do slightly agree that the behaviour of migrating abroad is a norm among their important referents. For example, the engineers do think that many of the people who are important to them have migrated abroad or will support their own behavioural intention.

However, the marginal different between the average score from the neutral score shows that the number of engineers who agree that their subjective norms do support the behaviour of migrating abroad is just slightly more that those who think otherwise. For instance, only 51.1 percent of the respondents believe people who are important to them have migrated abroad. The result is consistent with Remhof et al.'s (2014) study. However, in Weerasinghe and Kumar's (2014) study, the undergraduates' sample have slight positive score while for graduates, the score was 3.97 compared to the neutral score of 4.00.

4.6.2.2 Indirect measure of SN – Normative Belief

The indirect measure of subjective norm is referred as normative belief (NB), which evaluate the engineers' belief regarding what their immediate referents think about the behaviour of migrating abroad. From the preliminary interviews with 20 engineers, this study had identified the following people: parents, spouse/partners/fiancé, friends, working colleagues and superiors as their important referents.

In this study, NB is measured by two components; the degree of pressure given by the important referents on engineers' intention to migrate abroad (n_i) and the degree of motivation that the engineers need to comply with the referents' expectations (m_i). Table 4.15 summarises the percentage of respondents who have revealed negative, neutral and positive beliefs in regards to the various normative beliefs.

For the first component (n_i), the mean score for all the five groups are positive, except for parents (-1.09) where only 19.5 percent of the surveyed engineers think that their parent will support their migration intention. On the other hand, the engineers do think that their spouses, friends, working colleagues and superiors would support their intention to migrate.

For the second component (m_i), majority of the engineers responded that they are likely to comply with the wishes of all the five important others. Among the mean scores for the five referents, parents and spouses have the highest scores.

Table 4.15: Descriptive Result for the Components of NB

	Negative belief (percent)	Neutral (percent)	Positive belief (percent)	Mean	Std. Dev.
First component: How likely is it that each of the following groups or individuals would think that you should migrate abroad for at least a year WITHIN THE NEXT TWO YEARS (ni)?					
Parents (n1)	71.1	9.4	*19.5*	-1.09	1.65
Spouse / fiancé / partner (n2)	40.9	7.3	*51.7*	0.23	1.56
Friends (n3)	39.8	6.5	*53.7*	0.34	1.58
Working colleagues (n4)	42.1	6.0	*52.0*	0.29	1.59
Superiors (n5)	35.0	12.3	*52.7*	0.32	1.44
Second component: How likely are you to COMPLY with the following individuals or groups' wishes of you to migrate abroad for at least a year WITHIN THE NEXT TWO YEARS (bi)?					
Parents (m1)	5.1	5.6	*89.3*	1.39	0.86
Spouse / fiancé / partner (m2)	5.6	6.6	*87.8*	1.38	0.91
Friends (m3)	8.7	11.9	*79.4*	1.16	1.01
Working colleagues (m4)	8.9	17.2	*73.9*	1.04	0.98
Superiors (m5)	4.0	10.3	*85.7*	1.35	0.84
Average composite score for Normative Belief (ni x mi)					
Parents (NB1)	62.7	15.0	18.8	-1.40	2.80
Spouse/Fiance/Partner (NB2)	38.2	13.7	40.5	0.41	2.59
Friends (NB3)	35.4	18.2	46.4	0.58	2.47
Working colleagues (NB4)	31.6	22.6	45.8	0.68	2.32
Superiors (NB5)	33.8	21.5	44.7	0.54	2.26
Average mean score of NB				0.16	

Where: Std. Dev. is standard deviation

The normative belief (NB) of the engineers is measured by the composite score of the two components, n*i* and m*i*. In Table 4.15, for example, majority of the engineers believe that their parents will not support their migration intention and they are likely to comply their parent's wishes. Hence, the composite value for parents is negative, indicates that parents will influence the engineers intention negatively.

Among the referent that would have the high impact on the respondents' behavioural intention is their working colleagues (+0.68). The overall mean score for the five normative beliefs which together measure the

engineers' SN indirectly is 0.16 (which lies between 0 and +1). It indicates that basically, the engineers have formed slightly positive belief that the important people will support their migration behaviour.

4.6.3 Perceived Behavioural Control

4.6.3.1 Direct measures of PBC

This construct measures to what extend individuals perceive that they have control in performing the behaviour of migrating abroad. Same as the previous two constructs, PBC is measured directly as well as indirectly. In measuring the direct construct, a total of four items are included and were measured by seven-point Likert scales, ranging from strongly disagree to strongly agree. Table 4.16 summarises the respondents' agreement and disagreement towards the four items.

Table 4.16: Descriptive Result for the Items of PBC

	Disagree (percent)	Neutral (percent)	Agree (percent)	Mean	Std. Dev.
I have the resources and time to migrate abroad for at least a year in the next 2 years	43.8	16.2	39.9	3.99	1.49
I can easily migrate abroad for at least a year in the next 2 years	45.4	14.7	39.9	3.96	1.43
I am confident that if I wanted to, I could migrate abroad for at least a year in the next 2 years	43.6	19.0	37.3	3.94	1.47
I am in control over my behaviour of migrating abroad for at least a year in the next 2 years	46.3	13.5	40.4	3.98	1.52

Where: Std. Dev. Is standard deviation

The results shown in table 4.16 implies that on average, the engineers are quite neutral when comes to the control that they have over the behaviour of migrating abroad. For example, 40 percent of the engineers agreed that they have the necessary resources and time to migrate abroad compared to the

disagreed percentage, 43.8. This shows that quite a number of the respondents perceive that they do not have complete control over the behavioural intention. Relatively, the PBC of the respondents in the other two migration studies (Remhof et al., 2014; Weerasinghe and Kumar, 2014) were more positive.

4.6.3.2 Indirect measures of PBC – Control Belief

Control belief (CB) is an indirect measurement of PBC, and the engineers' salient beliefs over the control were elicited through interviews. Six factors were identified as the factors that would make it easier or difficult to migrate abroad, monetary cost, current job skills, networks abroad, relevant language skills, ability to adapt to new culture and ability to find jobs.

For the present study, CB is composed of two components – the strength of the factors (c_i) and the engineers' power of control over the factors (p_i). Table 4.17 summarises the percentage of respondents who have revealed negative, neutral and positive beliefs in regards to the various control beliefs.

Table 4.17: Descriptive Result for the Components of CB

	Negative belief (percent)	Neutral (percent)	Positive belief (percent)	Mean	Std. Dev
First component: How likely is that each of the following factors would FACILITATE you to migrate abroad for at least a year WITHIN THE NEXT TWO YEAR (ci)?					
Monetary cost to migrate (c1)	37.6	6.7	55.7	0.38	1.52
Current job skills (c2)	25.9	23.9	50.2	0.39	1.30
Having family members / friends / relatives living abroad (c3)	27.9	20.7	50.9	0.42	1.32
Command of language (c4)	65.5	14.1	20.4	-1.12	1.57
Ability to adopt to new culture (c5)	23.3	6.0	70.9	0.77	1.30
Finding the right job for me (c6)	41.9	4.5	53.5	0.28	1.50
Second component: State the level of AGREEMENT with the following statements in regard to migrating abroad for at least a year WITHIN THE NEXT TWO YEARS (Pi)?					
I have complete control over the monetary expenses needed to migrate for at least a year (p1)	27.6	17.2	55.2	0.54	1.41
I have the relevant job skills required to migrate abroad for at least a year (p2)	38.5	15.9	45.5	0.20	1.80
I have many family members / friends / relatives living abroad (p3)	63.5	25.9	10.7	-0.85	1.15
I have complete control over the language required to migrate abroad (p4)	19.8	8.0	72.2	0.79	1.39
I have the ability to adopt to new culture once I migrate abroad (p5)	34.8	21.1	44	0.14	1.13
I have the ability to find the right job once I migrate abroad (p6)	59.9	21.7	18.4	-0.94	1.47
Average composite score for Control Belief (ci x pi)					
Monetary cost to migrate (CB1)	38.4	21.1	40.6	0.12	2.30
Current job skills (CB2)	8.0	34.8	57.2	1.42	2.11
Having family members / friends / relatives living abroad (CB3)	31.4	42.0	26.4	-0.09	2.00
Command of language (CB4)	51.9	21.4	26.3	-0.93	2.89
Able to adopt to new culture (CB5)	19.0	24.6	56.3	0.95	1.7
Finding the right job (CB6)	35.2	24.6	40.2	-0.30	2.66
Average mean score of CB				0.19	

Where: Std. Dev. is standard deviation

In determining the strength of the factors (c_i), the engineers were asked to state the likeliness that each of the six factors would facilitate them to migrate abroad for at least a year in the next two years. As shown in Table 4.17, the mean score for five factors are positive in which ability to adopt to new culture has the highest positive mean score (+0.77) and this is supported by 70.9 percent of the engineers. However, the engineers in the sample

believed that their ability to communicate in the language required at the host country are less important in their migration behaviour. The mean scores for the factor is -1.12. It is quite surprising to know that about 66 percent of the respondents do not believe that their ability to speak in the required language will facilitate their behaviour of migrating abroad.

For the engineers' power of control over the factors (p_i), the respondents were asked to state their degree of agreement or disagreement in regards to perceived power of ease or difficulty to carry out the migration behaviour based on six factors. The engineers responded that they have slightly more control over four factors – monetary cost, job skills, language required, and ability to adopt to new culture.

In other words, more engineers believe that they are capable to migrate abroad financially, have the necessary skills, able to meet the language requirement and also have the ability to adopt to the different culture. Interestingly, majority of them do not think they have enough control on their ability to find the right jobs. Probably, this is because they believe that they do not have the control on the relevant job skills that are required abroad.

The composite score of the two components (c_i multiplied by p_i) gives the final score for the six factors of control belief. Table 4.17 shows that three factors have positive mean scores: having complete control over the monetary expenses, having relevant job skills and ability to adapt with new culture. It shows that the typical engineers do believe slightly that they have better control

over expenses required in migrating abroad, as well as the ability to adapt to new culture while abroad. They also do think that they have the right skills needed to migrate abroad.

In contrast, many engineers do not belief they have control over the migration networks, commanding the necessary language or capable of finding the right jobs abroad. The average score of the construct of control belief, +0.19 (which lies between 0 and +1) has suggests that the engineers are on average, do slightly belief that they have some control over the behaviour of migrating abroad.

4.6.4 Psychological Ownership Feeling over a Country

The construct (POC) is expected to influence the engineers' behavioural intention to migrate negatively; the stronger their feeling of POC over Malaysia, the lower their intention to migrate. Due to the similarity of this construct with patriotism and nationalism in literature, factor analysis was carried out. Six items that had loaded well into the construct of POC were identified and had been grouped into three dimensions: control, engagement and knowledge (see Table 4.18).

The items of the dimension of control measure the degree to which the engineers feel that they have a certain degree of control over ones country. The mean scores of 4.07 and 4.15 for the respective two items show that the engineers have a slight positive feeling that they may have some degree of control over Malaysia. Items number three and four shown in Table 4.18 would be used to measure the engagement dimension, the degree to which the

engineer involves in the activities that were related to the nation. The mean scores for the items show that the engineers are quite neutral in engaging themselves in national activities or events.

Table 4.18: Descriptive Result for the Dimensions of POC

		Agree (percent)	Neutral (percent)	Disagree (percent)	Mean	Std. Dev.
	A) Control dimension					
1.	I believe my vote counts	40.6	19.5	40.1	4.07	1.49
2.	My vote has an impact of what happens in the country	43.1	10.7	46.1	4.15	1.54
	B) Engagement dimension					
3.	I stand and participate in the national anthem "Negaraku"	45.9	16.0	38.1	3.96	1.48
4.	I vote in all major elections in the country	45.1	6.5	48.6	4.16	1.51
	C) Knowledge dimension					
5.	Knowing about what is happening in the country is important for me	42.2	9.7	48.1	4.19	1.54
6.	I read news about what is going on in the country	44.7	9.8	45.5	4.07	1.54
	Average mean score of POC				4.10	

Where: Std. Dev. is standard deviation

From the same table, the last two items would represent the knowledge dimension that measures the degree of desirability to accumulate information pertaining to home country, Malaysia. The mean scores of slightly above four for the two items imply that the engineers did gather some information about Malaysia.

By averaging mean scores of the six items, the score of 4.10 indicates that the respondent engineers do have a slight positive feeling of psychological ownership over Malaysia. The average score is relatively lower compared to the Finns, who are the majority ethnic in Finland, but higher than the minority Russian ethnic in Finland (Brylka et al., 2015). Similar interpretation can be

made in this study, as majority of current study's respondents are the minorities (Chinese and Indian ethnics in Malaysia), the degree of their POC is not high.

4.6.5 Intention to Migrate Abroad

Three items were used to measure the dependent construct, intention to migrate abroad (Bagozzi, 1992) by using seven-point Likert scale that ranged from strongly disagree to strongly agree. In Table 4.19, all the three items have mean scores around 4.66, which give an average composite score of 4.66. About 60 percent of the engineer respondents do have some degree of behavioural intention to migrate in the next two years.

Table 4.19: Descriptive Result for the Items of Intention to Migrate

	Disagree (percent)	Neutral (percent)	Agree (percent)	Mean	Std. Dev.
I intend to migrate abroad for at least a year within the next two years	32.6	5.5	61.9	4.66	1.83
I want to migrate abroad for at least a year within the next two years	32.8	6.0	61.1	4.67	1.92
I will migrate abroad for at least a year within the next two years	32.8	7.0	60.3	4.65	1.82
Average mean score of ITMA				4.66	

Where: Std. Dev. is standard deviation

The result shows that the intention of engineers to migrate is relatively higher, consistence with the finding by Weerasinghe and Kumar (2014), where undergraduate respondents' in Sri Lanka had strong positive intention to migrate. In contrast, the graduates in Weerasinghe and Kumar's study as well as the undergraduates in Remhof et al.'s (2014) study in Germany had lower intention to work abroad.

The finding of the current study provides concrete evidence on high behavioural intention to migrate abroad among Malaysian gen-Y engineers. If the phenomenon is not checked, it can cause various negative impact to the country. Therefore, to reduce the negative issue of brain drain such as shortage of engineering workforce in the local job market, appropriate strategies need to be carefully planned and implemented by the relevant authorities in Malaysia.

4.7 Contingency Table Analysis between Respondents' Demographical Factors and Intention to Migrate

Table 4.20 summarises the association between respondents' profiles and their intention to migrate abroad. Males have exhibit higher behavioural intention compared to females at the significant level of 0.05. This is consistent to van Dalen and Henkens's study result (2008). Nevertheless, in planning a new or modified intervention program to change the Malaysian engineers' intention, the policy makers should target on both genders because their mean values showed that both genders have high intention to migrate in the next two years.

Results shown in de Groot et al. (2011) and van Dalen and Henkens's (2008) studies had implied that younger workforce has higher intention to migrate. Older workforce has lower intention because of family commitment. However, current study shows that there is no significant association between respondents' age and their behavioural intention, at 5% significance level (see Table 4.20). Therefore, a clear relationship between age and engineers' behavioural intention could not be established. Similarly, the engineers' education level does not significantly influence their intention to migrate

abroad and the result is consistent to van Dalen and Henkens' (2008) study result.

Table 4.20: Cross Tabulation Results that Associate the Respondents' Profiles and Their Intention to Migrate

	Disagree (%)	Neutral (%)	Agree (%)	Mean	Type of test	p-value
Gender						
Male	28.0	6.1	65.9	4.84	t-test	0.010*
Female	42.7	3.6	53.7	4.34		
Age						
21-24	39.0	5.6	55.4	4.28	One-way	0.092
25-28	21.1	4.7	74.2	5.07	ANOVA	
29-32	33.0	5.1	61.9	4.73		
33-36	39.7	5.7	54.6	4.42		
Education						
Diploma	44.7	5.1	50.2	4.21	One-way	0.256
Bachelor	32.6	5.4	62.0	4.72	ANOVA	
Masters	27.7	4.3	68.0	4.74		
Ethnic						
Malay	95.4	0.0	4.6	1.63	One-way	0.000*
Chinese	23.5	5.9	70.6	5.12	ANOVA	
Indian	46.3	4.9	48.8	4.22		
Marital status						
Single	20.9	6.6	72.5	5.12	t-test	0.016**
Married	35.7	4.7	59.6	4.58		
Widowed	50.0	0.0	50.0	4.00		
Divorced	71.5	14.3	14.2	3.14		
Children						
0	24.5	5.5	70.0	5.04	Pearson	0.000*
1	30.8	4.4	64.8	4.89	Correlation	
2	32.5	5.7	61.8	4.70		
3	63.9	5.6	30.5	3.14		
4	42.9	0.0	57.1	3.62		
5	100	0.0	0.0	2.00		
Employment status						
Permanent	33.2	4.8	62.0	4.68	t-test	0.856
Contract	30.9	10.3	58.8	4.62		
Type of employment						
Civil	40.0	5.7	54.3	4.43	One-way	0.007*
Computer	19.2	12.8	68.0	4.85	ANOVA	
Chemical	48.6	2.7	48.7	4.08		
Electrical	23.4	4.7	71.9	5.13		
Electronic	30.3	4.6	65.1	4.93		
Industrial	33.3	2.4	64.3	4.50		
Mechanical	46.9	4.7	48.4	4.11		
Telecom	0.0	0.0	100	6.25		

Note: * significance at 1%, **significance at 5%

Results shown in Table 4.20 further supports that the Chinese and Indian engineers (the minority ethnics) have higher intention to migrate compared to the Malays, who are the majority ethnic. This finding support the study results carried out by Tyson et al. (2011), Choong et al. (2013) and Quah et al. (2014). The feeling of social injustice among the minority could influence the studied respondent's' intentional behaviour. This study's result has provides a useful indication to policy makers in Malaysia that more in-depth understanding on the minority ethnics of Chinese and Indian engineers' behaviours is urgently needed. A new or modified policy to change their behaviour has to be developed to complement the current policies that are more geared towards economy indicators such as creating more job opportunities and improving the engineers' pay.

Regardless of their marital status, the single and married respondents have high intention to migrate. Relatively, married respondents have lower intentional behaviour probably due to higher level of family commitment and this is supported by de Groot et al. (2011). The association between employment status (engineers with permanent and contract status) and their behavioural intention however is not significant at the level of 0.05.

Having more children has proven to reduce the behavioural intention among the engineers in Malaysia. The mean values are decreasing gradually when the number of children increases (see Table 4.20) at the significant level of 0.05 and thereby the result supports Agadjanian, et al.'s (2008) study finding. Hence, Malaysian policy makers should target more engineers with

fewer children when strategizing intervention policies to discourage them from moving abroad.

Among the different type of surveyed engineers, electrical and mechanical engineers are significantly associated to intention to migrate abroad. Nevertheless, since the mean values for all types of engineers exceeded four, policymakers should target all types of engineers in developing suitable intervention policies to stem brain drain in Malaysia.

In summary, among the eight demographical variables, five of them (gender, ethnic, marital status, number of children and type of engineers) are associated to intention to migrate at the significant level of 0.05. The results also can give indications to policy makers that the new or modified intervention program should give special attention to the minority ethnic and engineers with fewer children as this sub-groups are demonstrating higher tendency to migrate.

4.8 Structural Equation Modelling Results

Structural equation modelling (SEM) results are useful to answer the first three research questions of this study. In details, the following sub-chapters discuss the results of measurement model analysis and structural model analysis.

4.8.1 Measurement Model Analysis and Result

Before the confirmation of hypotheses can be done, the analysis of measurement model was carried out to study the relationships between each latern construct: attitude, SN, PBC, POC and intention to migrate and their respective observable items. Figure 4.3 shows the output of the measurement model. The first step in the measurement model analysis is to ensure that the model is identified. As discussed in the previous chapter (in sub-Chapter 3.5.2.1), the model has positive degree of freedom of 204, indicate that the model is over-identified and all the parameters can be estimated appropriately.

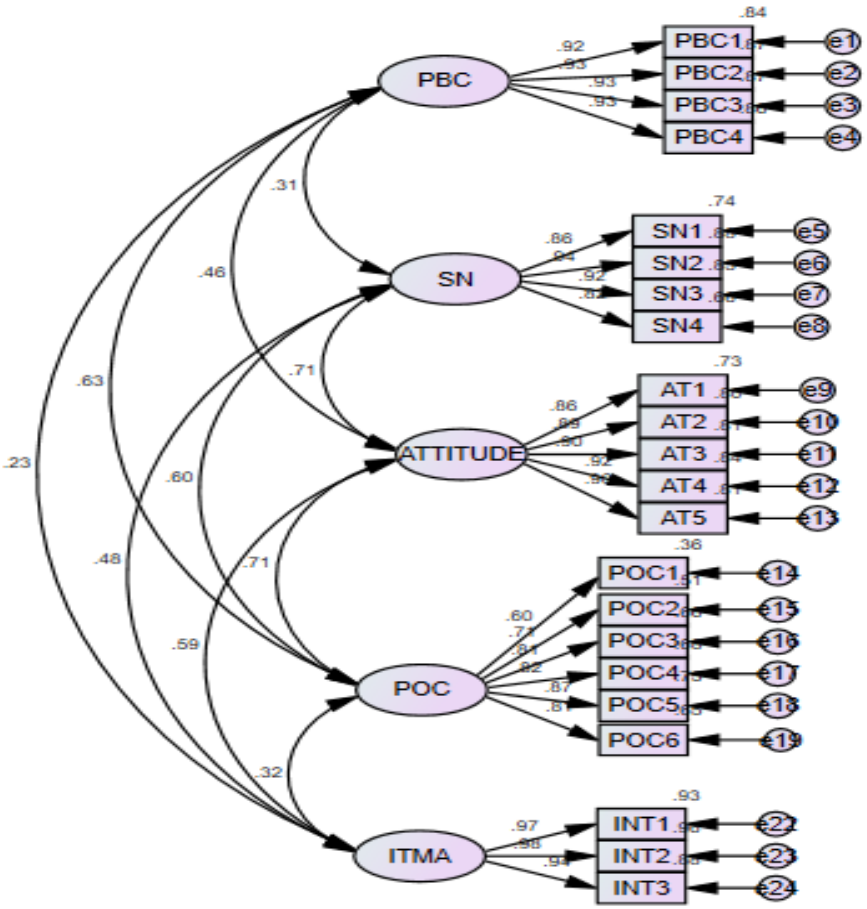

Figure 4.3: Standardized Estimates of the Measurement Model

The measurement model was evaluated to ensure the model fits the data well. The value of the four fit indices are summarised in Table 4.21. The chi-square test result show that the p-value is less than the acceptable level of 0.05. However, chi-square test is sensitive to any minor deviation from normality and also to sample size (Hair et al., 2005). Therefore, the result was confirmed by alternative indices such as RMSEA, CFI and normed chi-square which have shown excellent fits. For example, the RMSEA has a value of 0.05, CFI is 0.979 and the normed chi-square is 2.014 and those values are within the level of acceptance, as suggested in Awang (2015) and Kline (2005).

Table 4.21: Model Fit Indices for Measurement Model

Name of category	Name of index	Level of acceptance	Result
1. Absolute fit	Chi-Square	P-value > 0.05	0.000
	RMSEA	RMSEA < 0.08	0.05
2. Incremental fit	CFI	CFI > 0.90	0.979
3. Parsimonious fit	Normed Chi-square	Chi-Square/ df < 3.0	2.014

Once the fitness of the hypothesised model has been accepted, the unidimensionality test on all the latern constructs was carried out to assess the strength of loadings that each of the observable items has on their respective latern constructs. The standardized loadings for each of the item are summarized in Table 4.22. The results show that all the item's loadings are above the threshold value of 0.7 except for POC1. As the measurement of POC is relatively new and is not clearly established in the literatures yet, the acceptable threshold value is lowered to 0.5 (Awang, 2013). As the loading for POC1 is higher than 0.5, this item then was retained in the model.

Table 4.22: Standardized Loadings for the Constructs of Attitude, SN, PBC, POC, and Intention to Migrate

Latern construct	Items	Loading
Attitude	AT1	.857
	AT2	.894
	AT3	.897
	AT4	.915
	AT5	.898
Subjective Norms (SN)	SN1	.857
	SN2	.937
	SN3	.922
	SN4	.815
Perceived Behavioural Control (PBC)	PBC1	.917
	PBC2	.935
	PBC3	.932
	PBC4	.930
Psychological Ownership (POC)	POC1	.598
	POC2	.713
	POC3	.813
	POC4	.822
	POC5	.865
	POC6	.807
Intention to migrate	INT1	.967
	INT2	.982
	INT3	.940

In summary, attitude is constructed by five items (AT1 – AT5), four items for SN (SN1 – SN4) and PBC (PBC1 – PBC4) each, six items for POC (POC1 – POC6) and three items for intention to migrate (INT1 – INT3).

4.8.1.1 Constructs' Reliability and Validity Results

The reliability and validity of the five developed constructs were assessed by using CFA. To test the reliability of the items in measuring the respective construct, composite reliability (CR) test was carried out. From Table 4.23, all studied constructs have achieved internal consistency with high reliability as the CR value for each construct was ranged from 0.895 and 0.974, far exceeded the threshold value of 0.7 (Sekaran, 2000).

Table 4.23: Convergent and Discriminant Analysis Results for the Constructs of Attitude, SN, PBC, POC, and Intention to Migrate

	CR	AVE	MSV	MaxR(H)	PBC	ATT	POC	ITMA	SN
PBC	0.962	0.862	0.393	0.962	0.929*				
ATT	0.951	0.794	0.533	0.978	0.458	0.891*			
POC	0.895	0.623	0.533	0.982	0.627	0.730	0.789*		
ITMA	0.974	0.927	0.353	0.990	0.226	0.594	0.344	0.963*	
SN	0.939	0.794	0.504	0.992	0.304	0.710	0.609	0.479	0.891

Note: Composite Reliability (CR), Average Variance-Extracted (AVE), Maximum Shared Variance (MSV), and * reflects the value of each construct's square root of AVE

The validity test comprised of two steps. First, the convergent validity is achieved as the AVE value for every construct is higher than the threshold value of 0.6. In other words, all items that had been used to measure certain construct are highly correlated or able to explain the measured construct cohesively. Next, the discriminant validity was achieved as the value of each square root of AVE for each construct is higher than the correlation scores of that construct and other constructs. For example, the value of the square root of AVE for PBC construct is 0.929, and the correlation values between PBC with the other four constructs are 0.458, 0.627, 0.226 and 0.304. To conclude, all the studied constructs are different from each other and independent. In the next sub-chapter, the causal relationships between the four independent constructs and the dependent construct are explained.

4.8.1.2 Validating the internal structure of the formatively constructed models

In assessing the internal validity of the three formative constructs of attitude, SN and PBC, the methods proposed by Cenfetelli and Bassellier (2009) and Diamantopoulos and Winklhofer (2001) were applied in this study.

a) Internal validity of formatively constructed attitude model

In validating the internal structure of the formative component of attitude, all the five BB items were regressed against the attitude construct. Table 4.24 shows the results of the regression analysis, including the VIF value to check for the existence of multicollinearity. The results indicate that all the five factors (BB1 to BB5) have significant influence on attitude at 5% level, or attitude does exhibit satisfactory initial internal validity. Moreover, the VIF values for BB1 to BB5 are below threshold value of 3.3 or this indicates that the five indicators do not exhibit any multicollinearity between each other.

Table 4.24: Regression Analysis for a Formative Construct of Attitude

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		Beta	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3.841	.062		61.586	.000		
	BB1	.087	.016	.237	5.429	.000*	.620	1.612
	BB2	.143	.013	.491	11.183	.000*	.610	1.638
	BB3	.057	.017	.144	3.293	.001*	.616	1.622
	BB4	.065	.017	.146	3.719	.000*	.765	1.308
	BB5	.036	.015	.108	2.403	.017**	.578	1.729

Note: * significant at 1 percent, ** significant at 5 percent

Next, Pearson correlation test is performed and the results are shown in Table 4.25. The results indicate that all the coefficients scores are below the threshold value of 0.6. Based on the three tests' results (regression analysis, VIF, and Pearson correlation test), the formative attitude model therefore can be conclude as exhibiting satisfactory internal validity.

Table 4.25: Pearson Correlation Analysis for Formative Indicators of Attitude Construct

	BB1	BB2	BB3	BB4	BB5
BB1	1				
BB2	.454	1			
BB3	.359	.520	1		
BB4	.307	.315	.455	1	
BB5	-.576	-.499	-.422	-.308	1

b. Internal validity of formatively constructed SN model

The internal validity of the formatively measured SN was assessed by using the same three steps discussed above. Table 4.26 shows the results of multiple regression analysis with four indicators (NB2, NB3, NB4, and NB5) are significant at 0.05 level. Multicollinearity is not an issue because all the VIF values are below the threshold value of 3.3.

Table 4.26: Regression Analysis for a Formative Construct of SN

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		Beta	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	3.948	.041		96.83	.000		
	NB1	.002	.012	.005	.193	.847	.983	1.017
	NB2	.057	.015	.105	3.781	.000*	.790	1.265
	NB3	.224	.020	.392	11.276	.000*	.505	1.982
	NB4	.089	.021	.145	4.149	.000*	.495	2.021
	NB5	.266	.019	.429	14.019	.000*	.648	1.543

Note: * significant at 1percent

The results from the Pearson Correlation analysis in Table 4.27 also indicate that none of the coefficients values that are reflecting the correlation between different variables are more than the threshold value of 0.6. Therefore, the formatively constructed indirect measure of SN can meets the internal validity requirements.

Table 4.27: Pearson Correlation Analysis for Formative Indicators of SN

	NB1	NB2	NB3	NB4	NB5
NB1	1				
NB2	.120	1			
NB3	.086	.410	1		
NB4	.069	.346	.566	1	
NB5	.081	.364	.498	.545	1

c) Internal validity of formatively constructed PBC model

The multiple regression analysis results shown in Table 4.28 indicate that only two belief factors, CB1 and CB6 are significant at 0.05. However, the other two tests' results indicate better internal reliability. Multicollinearity is not issue because the VIF values for every belief factors (CB1 to CB6) are below the threshold value of 3.3.

Table 4.28: Regression Analysis for a Formative Construct of PBC

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		Beta	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	3.843	.090		42.5	.000		
	CB1	.142	.030	.234	4.75	.000*	.973	1.028
	CB2	.010	.032	.015	.307	.759	.983	1.017
	CB3	.016	.034	.023	.462	.644	.978	1.022
	CB4	-.014	.023	-.029	-.58	.557	.981	1.019
	CB5	.074	.038	.095	1.93	.043**	.976	1.024
	CB6	-.014	.026	-.026	-.53	.594	.974	1.026

Note: * significant at 1percent, ** significant at 5percent

Finally, the result in Table 4.29 shows that all the Pearson Correlation coefficients have values less than the threshold value of 0.6. Therefore, the indirectly measured PBC construct has met the internal validity requirements of a formative construct.

Table 4.29: Pearson Correlation Analysis for Formative Indicators of PBC Construct

	CB1	CB2	CB3	CB4	CB5	CB6
CB1	1					
CB2	-.076	1				
CB3	-.040	.060	1			
CB4	-.101	-.047	.042	1		
CB5	.086	.065	.042	-.054	1	
CB6	-.042	.002	-.119	-.042	-.093	1

In summary, using the measurement model and CFA, the internal validity of all the three direct measurements of attitude, SN and PBC, as well as POC on intention to migrate are confirmed. All the reflective indicators that underlie their respective constructs have sufficient loading power, and the hypothesised measurement model has good fit. The formatively constructed attitude, SN and PBC also have good validity, thus all the formative indicators in the hypothesised model can be retained.

4.8.2 Structural Model Analysis and Results

In analysing the structural model, Bollen-Stine bootstrapping approach was applied due to the existence of multivariate non-normality issue. Similar to the analysis of the measurement model, the identification and the evaluation of the structural model were performed first. The structural model includes the three MIMIC models, POC and intention to migrate constructs. The model is over-identified with the total number of variances and co-variances available is 741. It exceeded the number of parameters need to be estimated, which are 80. The difference between the two gives a positive degree of freedom, which is 661 (741 - 80).

Next, the hypothesised structural model was tested to ensure the sample data fits the model well. Similar tests to the one used in measurement model are applied in this sub-chapter. The results in Table 4.30 revealed that the model does not fit the data well because all the four indices do not achieve the acceptance level. For example, the RMSEA value is above the acceptable level of 0.08, while the normed Chi-square value is above the acceptable level of 3.0. In addition, the model fit was also tested using the bootstrapping approach, which gives a p-value of the Bollen-Stine bootstrapping as 0.018. This further confirmed that the hypothesised structural model is not tenable, and may require further modification.

Table 4.30: Results of Tests for the Goodness of Fit

Name of category	Name of index	Level of acceptance	Result
1. Absolute fit	Chi-Square	P-value > 0.05	0.000
	RMSEA	RMSEA < 0.08	0.101
2. Incremental fit	CFI	CFI > 0.90	0.777
3. Parsimonious fit	Normed Chi-square	Chi-Square/ df < 3.0	5.070

Therefore, the model needs some re-specification and the suggested modification by the AMOS program was reviewed further. In the re-specification process, adding of new paths and/or co-variances in the model can be done only if the suggested path and/or co-variance is supported by a theoretical framework. Furthermore, only the paths or co-variances that have modification indices more than 10 can be considered (Hair et al., 2014).

Based on the many suggestions provided by the AMOS program, additional co-variances and paths were added into the model. Borges, Taeur and Lansink (2016) and de Leeuw, Valois, Ajzen and Schmidt (2015)

suggested that the belief items between behavioural, normative and control beliefs can be correlated to one another. In addition, some of the error terms of reflective items within the same construct are allowed to correlate. For example, error terms for AT1 (e1) and AT4 (e4) can be correlated because there is a possibility that some unexplained factors could influence both the error terms of the reflective items of attitude.

One important contribution that arises from the suggested modification is that paths from PBC and SN to attitude are added. The modification index for the first path, from PBC to attitude is 35.0, means that freeing the parameter will reduce the chi-square value by 28.7 point. Similarly, freeing the parameter of the path from SN to attitude will reduce the chi-square value by 115.7, which will further improve the model fit.

There is enough evidence in the literature of TPB to support the effect of PBC and SN on the attitude towards behavioural intention. For instance, Fife-Schaw, Sheeran, and Norman (2007) investigated the applicability of TPB in explaining the intention and behaviour involve 30 different cases. Their results had supported the effect created by PBC and SN on respondents' attitude. The study explained that when the students were confidence that they have sufficient control over a particular behaviour (PBC), their positive attitudes became stronger. Meanwhile, Koo and Kwong (2006) found that when important others (SN) support students learning using podcast, their attitudes in using the podcast in learning improved.

Once the parameters of the suggested new paths and co-variances were freed, a new structural model as shown in Figure 4.4 was developed and estimated.

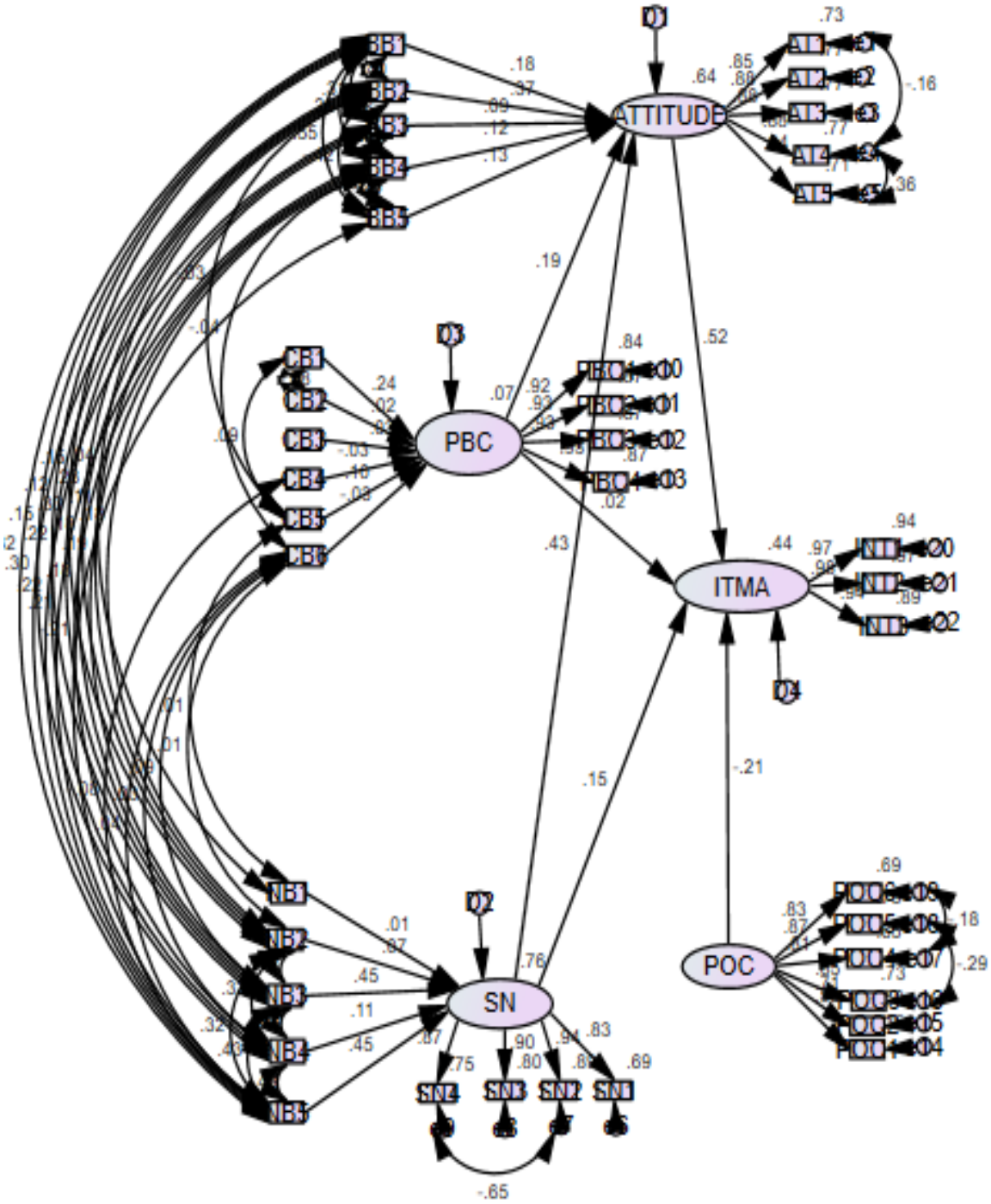

Figure 4.4: A Modified Structural Model

The analysis on the model fits indicates that the new model fits the data better. The various goodness of fit indices have values within the widely acceptable threshold values: RMSEA is 0.070 (less than 0.08), CFI is 0.901 (more than 0.9) and the normed chi-square is 2.951 (less than 3.000). In addition the p-value of the Bollen-Stine bootstrapping is 0.101, which is higher than the conventional test level of 0.05. The null hypothesis that the model fits the data appropriately cannot be rejected.

4.8.2.1 Total variance in intention explained

From Figure 4.4, 44 percent (R^2 value) of the variance in the engineers' behavioural intention can be explained by the variance of attitude, SN, PBC and POC. The value is quite similar to other migration studies carried out by Engle et al. (2015); and Remhof et al. (2014). According to Armitage and Conner (2001), Godin and Kok (1996) and Sutton (1998), as individuals' behaviour are quite unpredictable and the conceptual framework is not meant to solve minor problems, moderate predictive power of the examined behavioural constructs therefore is acceptable.

4.8.2.2 Significance of direct predictors on intention to migrate

To answer the current study's second and third research questions, analyses were further carried out to evaluate the effect of attitude, SN, PBC and POC on behavioural intention. First, the results of the Bollen-Stine bootstrapping standard errors of the regression weights were analysed. The purpose is to determine if the estimated regression weights are close to the regression weights estimated by the MLE method.

The results indicate that the differences in the standard errors of the two methods, represented by Bias in Appendix E, are very small. Moreover, the standard errors of the Bias (SE-Bias) are all smaller than or equals to the standard error (SE) for the Bollen-Stine bootstrapping estimators (Levers-landis, Burant, & Hazen, 2011). Hence, it can be concluded that the regression weights estimated using the bootstrapping method in the current study are not biased, and act as a good substitute to the MLE method. Table 4.31 summarises the bootstrapping results of the hypotheses that test the effects of the four direct predictors on the gen-Y engineers' intention to migrate abroad. Full results are provided in Appendix F.

Table 4.31: The Confirmation of Hypothesised Effects Generated by Direct Predictors on Engineers' Intention to Migrate

Hypotheses details	p-value	Beta	SE (CR)	Significance (Direction)
H1: Engineers' attitude on the perceived outcomes that may be generated by migration will affect the Malaysian engineers' intention to migrate positively;	0.000*	0.868	0.092 (9.431)	Significant (positive)
H2: The effect generated by the construct of SN will change the Malaysian engineers' intention to migrate positively;	0.004*	0.204	0.072 (2.845)	Significant (positive)
H3: Perceived behavioural control (PBC) would affect Malaysian engineers' intention to migrate positively; and	0.593	0.032	0.060 (0.535)	Non-significant
H4: The degree of POC amongst Malaysian engineers will affect Malaysian engineers' intention to migrate negatively.	0.000*	-0.310	0.060 (-5.199)	Significant (negative)

Note: Standard error (SE), Critical ratio (CR), *significant at 1%

In addition, the results generated from SEM analysis also reflect that the direct predictors could affect each other's variance (See Table 4.32). The following sub-topics describe in depth of the relationship created by each direct

predictor on engineers' behavioural intention and how one direct predictor is affected by other direct predictors.

Table 4.32: Effect of SN and PBC on Intention to Migrate, as Mediated by Attitude

Path	Direct effect	Indirect effect	Total effect
SN → INT	0.204*	0.309**	0.513**
PBC → INT	0.032	0.147**	0.179**

Note: *significant at 1%, **significant at 5%

a) Relationship between attitude and intention to migrate (H1)

Table 4.31 shows that a positive significant effect of the engineers' attitude on behavioural intention was established. In other words, the engineers' behavioural intention is strongly influenced by their favourable and unfavourable attitude towards the outcomes that they may gain if they have migrated. The confirmed hypothesis is consistent to the relevant past studies carried out by Engle et al. (2015), Remhof et al. (2014) and Weerasinghe and Kumar (2014) that examined current and future high skilled workforce. For low skilled workforce, Suwandi's (2015) study affirmed that the relationship between attitude and the respondents' intention to work abroad was non-significantly. Probably, high-skilled workers are more demanding on certain benefits such as better living standard if they were to work abroad than their home country, compared to low skilled workers.

b) Relationship between SN and intention to migrate (H2)

The direct effect generated by SN on intention to migrate is statistically significant (see Table 4.31) and thereby the confirmed H2 can support the study results of Engle et al. (2015), Remhof et al. (2014), Suwandi (2014) and

Weerasinghe and Kumar (2014). Migration abroad can be considered as a long term investment and could be risky as well. Therefore, reaction or opinion given by influential people and/or people who are important to the engineers could change the respondents' intentional behaviour to migrate.

SN also found to influence the engineers' intention to migrate indirectly, through its effect on attitude. The structural model results show that SN and attitude is related, which is a new finding in migration literature. (see table 4.32 for the path of SN and INT). Being lived in a collectivism culture society (Sumaco, Imrie & Hussain, 2014), the Malaysian gen-Y engineers do respect and care about other people's reaction especially those who are important in their personal and working lives. In other words, the reaction given by those influential people can inspire the engineers to increase or reduce the respondents' own positive or negative attitude towards the perceived outcome that they may gain from migration.

To conclude, SN is expected to generate direct effect on engineers' intention to migrate directly as well as indirectly through its effect on attitude. The total effect that is created by SN is 0.513, which is the sum of its direct effect (0.204) and indirect effect through attitude (0.309).

c) Relationships between PBC and intention to migrate (H3)

The result for H3 shows that PBC does not have significant direct effect on behavioural intention (see table 4.31) which is consistent to Suwandi (2014) and Weerasinghe and Kumar's (2014) studies. However, Engle et al. (2015)

and Remhof et al. (2014) asserted that PBC can create direct effect in explaining undergraduates' intention to work abroad. Possibly, this is because the nations of developed countries have better control over their resources such as perceived financial assistant or support and capabilities such as ability to adapt the host country's living or working culture. In contrast, the professionals from developing countries (as the case of the current study; Suwandi, 2014; Weerasinghe & Kumar, 2014) may feel that they have less control on the skills and resources to migrate, mostly to the developed countries.

Interestingly, unlike previous studies in migration, this study has found a new relationship between PBC, attitude, and behavioural intention. The engineers' PBC can influence their behavioural intention indirectly, through its effect on attitude (see Table 4.32 under the path of PBC to INT). In other words, respondents' perceived control on their resources and capabilities can affect the way they construct their own attitude which will in turn affect their intentional behaviour. For example, if the respondents perceived that they are lacking of certain skills that the prospective company located abroad is looking for, unfavourable attitude towards migration will be formed and their intention to migrate would eventually decrease. This finding indeed has enriched the migration literature as the studied of the indirect effect that can be generated by PBC on intention is limited.

d) Relationship between POC and behavioural intention (H4)

Table 4.31 shows that POC is expected to generate negative impact on the gen-Y engineers' behavioural intention at the precision level of 5 percent. This indicates that the engineers who have lower feeling of ownership over

their home country, Malaysia, may have higher intention to migrate. The present finding can map the results produced in studies by Leong and Soon (2011), Mattes and Mniki (2007) and Nguyen et al. (2008). The past studies used national pride, patriotism and responsibility to the country respectively as proxy to national identity. Both, past and the present studies' results indicate that when local citizens are proud and have strong feeling over their home countries, the chances that they may continue to serve their home nation is higher.

e) Summary

In summary, attitude, SN and POC has significant direct effect on the gen-Y engineers' behavioural intention. Although PBC is not generating significant direct effect on behavioural intention, the construct itself can generate significant indirect effect on behavioural intention by causing the respondents' attitude reaction.

4.8.2.3 Significance of the belief factors on attitude, SN and PBC

Current study's fourth research question was raised because it is important for the policy makers to understand the salient beliefs of each direct predictors which can significantly affect the respondents' behavioural intention at 5 percent precision level. By understanding the salient beliefs or the root causes that influence the formation of certain attitude, perceived pressured by the important others and perceived control over the behaviour of migration, the intervention programme could be more effective in reducing the brain drain which is still an issue in Malaysia. The following sub-chapter would present

the results of the influence that can be generated by salient beliefs (BB, NB and CB) on the respondents' attitude, SN and PBC respectively.

a) The effect of behavioural belief (BB) on attitude (H1a to H1e)

A total of five BB factors were elicited in this study. Hypotheses testing revealed that all the five beliefs do significantly influence the Malaysian gen-Y engineers' attitude towards migrating abroad. The result in Table 4.33 has confirm H1a. The engineers' belief that they can experience better standard of living when they migrated abroad do positively influence their attitude towards migration, or both variables are positively related. As affirmed in the literatures (Chandar & Jauhar, 2015; Choong, et al., 2013; Foo, 2011; Jauhar, et al. 2009; Wahab, 2014; World Bank, 2011), perceived lower standard of living in Malaysia had been cited as one of the important reason for brain drain. Therefore, this study result support past studies' findings.

Among the five belief factors, the belief of opportunity to experience safe and secure environment when living abroad has the strongest effect. It is not surprising to note this as past studies, such as Chandar et al. (2015), Choong et al. (2013) and Quah et al. (2014), revealed that Malaysians' intention to migrate were significantly influenced by the perception that the country's safety and security level is still low relative to other developed countries. Overall, such a strong and positive feeling on host country's safety and security is expected to increase the local engineers' positive or favourable attitude towards migrating and the result has confirmed H1b.

Table 4.33: The Confirmation of Hypothesised Effects Generated by Behavioural Belief on Attitude

Hypotheses details	p-value	Beta	S.E. (CR)	Significance (direction)
H_{1a}: The degree of belief for better standard of living will affect Malaysian gen-Y engineers' attitudes towards migration positively;	0.000*	0.061	0.014 (4.366)	Significant (positive)
H_{1b}: The degree of belief for the possibility to experience safe and secure environment when living abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively;	0.000*	0.102	0.012 (8.879)	Significant (positive)
H_{1c}: The degree of belief for having better job opportunity abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively;	0.029**	0.032	0.014 (2.185)	Significant (positive)
H_{1d}: The degree of belief for having better opportunity to learn new skills abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively; and	0.001*	0.048	0.015 (3.186)	Significant (positive)
H_{1e}: The degree of belief for getting better education opportunity for their children abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively.	0.002*	0.038	0.012 (3.061)	Significant (positive)

Note: Standard error (SE), Critical ratio (CR), *significant at 1%

Table 4.33 also shows engineers believe on the chance to secure better jobs in foreign market can affect the respondents' attitude positively and the result support H1c. Nevertheless, the Malaysian engineers did not believe that they could secure better jobs if they were to migrate abroad as the descriptive analysis result revealed that the composite belief has negative mean score of 0.30. Since more engineers have weaker belief that they are likely to get better jobs abroad, this could lower their positive attitudes toward migrating abroad. According to the structural model's result, this can initiate the respondents to form unfavourable attitude towards migration. In a report about brain drain in Malaysia, Boo (2017) asserted that some Malaysian professionals have returned to work in the country after some years abroad. The migrants claimed

that they could not get the job they desired due to stiff competition from other foreign migrants.

Next, the engineers' belief of their ability to learn new skills when working abroad has positive effect on their intention to migrate abroad and this support H1d. The descriptive result has shown that majority of the respondents did not think that they are able to learn new skills if they migrate abroad. Probably they fear that the workers in host country is not willing to transfer their work knowledge to the engineers. As such, the engineers' negative belief on the ability to learn new skills abroad could lead to negative attitude towards migration.

The final hypothesis of BB factor (H1e): better education opportunity for their children if they work abroad is supported by the structural model's result. In a qualitative survey done by Tyson et al. (2011), the Malaysian participants voiced their concern on local university's ability to nurture future labour that can perform competitively as those who are graduated abroad. Such negative perception had driven the participants to send their children abroad for higher education.

In summary, in order to change the attitude of the engineers' toward migrating abroad from positive to negative, all the behavioural factors of BB should be studied in-depth.

b) The effect of normative belief (NB) on SN (H2a to H2e)

Table 4.34 shows that four of the NB factors (spouses, friends, colleagues and superiors) can generate positive effect on the engineers' intention to migrate at the precision level of five percent, except the pressure given by parent. Overall, the result of this study is consistent with migration theories in the field of sociology - New Economics of Labour Migration Theory by Stark (1991) and Migration Networks Theory by Massey, et al. (1998).

Table 4.34: The Confirmation of Hypothesised Effects Generated by Normative Belief on SN

Hypotheses details	p-value	Beta	S.E. (CR)	Significance (direction)
H_{2a}: The degree of belief on the pressure that will be given by the respondent's parents will affect Malaysian gen-Y engineers' reaction on SN positively;	0.828	0.003	0.013 (0.218)	NO
$_{2b}$: The degree of belief on the pressure that will be given by the respondent's spouse will affect Malaysian gen-Y engineers' reaction on SN positively;	0.018**	0.037	0.016 (2.364)	YES (positive)
H_{2c}: The degree of belief on the pressure that will be given by the respondent's friends will affect Malaysian gen-Y engineers' reaction on SN positively;	0.000*	0.269	0.021 (12.726)	YES (positive)
H_{2d}: The degree of belief on the pressure that will be given by the respondent's colleagues will affect Malaysian gen-Y engineers' reaction on SN positively; and	0.001*	0.070	0.022 (3.246)	YES (positive)
H_{2e}: The degree of belief on the pressure that will be given by the respondent's work superiors will affect Malaysian gen-Y engineers' reaction on SN positively.	0.000*	0.297	0.020 (14.551)	YES (positive)

Note: Standard error (SE), Critical ratio (CR), *significant at 1%, **significant at 5%

The results shown in table 4.34 has further confirmed that the respondents are willing to comply the four groups' wishes positively or this support H2b to H2e. On the other hand, the engineers are less believes that

their parent will have much influence on their decision to migrate abroad. According to Reczek, Liu and Umberson (2010), parents influence on children decline as the children reach adulthood. Probably, the gen-Y respondents may think that their parents have less information about the living and working life in other countries.

c) The effect of control belief (CB) on PBC (H3a to H3f)

Although PBC does not generate significant direct effect on engineers' intention to migrate, their relationship is fully mediated by the respondents' attitude. Hence, the knowledge on which CB factors that influence PBC is necessary in developing effective intervention program to change the engineers' positive PBC. The structural analysis results for CB are summarised in Table 4.35.

Table 4.35: The Confirmation of Hypothesised Effects Generated by Control Belief on PBC

Hypotheses details	p-value	Beta	S.E. (CR)	Significance (direction)
H_{3a}: The degree of belief for having better control over the financial support needed to fun the migration will affect Malaysian gen-Y engineers' reaction on PBC positively;	0.000*	0.138	0.029 (4.788)	YES (positive)
H_{3b}: The degree of belief for having better control over the job skills that may be required in overseas labour market will affect Malaysian gen-Y engineers' reaction on PBC positively;	0.760	0.009	0.031 (0.305)	NO
H_{3c}: The degree of belief for having better control on having family members or friends when living abroad will affect Malaysian gen-Y engineers' reaction on PBC positively;	0.607	0.017	0.033 (0.515)	NO
H_{3d}: The degree of belief for having better control on the ability to converse in foreign language will affect Malaysian gen-Y engineers' reaction on PBC positively;	0.526	-0.014	0.022 (-0.633)	NO
H_{3e}: The degree of belief for having better control on the ability to adapt oneself to new culture will affect Malaysian gen-Y engineers' reaction on PBC positively; and	0.050**	0.072	0.037 (1.962)	YES (positive)
H_{3f}: The degree of belief for having better control on the ability to find the right job will affect Malaysian gen-Y engineers' reaction on PBC positively.	0.578	-0.014	0.025 (-0.556)	NO

Note: Standard error (SE), Critical ratio (CR), *significant at 1percent, **significant at 5percent

As shown in Table 4.35, among the CB factors, only two have positive effect on PBC at the significance level of 0.05; control over the financial support and the control on their ability to adapt oneself to new culture. In brief, only H3a and H3e are supported. In the descriptive result, the engineers do agree that they have control over the financial support that is needed to fun their migration. The structural model's result shown in Table 4.35 further confirms that the control factor can facilitate the engineers to migrate abroad. The structural model's result also confirms when the engineers believe that

they are able to adapt to the host country's culture, they would be more eager to migrate and vice versa.

4.9 Chapter Summary

Table 4.36 shows the summary of current hypotheses that are supported and not supported. Basically, attitude, SN and POC predictors could generate direct effect on engineers' intention to migrate at the precision level of five percent. The direct effect generated by PBC is non-significant at precision level of 0.05 but its influence on intention is fully mediated by attitude. Meanwhile, the following salient belief's factors: better standard of living abroad, safe and secure environment, better job opportunity abroad, better opportunity to learn new skills, and better future for children's education could intensify the change of variance in the respondents' attitude toward migration. Meanwhile, the influence of spouses, friends, working colleagues and superiors are expected to influence the engineers' SN. In regards to CB, control over the migration cost and ability to adapt to cultural abroad could explain the engineers' perceived positive control over the behaviour of migration.

Interestingly, the structural model results have shown two findings which are less discussed in literature, attitude can mediating the effect generated by SN and PBC on the engineers' intention to migrate. The result thereby could further enrich the migration literature.

Table 4.36: Summary of the Confirmation of Hypothesised Direct and Indirect Effects on Engineers' Intention to Migrate

Hypotheses details	Remark
H1: Engineers' attitude on the perceived outcomes that may be generated by migration will affect the Malaysian engineers' intention to migrate positively;	Supported
H2: The effect generated by the construct of SN will change the Malaysian engineers' intention to migrate positively;	Supported
H3: Perceived behavioural control (PBC) would affect Malaysian engineers' intention to migrate positively; and	Not supported
H4: The degree of POC amongst Malaysian engineers will affect Malaysian engineers' intention to migrate negatively.	Supported
H_{1a}: The degree of belief for better standard of living will affect Malaysian gen-Y engineers' attitudes towards migration positively	Supported
H_{1b}: The degree of belief for the possibility to experience safe and secure environment when living abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively	Supported
H_{1c}: The degree of belief for having better job opportunity abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively	Supported
H_{1d}: The degree of belief for having better opportunity to learn new skills abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively	Supported
H_{1e}: The degree of belief for getting better education opportunity for their children abroad will affect Malaysian gen-Y engineers' attitudes towards migration positively.	Supported
H_{2a}: The degree of belief on the pressure that will be given by the respondent's parents will affect Malaysian gen-Y engineers' reaction on SN positively	Not supported
H_{2b}: The degree of belief on the pressure that will be given by the respondent's spouse will affect Malaysian gen-Y engineers' reaction on SN positively	Supported
H_{2c}: The degree of belief on the pressure that will be given by the respondent's friends will affect Malaysian gen-Y engineers' reaction on SN positively	Supported
H_{2d}: The degree of belief on the pressure that will be given by the respondent's colleagues will affect Malaysian gen-Y engineers' reaction on SN positively	Supported
H_{2e}: The degree of belief on the pressure that will be given by the respondent's work superiors will affect Malaysian gen-Y engineers' reaction on SN positively.	Supported

Continue next page …

Table 4.36 Continued

Hypotheses details	Remark
H_{3a}: The degree of belief for having better control over the financial support needed to fun the migration will affect Malaysian gen-Y engineers' reaction on PBC positively	Supported
H_{3b}: The degree of belief for having better control over the job skills that may be required in overseas labour market will affect Malaysian gen-Y engineers' reaction on PBC positively	Not Supported
H_{3c}: The degree of belief for having better control on having family members or friends when living abroad will affect Malaysian gen-Y engineers' reaction on PBC positively	Not Supported
H_{3d}: The degree of belief for having better control on the ability to converse in foreign language will affect Malaysian gen-Y engineers' reaction on PBC positively	Not Supported
H_{3e}: The degree of belief for having better control on the ability to adapt oneself to new culture will affect Malaysian gen-Y engineers' reaction on PBC positively	Supported
H_{3f}: The degree of belief for having better control on the ability to find the right job will affect Malaysian gen-Y engineers' reaction on PBC positively.	Not Supported
New relationships found in this study	
Attitude could mediate the relationship between SN and intention to migrate	
Attitude could mediate the relationship between PBC and intention to migrate	

CHAPTER FIVE

CONCLUSION, IMPLICATIONS & RECOMMENDATIONS

5.1 Introduction

Based on the main survey data's results, this chapter begins by discussing the accomplishment for current study's research objectives. Then, the implications to academics and policy makers are deliberated. The results of the relationship between the key salient beliefs (behavioural belief, normative belief and control belief), direct predictors (attitude, SN, PBC, and POC), and engineers' behavioural intention to migrate were used to suggest useful indications to policy makers in planning new intervention programme. This chapter ends by highlighting the limitations of current study and suggestions for future research.

5.2 Accomplishment of Research Objectives

The phenomenon of brain drain among the engineers in Malaysia is still critical despite of the implementation of various strategies activated by government agencies such as TalentCorp. Instead of examining ways to increase the engineers' economic and social well-being, which have been widely discussed in literature, this study aims to examine the gen-Y engineers' behaviour. To elaborate, this study has four specific objectives and the extended TPB was used as the basic model.

The first objective is to assess the utility of the extended TPB model in predicting the Malaysian gen-Y engineers' intention to migrate in the next two years. The findings show that the extended TPB model can be used effectively in predicting the engineers' intentional behaviour to migrate. Current study's extended structural model illustrated in Figure 4.4 (in Chapter 4, p. 174) has good model fit indices. Moreover, about 44% variance in the dependant variable (intention to migrate) could be explained by the four direct predictors; attitude, SN, PBC and POC. The result is considered acceptable because very rarely human will practice certain behaviour constantly and consistently without being influence by other variables that are not examined in this study. The coefficient of determination (R square) value is consistent with the average values measured by using meta-analyses approach (see studies carried out by Armitage and Conner, 2001; Godin and Kok, 1996; and Sutton, 1998).

The second objective of this study is to evaluate the direct effect of attitude, SN and PBC on the engineers' behavioural intention. In meeting this objective, three hypotheses – H_1, H_2 and H_3 – were developed and tested. Based on the SEM analysis on the hypothesised model, H_1 and H_2 were supported and H_3 was not supported. Positive attitude towards migrating abroad could directly increase the engineers' behavioural intention. In fact, attitude has the strongest effect compared to the other two predictors. Similarly, the engineers' intention to migrate could increase when they are pressured by important and influential people to perform such act. Although the engineers' perceived behavioural control (PBC) over migration was not statistically significant in influencing the behavioural intention directly, PBC

could affect the intention indirectly through its effect on attitude. Engineers who are positive on PBC could increase their positive attitudes towards migrating abroad, which will eventually increase their intention to migrate.

The third objective involves the determination of POC on the engineers' behavioural intention. Prior to the testing of structural relationship, this study has successfully developed the POC construct by using factor analysis to reduce the number of measurement items that had been extracted from literature and grouped the items that can measure the POC appropriately. The EFA and CFA helped to distinguish this construct from the other two similar constructs – patriotism and nationalism. The SEM result support H_4 that POC and behavioural intention is negatively related. When the Malaysian gen-Y engineers have lower feeling of POC over Malaysia, they are expected to show higher intention to migrate and vice versa.

The final objective of this study is to examine the degree of salient beliefs that have been perceived by the engineers and how the behavioural belief, normative belief and control belief could affect their respective predictors: attitude, SN, and PBC. MIMIC models' results show that all the five salient belief factors of behavioural belief elicited in the preliminary investigation do significantly influenced the engineers' attitudes toward migration positively. Meanwhile, four out of the five belief factors for normative belief could intensify the effect on SN positively. In other words, the engineers believe that their spouses/friends/fiancé, friends, working colleagues and superiors will exert certain pressure on the respondents' to migrate and the

engineers will comply the influential people's pressure. The respondents' however does not belief that their parent will pressure them to migrate, and thereby they have no intention to comply the parent's pressure. Finally, out of the six salient belief factors of control belief, only two factors are significant in affecting the behavioural intention. The engineers believe that they have full control over the financial support needed to fund the migration and also are able to adapt to new culture while abroad.

In summary, this study has managed to meet all the four specific objectives by collecting valid and reliable data for statistical analyses. The implications of the data findings to academics and policy makers are presented in the next sub-chapter.

5.3 Implications

5.3.1 Implications for Scholarship and Further Research

As highlighted in Kerr et al.'s (2016) study, the incidence of brain drain among highly educated professionals, particularly in smaller and fast developing countries like Malaysia, are increasing yearly. Researchers in migration studies have argued that the results of studies in the fields of economics, social and politics could not clearly and implicitly explain why only some people of the studied population have the intention to migrate abroad (Castles, 2000; Arango, 2004). The authors further urged the need of behavioural studies to fill the lacking of the examination on potential migrants' behaviour in literature. Therefore, this study has filled up the literature gap by

enriching the knowledge of migrants' behavioural intention by using a behavioural model.

Furthermore, in studies carried out by Amir et al. (2005), Anderson and Stamoulis (2006), and World Bank (2015), the authors suggested policy makers to implement behavioural intervention policy, which could be more economical and may have higher rate of success. Literature screening has shown that there is lack of appropriate approach in developing effective behavioural intervention policy to handle the issue of brain drain, which may further explain the continuing increase of migration phenomenon, especially in developing and less developed country. In response to the limitation, the present study has enriched the migration literature by studying the salient beliefs that could influence the intention to migrate abroad. The examination of salient belief factors in migration literature is very limited.

This study has included an additional construct, POC into the original TPB model because the examination of POC's effect on intention to migrate is lacking in literature. The SEM analysis has produced a significant relationship between POC and the engineers' intention to migrate abroad. Thus current study has contributed a new finding to the literature of migration by identifying weak POC as a significant behavioural factor that could explain high intention to migrate. Future studies should assess the relationship between the two variables in other cultural contexts as well to further confirm the result of this study.

The hypothesized model of current study has achieved an acceptable model fits as all the important goodness-of-fit test values are within the widely acceptable threshold values (Awang, 2015; Kline, 2005). This study has also recorded a new finding in the literature of migration – the respondents' attitude towards migration does mediate the relationships between SN and intention to migrate as well as between PBC and intention to migrate. The finding thus shows the important role played by the respondents' attitude in influencing their intention to migrate. By changing the respondents' current positive attitude towards migration to negative, their intention to migrate can be lowered significantly. Thereby this finding further enrich the migration literature. In summary, current study's framework is deemed useful to scholars who intend to modify the same or other theoretical framework to develop effective behavioural intervention programs.

Moreover, in response to Amir et al. (2005), Anderson and Stamoulis (2006) and World Bank's (2015) suggestions, this study has suggested the application of Randomized Controlled Trials (RCT) method to test the effectiveness of the designed intervention programs (explained in sub-chapter 5.4.2). Its application can lead to the development of behavioural intervention policy that is perceived to be more economical and have higher rate of success. Haynes et al. (2012) stressed that although RCT has been applied widely, its use in public policy is limited. The present study therefore could improve the scholars' knowledge of RCT's effectiveness in designing new or improving current behavioural intervention policy that aims to change the studied population's behavioural intention.

5.3.2 Methodological Implication

Apart of presenting the statistical evidences, this study has created MIMIC models to predict the influence of the belief factors on attitude, SN and PBC. The application of MIMIC models in developing the TPB constructs is limited in literature, probably because of the difficulty in obtaining a good model fit when the full TPB model is tested. The following discussion illustrate the current author's argument.

In predicting farmers' intention to use natural grassland, Borges et al. (2016) began their analysis by testing each of the three individual MIMIC models separately so that to significant salient beliefs that influence attitude, SN and PBC can be identified. Once the significant beliefs were identified, the other non-significant beliefs were excluded from the final structural model analysis. Meanwhile, in assessing the respondents' intention to engage in activities supporting environment, de Leeuw et al. (2015) created three MIMIC models for attitude, SN and PBC, and tested their effect on the behavioural intention construct separately.

However, the approach used in the two studies (Borges et al., 2016; de Leeuw, et al., 2015) can lead to an important methodological issue. Both studies did not test the full TPB model when MIMIC models were used, probably because a large number of belief factors had been included in the models (21 and 42 belief items were examined in Borges et al. and de Leeuw et al.'s studies respectively). When large number of belief factors or items are included in a structural model, it could generate an unacceptable model fit.

However, Ajzen, the founder of TPB, explained that in predicting the effect of belief factors on attitude, SN and PBC, the full model with all the elicited belief factors should be tested (Ajzen, 1991). In this study, a total of 16 salient beliefs were included in the three MIMIC models, and this has resulted the formation of acceptable model fits. Therefore, for future studies that plan to test the constructs of the modified TPB, a reasonable number of belief factors for behavioural belief, normative belief and control belief should be included in the MIMIC models. For instance, the current study managed to develop an acceptable model fit with a total of 16 belief items.

5.3.3 Implications to Policy Makers

The Malaysian government is fully aware of the catastrophe that can be generated by brain drain and have implemented a few policies to retain the engineers in the home country. However, the existing macro policies are either not effective or insufficient to tackle the issue. This can be supported by recent publications that showed the number of migrated high-skilled workforces is continually increasing (OECD-UNDESA, 2013; World Bank, 2011). The current study's descriptive result provides further evidence on the criticality of the issue, where about 60 percent of the gen-Y engineers have expressed their intention to migrate in the next two years.

The main objectives of setting up a public agency, named TalentCorp are to encourage the return of Malaysian professionals from abroad and also to retain the foreign professionals who are working in Malaysia. What about those local high skilled workforces like engineers who has the intention to migrate

abroad? Shouldn't the government implement a policy than can retain the local professionals to serve the local nations continually? The outflow of local skilled workers is not beneficial to local nation, unless they return home after being trained abroad and willing to transfer the learnt knowledge to local people. The tangible and intangible resources that were used to educate and train the local skilled workers would be considered loss if they have migrated abroad for a long tenure time period or has no interest to return home. One of the ways to reduce the local engineers from migrating abroad is to design an effective behavioural intervention program.

According to Haynes, et al. (2012), intervention programs could be more effective if the available resources can be allocated to change the target people's beliefs and behaviours. In current study, engineers who have higher intention to migrate have two distinctive characteristics: the Chinese and Indian ethnics; and those with two or less children. Therefore, the intervention programs should focus on changing the beliefs of gen-Y engineers who are either Chinese or Indian ethnics, with less than three children.

Current study's result has provided some new and useful knowledge about Malaysian gen-Y engineers' salient beliefs toward migration which is scarcely available or discussed in literature or public forum. The salient belief factors can be grouped into three domains: behavioural belief, normative belief and control belief. Among the five behavioural belief factors which are significant, three factors; safety and security environment, better education for children, and higher living standard have positive mean values, thus could increase the engineers' positive attitude towards migration. The other two

factors; opportunity for better jobs and opportunity to learn new skills, though significant, have negative mean values which could actually lower the engineers' positive attitude.

In examining the salient factors of normative belief that can intensify the effect on SN, the present study has identified that the engineers' spouses is one of the most influential people that can affect the respondents' behavioural intention. Besides that, other people such as friends, working colleagues and superiors could influence the engineers' intention to migrate. Next, the salient control belief factors that could affect the engineers' PBC significantly are having better control over the following two beliefs 1) financial support needed to fund the migration; and 2) ability to adapt to new culture. In developing effective intervention programs, the government should take efforts to weaken those salient beliefs that can reduce the engineer's behavioural intention.

Besides that, the study's result also could provide some new knowledge in regards to the effect of the gen-Y engineers' POC on their behavioural intention. Engineers with high behavioural intention has low POC. Therefore, the government should develop behavioural intervention program that could instil stronger POC among the engineers. The following section provides suggestions on the intervention programs that the Malaysian authorities could use to lower the gen-Y engineers' behavioural intention.

5.4 Recommendations to Policy Makers

This section provides suggestions on effective intervention programs that can be implemented to change the gen-Y engineers' attitude, SN, PBC and POC. It also includes the recommendations on the various tools that can be used in the implementation of the intervention programs.

5.4.1 Changing the Engineers' Attitude, SN, PBC and POC

In developing effective intervention program, Ajzen (2011) stressed that the TPB direct predictors; attitude, SN and PBC, can only be changed by targeting their respective salient belief factors that have significant effect on their underlying constructs. Since the study result shows that attitude has the strongest effect on the behavioural intentions, the salient factors of behavioural belief that can influence the respondents' attitude at precision level of 0.05 should be targeted the most.

5.4.1.1 Targeting the salient belief factors of behavioural belief

In developing the intervention program to reduce the behavioural intention among Malaysian gen-Y engineers, policy makers should weakened the salient beliefs that have positive mean values: safety and security environment, better education for children and higher standard of living. In contrast, the other two significant behavioural belief factors; opportunity for better jobs and opportunity to learn new skills have negative mean values. So policy makers should further strengthen the two negative beliefs.

The engineers do believe that if they migrate abroad, they will have better safety and security environment compared to Malaysia. In term of peacefulness, Malaysia was ranked number 29 out of 160 countries according to the Global Peace Index (GPI) 2017 rankings (Institute for Economics and Peace, 2017). It ranks Malaysia even higher than UK (41) and US (114). Although Australia and Singapore have better ranking, numbered at 12 and 21 respectively, Malaysia can be still considered as a peaceful nation to live. Such information should be widely circulated to local industries and other working sectors so that the workforce, especially the local nation's perception about safety and security issues in Malaysia would improve. According to Gupte and Jadhav (2014), the perception that the safety and security level at home country has improved had significantly reduced the brain drain in India. Similarly, a change in the Malaysian gen-Y engineers' belief that the safety and security environment in Malaysia has improved could change their attitude toward migration, from positive to negative.

Generally, the engineers believe that their children can receive better qualities in education if they migrate to countries like Australia, UK and US. In response to this, the local people especially the engineers should be alerted of the improvement on education quality and opportunity that has and will be done. For example, Malaysian government has lifted the quota on the enrolment into international schools. Local students are now allowed to study in more than 100 international schools that are located in the country (MM2H, 2016). Furthermore, the number of incoming foreign universities that are highly ranked in World University ranking such as University of Reading,

University of Nottingham, Heriot-watt University and Monash University is increasing gradually.

Ramtohul (2016) has urged developing countries to improve the quality of education in order to stem the brain drain. Using a case study of Mauritius, the author asserted that the internationalization of the country's education has changed the citizens' perceptions toward the quality of education in Mauritius. In turn, more students have remained in the country to pursue higher education, thus reduce the rate of brain drain. Therefore, it is important to policy makers in Malaysia to form a new belief among the gen-Y engineers' in Malaysia that the internationalization of education has improved the quality of education in the country. This will probably lead to the engineers to think that their children have better future in Malaysia, thus lower their positive attitude towards migration.

The policy makers should also publicise that being a safe and secure living place coupled with the opportunity to pursue world class international education locally, the standard of living in Malaysia thereby is not as bad as been believed by the engineers. Gupte & Jadhav (2014) stated that another reason for the reduction in the brain drain in India was the improvement in the country's economy, which in turn has improved the perception of its professionals toward the standard of living in India.

The policy makers should also strengthen the engineers' current belief that the opportunities for better jobs abroad are less likely. As reported by Boo

(2017), many Malaysian professionals could not get the jobs they desired due to competition from migrants from all over the world. As a result, many of them ended up working in restaurants that pay low wages. Therefore, intervention program should highlight the tough environment for many Malaysians in getting jobs abroad. The program can also stress on the negative impact of being unemployed or under employed if the engineers could not find the desired jobs abroad.

Since the gen-Y engineers do not really belief that they will be able to learn new skills upon migration, policy makers should further strengthen this belief. The engineers should be aware that many skilled migrants from developing countries who are living in developed countries could not even find jobs that fit their existing skills. For example, Qureshi et al. (2013) reported that many Indian professionals in medical, nursing, engineers, and information technology fields who migrated to Britain ended up being under employed with low skilled jobs. Such information will probably make the engineers aware that the chance for them to improve their skills while abroad is very slim. In turn, it could influence the engineers' attitude towards migrating abroad, from positive to negative.

5.4.1.2 Targeting the salient belief factors of normative belief

Current statistical result shows that four out of five groups of people who are important to the engineers could affect the respondents' SN towards migration. To elaborate, many gen-Y engineers initially believe that their spouses/partners/fiancé, friends, working colleagues and superiors may want

them to migrate abroad. Therefore, when they receive such pressure from these people, the engineers are more likely to oblige their request.

Past studies have shown that individuals' beliefs are significantly influenced by what their important others think or behave in a particular situation (Giles et al., 2014; Kothe et al., 2012; Tomasone et al., 2014). Hence, targeting or involving them in the intervention program may reduce the engineers' intention to migrate. In implementing the intervention programs, public agencies can include the four groups of stakeholder into the programs, as well as to invite them for public discussions. They can be alerted on the contribution that the local engineers can give to local nations and the possible risks of migrating abroad.

For instance, when a seminar or workshop related to intervention program is organised, TalentCorp should invite the engineers' spouses or their partners. Effort must be taken to create awareness among the spouses and partners on the risk of migrating abroad. They too should understand that many migrants are struggling to find jobs abroad and ended being employed as low skill workers.

5.4.1.3 Targeting the salient belief factors of control belief

As explained earlier, the engineers' PBC only affect the behavioural intention indirectly through its influence on attitude. Therefore, policy makers could probably focus less time and resources to change the control belief factors that could change the PBC. Possibly, this is why only two out of six

control belief factors could affect the engineers' PBC towards migrating abroad at significant level of 0.05.

One of the factors is referring to the engineers' believe on their ability to control the financial aids that is needed to fund the migration. One of the ways to decrease this belief is to let the engineers aware of the financial risk that they may need to bear when living abroad such as higher cost of living especially in developed country, or they may be underemployed or unemployed for a long term (Qureshi et al., 2013). Kahneman and Tversky (1979) suggested that most people tends to be incubate pessimistic characteristic, or weight the losses that they are expected to incur higher than the expected gain.

Another control belief factor is related to the engineers' belief that they may have the ability to adapt the host culture. In implementing the intervention programme, the policy makers can highlight the cross culture issue that have been facing by many Malaysians abroad. For example, Boo (2017) asserted that a number of Malaysians migrants had decided to returned home because of the difficulty to adapt the host culture and life style, particularly when comes to food. Past studies had highlighted the challenges that local skilled workers need to undertake when they work abroad, such as bullying and discriminations in some workplaces in Australia (Ramsay, Barker & Shallcross, 2008) and communication barriers with host co-workers in Canada (Sakamoto, Chin & Young, 2010). The engineers should be aware that the life abroad is not always good as they initially believed.

5.4.1.4. Targeting the three routes of POC

Psychological ownership feeling over a country (POC) can be developed by giving the respondents more opportunity to develop their work talent. If the gen-Y engineers aware that they could develop their work skills or career locally, their POC feeling may likely to grow. Trainings or further studies should be encouraged so that the engineers would be getting more involved in their work. For example, Malaysia government has been providing My-Brain scholarship to encourage bachelor and master degree holders to further their studies (Ministry of Higher Education, 2015).

Discussion on ways to change individuals' POC is limited in past studies. Pierce et al., (2001) suggested that the intervention program could focus on enhancing any of or all the three routes that lead to the POC – control, knowledge and engagement. The control sub-scale measures the extent to which an individual feels that he has certain degree of control over his country. Intervention program should be designed in a way to enhance the engineers' feeling that they have certain degree of control over Malaysia.

In a study to determine the participation of Malaysian gen-Y in politics, majority of the 1029 participants surveyed felt that their concerns were not addressed by the government (Shiratuddin, Sani, Hassan, Ahmad, Talib & Ahmad, 2016). Therefore, it is important for policy makers to provide the engineers with some platforms to express their concerns and contribute ideas to national issues such as high brain drain in Malaysia. For example, policy makers could create a special space in social media for such purpose and could

even provide rewards for innovative ideas. In turn, the engineers may feel that they are able to contribute to the nation building.

The intervention program should also try to facilitate the engineers in accumulating more information about Malaysia, thus increase their knowledge about the country. Shiratuddin et al. (2016) found that gen-Y community in Malaysia only occasionally follow or receive news about current local issues. Many of them agreed that the main source of news is from social media and they also admitted that many of the news are dubious. Therefore, the intervention program should include the distribution of accurate information to local nation.

Yong (2016) asserted that to increase the spirit of nationalism among people in Singapore, its Culture, Communication and Youth Minister determined to increase the people's knowledge about the country's history and cultural. In addition, effort should be taken to refresh the engineers' knowledge regarding the history of home country as such approach has proven to enhance the individuals' feeling of patriotism.

Using the third route to improve the engineers' engagement with the nation, policy makers should also attempt to increase the engineers' participation in national related activities. Cox (2013) and Centre of Civic Education (CCE) (2016) identified voting in the state or the national election is an effective way to enhance people's engagement with ones' country. Therefore, as a part of the intervention program, steps should be taken to

highlight the role of the engineers as registered voters. The gen-Y engineers should be aware that they are exercising their rights as a citizen by voting, thus increase their engagement with Malaysia. The policy makers shall encourage them to register as voters, as about 4.1 million eligible voters in Malaysia yet to register (The Star, 2017, March 3).

In addition, the program should also find ways to encourage more engineers to participate in volunteering activities to strengthen their commitment in national building. As stated by the CCE and Yong (2017), when the engineers participate in such services, they would be more engaged with community. In turn, it is expected to increase the engineers' POC over Malaysia. Policy makers could sponsor such activities directly or could have more collaboration with private sectors for that purpose.

5.4.2. Application of RCT Method in Testing the Intervention Program

Haynes et al. (2012) suggested that policy makers should first evaluate the interventions program's effectiveness by implementing on few randomly selected group of samples. In Malaysia, since one of the responsibilities of TalentCorp is to retain the skilled workforce at home, the agency should take the lead to evaluate some of the stated interventions' feasibility. A few samples of the engineers in gen-Y category can be randomly selected and should be subjected to different intervention programs. One of the groups should be controlled – either not subjected to any intervention or have some minimum intervention. The targeted engineers should preferably make up by non-Malay

ethnics and with two or less children because they are predicted to have higher behavioural intention in Malaysia.

In testing the intervention program's effectiveness, TalentCorp could consider the use of a combination of intervention methods and tools that were discussed and reviewed in sub-chapter 2.7.3. One of the methods includes face to face lecture or seminar with the targeted participants (Borzendowski, 2014; Giles et al., 2014; Tomasone, et al., 2014). Other channels of communications used in the past were e-mails (Kothe et al., 2012) and social media (Adewuyi and Adefemi, 2016).

Factual and/or emotional messages can be used to let the migrants to express their negative experiences when they were abroad. Warner and Forward (2016) found that the combination of the two messages have high impact on changing the respondents' behaviour towards road safety. To convey emotional message to the engineers, TalentCorp could invite former migrants from Malaysia to share their bad experience during their stay abroad. On top of that, factual messages can be conveyed to the participants by showing the statistics of Malaysians who could not find the desired jobs abroad, GPI ranking of Malaysia compared to other countries, etc.

Next, the planned intervention programs should be tested on the various sampling groups for a sufficient period of time. However, the length of the time period was not discussed accurately in literature. Since the intention feeling for migrating abroad is usually a one-time behaviour, it would be

difficult to change the engineers' intention immediately during or after the implementation of the intervention program. Hence, it is recommended that TalentCorp implement the trial program for a longer period like six months to one year. In addition, as suggested by Tomasone et al. (2014), the program should be implemented on regular basis to achieve the maximum impact. For instance, few seminars should be organised on a regular interval basis so that the new intention developed by the engineers could be sustained.

The outcome of the RCT approach should demonstrate some significant differences between the manipulated groups and the controlled group. From the results, TalentCorp should choose one or few interventions that proven to be effective in changing the engineers' ITMA. After some adaptation to the existing interventions, if necessary, the final intervention program can be applied to the targeted population – Malaysian gen-Y engineers of Chinese and Indian ethnics, with two or less children. As stressed by Haynes et al. (2012), continuous testing, evaluation, adaptation and implementation of the program by TalentCorp is required to ensure that the intervention program can achieve the desired goals.

5.5 Limitations and Suggestions for Future Studies

This study did suffer some limitations as summarized below. First, the prominent limitations arise in analysing individuals' behavioural intention is the failure to assess their actual behaviour (Ajzen, 2011). Although about 60 percent of the surveyed engineers showed the same behavioural intention in the next two years, their actual behaviour on migration is unknown. Therefore, it is

not clear if present study's conceptual framework could determine the respondents' actual behaviour. Therefore, future studies should conduct longitudinal study with the same population to determine the participants' actual behaviour.

The second limitation of this study is the findings are solely based on quantitative analysis. In predicting the engineers' behavioural intention, various statistical analyses were carried out but the results are only useful in separating the significant factors from non-significant factors. The researcher is unable to understand in details why some engineers behave in certain ways. For example, it is not clear why majority of the engineers do have negative beliefs toward the ability to learn new skills when they migrate abroad. Although interviews were carried out to elicit the engineers' salient beliefs, only structured questions were prepared during the interviews so that the salient beliefs that had been frequently mentioned by the participants can be tabulated and identified. Therefore, future researcher is strongly recommended to assess the participants' beliefs toward migration by collecting qualitative data so that more in-depth information about the participants' behaviour can be identified.

Thirdly, the quantitative data for this study were collected using snowball technique, where new respondents were introduced to the researcher by the respondents who had previously filled up the survey questionnaire. This technique was applied because it was not possible to reach the engineers who are located in various parts of Malaysia. This technique could have resulted in

a slightly biased results due to the nature of non-probability method. Therefore it is suggested that future research may use probability sampling method to improve the accuracy of the findings.

Next, even though this study could provide useful indications to policy makers in designing new behavioural intervention programs, the effectiveness of the programs cannot be determined until it is implemented and evaluated. If the evaluation on the existing programme that has been implemented based on current study's suggestion is restricted by cost and time constrained, the programs can be tested using a small sample from the target population.

It is no doubt that shortages of engineers in Malaysia are critical and one of the main causes is related to brain drain. This study could provide useful suggestions to the policy makers by assessing the engineers' behavioural intention from behavioural perspectives. The suggested behavioural intervention policy could reduce the phenomenon if the policy can be implemented effectively. However, as the intervention programs were recommended based on the engineer respondents' salient beliefs, the recommended policy thereby is specifically designed for engineers and cannot be generalised to other professions in Malaysia, which is facing brain drain problems too such as accountants and bankers. To derive results that can be generalised to all professions could be disputable because each profession may have different beliefs and behaviour. Therefore, more behavioural studies that can measure the studied professional's salient beliefs toward migration are needed.

Finally, although the hypothesised relationship between POC and engineers' behavioural intention is supported in this thesis, Olckers and Du Plessis (2012) asserted that POC over an organization can develops positive attitude towards the organization, which in turn, could enhance employees' effectiveness and also loyalty to the organization. Hence, in the context of migration study, there is possibility that POC could mediate the relationship between attitude and behavioural intention. Nevertheless, current study did not test such relationship as the main aim of this study is to identify the beliefs toward migration and to suggest effective behavioural intervention policy. It can be important contribution to the literature in the migration studies if future studies could further explore the role of POC as a mediator in reducing behavioural intention.

5.6 Conclusion

This study is motivated by the high prevalence of brain drain in Malaysia as well as in some other smaller and fast developing countries. In Malaysia, the rate of brain drain has reached a critical level as more than 10 percent of the total skilled workers have migrated abroad. Due to the high phenomenon of brain drain in the country, the talent environment in Malaysia was forecasted to deteriorate further. Among the professionals, the shortages of engineers are causing difficulty for MNCs to hire engineers in Malaysia. As a result, some MNCs are reluctant to invest in the country. The issues raise the question on the effectiveness of the existing polices in retaining the country's high skilled workers at home, in particular their engineers.

This thesis has shown that a study on brain drain in Malaysia from a behavioural perspective could provide better explanations for the high intensity of brain drain in the country. Furthermore, behavioural related policies could be used as complement to existing policies from macro perspectives such as economics, social and politics. This study has demonstrated that extended TPB model is an appropriate behavioural model in analysing brain drain due to its ability to predict the belief factors that influence the behavioural intention.

Using the model, the study has managed to recommend a systematic approach that can be used to develop behavioural intervention policy to discourage engineers' intention to migrate. The intervention policy should target the professionals' salient beliefs so that their attitude, SN and PBC towards migration can be changed. The study has also introduced the POC as a new construct that could explain individuals' behavioural intention.

Using the extended TPB model and at the precision level of 5 percent, the findings indicate that the Malaysian gen-Y engineers' attitude and SN have direct and significant positive effect on the intention. Although PBC does not have significant direct effect on intention, PBC has significant indirect effect, mediated by the engineers' attitude. Lower feeling on POC is expected to increase the engineers' behavioural intention. Among the four constructs, attitude has the strongest effect on the engineers' behavioural intention. In regards to the effects that can be generated by salient beliefs, five behavioural beliefs, four normative beliefs and two control beliefs can affect the Malaysian gen-Y engineers' attitude, SN and PBC respectively. Based on the study's

results, current author has suggested some behavioural intervention programs that could change the engineers' behavioural intention. The policy makers are advised to use RCT method to test the effectiveness of the programs to avoid any costly mistakes.

To conclude, this study has contributed significantly to the literature of brain drain by illustrating the systematic approach that future researchers can adopt in developing effective behavioural intervention policy. Moreover, this study has also contributed significantly to the Malaysian policy makers by suggesting various intervention programs that can be used in reducing the phenomenon of brain drain in the country.

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APPENDICES

Appendix A: Types of Migration

Types of Migration	Explanation
Clandestine / Irregular / Illegal / Undocumented migration	Refers to migration across countries without proper documents (e.g. working permit), and thus is considered has breached the immigration law of the host country. Clandestine migration also includes those migrants who entered a country legally but overstayed.
Documented migration	Refers to legal migration where migrants enter the destination country with valid documents. If the migrants continue to stay beyond the valid time period, they are then considered as illegal migrants.
Economic migrant	Refers to a migrant who enters a foreign country to earn income and primarily motivated by economic factors. The term also applies to a migrant who enters a foreign country to work during a particular agricultural season (also known as seasonal worker).
Forced migration / refugees	Refers to a movement by individuals from their place of origin to other places due to an element of coercion which threaten their lives.
Frontier worker	A migrant worker who retains his or her habitual residence in a neighbouring state/country to which he or she normally returns every day or at least once a week.
Long-term migrant	Refers to a person who stays in another country other than that of his own for at least one year.
Short-term migrant	Refers to a person who stays in another country other than of his own for more than three months but less than a year (except in cases where the movement to that country is for purposes of recreation, holiday, visits to friends or relatives, business, medical treatment or religious pilgrimage).
Temporary migrant	Refers to a migrant who stay in the host country for a definite period of time, and returns to the country of origin at the end of his contract or permit.
Student migrant	Refers to a person who studies in another country for a minimum period of at least a year (Spring, 2009)
Skilled migrant	Refers to a person with certain qualifications or skills that reside in another country. They usually enjoy some privileges from the host countries with the motive to attract them to their countries.
Diaspora	Refers to a society that leaves their country of origin to reside in other countries on a temporary or permanent basis.

Source: UNESCO (1998)

Appendix B: Questionnaire

Appendix B1: Questionnaire cover page

SURVEY ON THE INTENTION OF MALAYSIAN ENGINEERS TO MIGRATE ABROAD

Dear Participants,

I am a Doctor of Philosophy (Economics) student of Universiti Tunku Abdul Rahman (UTAR) doing a study to evaluate Malaysian engineers' intention to migrate abroad. Your responses to the study questionnaire will be of great help in improving our understanding on the behavioural factors that explain the behavioural intention. This will enable the researcher to make suggestions to the relevant policy makers in the country to develop appropriate behavioural intervention programs in reducing brain drain amongst engineers in the country. I am inviting Malaysian engineers who are currently residing in Malaysia to complete this survey.

Please take a few moments to answer the following questions. There will be no risk involved with participating in this survey, and your responses will be anonymous. Your voluntary participation in this survey is greatly appreciated. Your opinions and comments will be kept confidential, and will be of great value. The completion of this survey implies consent to consolidate your data with others and to publish results in reports without identifying any respondents.

If you have any questions regarding this research, please contact me. My contact information is provided below. Thank you for your consideration, and participation in this research project.

Yours Sincerely,

…….

Balu Ramoo
Ph.D. Student, Faculty of Business & Finance
University Tunku Abdul Rahman (UTAR)
E-mail: baluramoo@1utar.my, Phone: 012-5741436

PERSONAL DATA PROTECTION STATEMENT

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

Notice:

1. The purposes for which your personal data may be used are inclusive but not limited to:-
   - ***For assessment of any application to UTAR***
   - ***For processing any benefits and services***
   - ***For communication purposes***
   - ***For advertorial and news***
   - ***For general administration and record purposes***
   - ***For enhancing the value of education***
   - ***For educational and related purposes consequential to UTAR***
   - ***For the purpose of our corporate governance***
   - ***For consideration as a guarantor for UTAR staff/ student applying for his/her scholarship/ study loan***

2. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.

3. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.

4. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

Consent:

1. By submitting this form you hereby authorise and consent to us processing (including disclosing) your personal data and any updates of your information, for the purposes and/or for any other purposes related to the purpose.

2. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.

3. You may access and update your personal data by writing to us at baluramoo@1utar.my

Acknowledgment of Notice

[ ] I have been notified by you and that I hereby understood, consented and agreed per UTAR above notice.

[ ] I disagree. My personal data will not be processed.

……

Name: Date:

Appendix B2: The master copy of current study's questionnaire

I. RESPONDENT'S PROFILE

Please tick (/) the appropriate box

1 Gender: ☐ Male ☐ Female

2 Age (years): ☐ 21 – 24 ☐ 25 - 28 ☐ 29 – 32 ☐ 33 - 36 ☐ 37 and above

3 Highest level of education: ☐ Diploma or less ☐ Bachelor degree ☐ Master degree ☐ Doctorate degree

4 Ethnic group: ☐ Malay ☐ Chinese ☐ Indian ☐ Others

5 Marital status ☐ Single ☐ Married ☐ Widowed ☐ Divorced

6 Do you have any children? ☐ No ☐ Yes (please specify the number: _____)

7 What is the status of your current employment?

☐ Full-time permanent employee ☐ Full-time fixed term contract employee ☐ Part-time employee ☐ Self-employed ☐ Unemployed

8 What type of engineer are you?

☐ Aerospace engineer ☐ Civil engineer ☐ Computer engineer ☐ Telecommunication engineer

☐ Chemical engineer ☐ Electrical engineer ☐ Electronic engineer ☐ Industrial engineer

☐ Mechanical engineer ☐ System engineer ☐ Others (Please specify: _____

II. ATTITUDE

What do you think/feel about migrating abroad? Circle ONE appropriate number that best represents your agreement for the followings.

For me, migrating abroad for at least a year within the next two years is

a.	Worthless	1	2	3	4	5	6	7	Valuable
b.	Unpleasant	1	2	3	4	5	6	7	Pleasant
c.	Bad	1	2	3	4	5	6	7	Good
d.	Unenjoyably	1	2	3	4	5	6	7	Enjoyably
e.	Harmful	1	2	3	4	5	6	7	Beneficial

How likely do you think you will achieve the following outcomes if you migrate abroad for at least a year within the next two years? Cross (X) one appropriate box for each outcome.

	Extremely unlikely	Quite unlikely	Slightly unlikely	Neutral	Slightly likely	Quite likely	Extremely likely
6. Better standard of living							
7. Safe and secure environment to live (free from crime and violence)							
8. Better job opportunities							
9. Able to learn new skills							
10. Better education opportunity for my children in the future							

For each of the following statements, cross (X) one box that indicates how IMPORTANT each attributes is in motivating you to migrate abroad for at least a year within the next two years.

	Very Unimportant	Quite Unimportant	Slightly Unimportant	Neutral	Slightly Important	Quite Important	Very Important
11. Better standard of living							
12. Safe and secure environment to live (free from crime and violence)							
13. Better job opportunities							
14. Able to learn new skills							
15. Better education opportunity for my children in the future							

III. SUBJECTIVE NORMS

For each of the following statements, cross (X) one box that indicates your level of AGREEMENT regarding migrating abroad for at least a year within the next two years.

	Strongly disagree	Quite disagree	Slightly disagree	Neutral	Slightly agree	Quite agree	Strongly agree
Most people who are important to me have migrated abroad for at least a year							
Most people whose opinion I value have migrated abroad for at least a year							
Most people who are important to me would support my intention to migrate abroad							
Most people whose opinion I value would approve of my intention to migrate abroad							

How likely is it that each of the following groups or individuals would think that you should migrate abroad for at least a year within the next two years? Cross (X) one appropriate box for each attribute *(do not cross if any of the groups or individuals is not applicable to you).*

	Extremely unlikely	Quite Unlikely	Slightly unlikely	Neutral	Slightly likely	Quite likely	Extremely likely
Parents							
Spouse / fiancé / partner							
Friends							
Working colleagues							
Superiors							

How likely are you to COMPLY with the following individuals or groups' wishes of you to migrate abroad for at least a year within the next two years? Cross (X) one appropriate box *(do not cross if any of the groups or individuals is not applicable to you).*

	Extremely unlikely	Quite Unlikely	Slightly unlikely	Neutral	Slightly likely	Quite likely	Extremely likely
Parents							
Spouse / fiancé / partner							
Friends							
Working colleagues							
Superiors							

IV. PERCEIVED BEHAVIOURAL CONTROL

For each of the following statements, cross (X) one box that corresponds with your level of AGREEMENT regarding migrating abroad for at least a year within the next two years.

	Strongly disagree	Quite disagree	Slightly disagree	Neutral	Slightly agree	Quite agree	Strongly agree
1. I have the resources and time to migrate abroad for at least a year in the next 2 years							
2. I can easily migrate abroad for at least a year in the next 2 years							
3. I am confident that if I wanted to, I could migrate abroad for at least a year in the next 2 years							
4. I am in control over my behaviour of migrating abroad for at least a year in the next 2 years							

How likely is that each of the following factors would FACILITATE you to migrate abroad for at least a year within the next two years? Cross (X) one appropriate box.

	Extremely unlikely	Quite unlikely	Slightly unlikely	Neutral	Slightly likely	Quite likely	Extremely likely
5. Financial support to migrate							
6. Current job skills							
7. Having family members / friends / relatives living abroad							
8. Ability to communicate in host country's national language							
9. Ability to adapt new culture							
10. Ability to find the right job							

Cross (X) the box that corresponds with your level of AGREEMENT with the following statements in regard to migrating abroad for at least a year within the next two years.

	Strongly disagree	Quite disagree	Slightly disagree	Neutral	Slightly agree	Quite agree	Strongly agree
11. I have better control over the financial support needed to fund the migration for at least a year							
12. I have the relevant job skills that may be required in overseas labour market once I have migrated abroad							
13. I have many family members / friends / relatives living abroad							
14. I have the ability to communicate in host country's national language once I have migrated abroad							
15. I have the ability to adopt to new culture once I have migrated abroad							
16. I have the ability to find the right job once I have migrated abroad							

V. NATIONAL IDENTITY

Cross (X) the box that corresponds with your level of AGREEMENT with the following statements regarding your country.

	Strongly disagree	Quite disagree	Slightly disagree	Neutral	Slightly agree	Quite agree	Strongly agree
1. I believe my vote counts in Malaysia							

2. To maintain our country's economic superiority, aggressive economic policies are necessary							
3. Malaysia is truly my country							
4. My vote has an impact of what happens in the country							
5. Malaysia should actively influences other countries							
6. I am proud to be a Malaysian							
7. I stand and participate in the national anthem "Negaraku"							
8. For the most part, Malaysia is more superior than many other countries in the world							
9. I do feel much affection for my country							
10. I vote in all major elections in the country							
11. I would fight and die for my country							
12. I have great love for my country							
13. Knowing about what is happening in the country is important for me							
14. I read news about what is going on in the country							

VI. INTENTION TO MIGRATE ABROAD

For each of the following statements, cross (X) one box that corresponds with your level of AGREEMENT regarding your ITMA for at least a year within the next two years.

	Strongly disagree	Quite disagree	Slightly disagree	Neutral	Slightly agree	Quite agree	Strongly agree
1. I *intend* to migrate abroad for at least a year within the next two years							
2. I *want* to migrate abroad for at least a year within the next two years							
3. I *will* migrate abroad for at least a year within the next two years							

Thank you for taking time to complete this survey

Appendix C: Comprehensive Descriptive Results

	Frequency	Percent	Valid Percent	Cumulative Percent
GENDER				
Male	264	65.6	65.6	65.6
Female	138	34.4	34.4	100.0
Total	402	100.0	100.0	
AGE				
21-24	18	4.5	4.5	4.5
25-28	85	21.1	21.1	25.6
29-32	158	39.3	39.3	64.9
33-36	141	35.1	35.1	100.0
Total	402	100.0	100.0	
EDUCATION				
Diploma or below	39	9.7	9.7	9.7
Bachelor	316	78.6	78.6	88.3
Masters	47	11.7	11.7	100.0
Total	402	100.0	100.0	
ETHNIC				
Malay	41	10.2	10.2	10.2
Chinese	320	79.6	79.6	89.8
Indian	41	10.2	10.2	100.0
Total	402	100.0	100.0	
MARRIED				
Single	91	22.6	22.6	22.6
Married	300	74.6	74.6	97.3
Widowed	4	1.0	1.0	98.3
Divorced	7	1.7	1.7	100.0
Total	402	100.0	100.0	

	Frequency	Percent	Valid Percent	Cumulative Percent
CHILDREN				
0	110	27.4	27.4	27.4
1	91	22.6	22.6	50.0
2	157	39.1	39.1	89.1
3	36	9.0	9.0	98.0
4	7	1.7	1.7	99.8
5	1	.2	.2	100.0
Total	402	100.0	100.0	
EMPLOYMENT				
FT Permanent	373	92.8	92.8	92.8
FT contract	29	7.2	7.2	100.0
Total	402	100.0	100.0	
TYPE_ ENGINEER				
Civil	35	8.7	8.7	8.7
Computer	47	11.7	11.7	20.4
Chemical	37	9.2	9.2	29.6
Electrical	64	15.9	15.9	45.5
Electronic	109	27.1	27.1	72.6
Industrial	42	10.4	10.4	83.1
Mechanical	64	15.9	15.9	99.0
Telecommunication	4	1.0	1.0	100.0
Total	402	100.0	100.0	

Appendix D: Cross Tabulation between Respondents' Profiles and Their Intention to Migrate

	Strongly disagree Fq (%)	Disagree Fq (%)	Slightly disagree Fq (%)	Neutral Fq (%)	Slightly agree Fq (%)	Agree Fq (%)	Strongly agree Fq (%)	Total Fq (%)	Mean
Gender									
Male	14 (5.3)	31 (11.7)	29 (11.0)	16 (6.1)	43 (16.3)	80 (30.3)	51 (19.3)	264 (100)	4.84
Female	8 (5.8)	17 (12.3)	34 (24.6)	5 (3.6)	25 (18.1)	32 (23.2)	17 (12.3)	138 (100)	4.34
Age									
21-24	3 (16.7)	1 (5.6)	3 (16.7)	1 (5.6)	3 (16.7)	5 (27.8)	2 (11.1)	18 (100)	4.28
25-28	3 (3.5)	8 (9.4)	7 (8.2)	4 (4.7)	19 (22.4)	28 (32.9)	16 (18.8)	85 (100)	5.07
29-32	8 (5.1)	24 (15.2)	20 (12.7)	8 (5.1)	21 (13.3)	44 (27.8)	33 (20.9)	158 (100)	4.73
33-36	8 (5.7)	15 (10.6)	33 (23.4)	8 (5.7)	25 (17.7)	35 (24 8)	17 (12.1)	141 (100)	4.42
Education									
Diploma	4 (10.3)	4 (10.3)	9 (23.1)	2 (5.1)	8 (20.5)	7 (17.9)	5 (12.8)	39 (100)	4.21
Bachelor	13 (4.1)	42 (13.3)	48 (15.2)	17 (5.4)	50 (15.8)	89 (28.2)	57 (18.0)	316 (100)	4.72
Masters	5 (10.6)	2 (4.3)	6 (12.8)	2 (4.3)	10 (21.3)	16 (34.0)	6 (12.8)	47 (100)	4.74
Ethnic									
Malay	22 (53.7)	17 (41.7)	0 (0.0)	0 (0.0)	1 (2.4)	1 (2.4)	0 (0.0)	41 (100)	1.63
Chinese	0 (0.0)	23 (7.2)	52 (16.3)	19 (5.9)	60 (18.8)	101 (31.6)	65 (20.3)	320 (100)	5.12
Indian	0 (0.0)	8 (19.5)	11 (26.8)	2 (4.9)	7 (17.1)	10 (24.4)	3 (7.3)	41 (100)	4.22
Marital status									
Single	1 (1.1)	7 (7.7)	11 (12.1)	6 (6.6)	18 (19.8)	32 (35.2)	16 (17.6)	91 (100)	5.12
Married	21(7.0)	38 (12.7)	48 (16.0)	14 (4.7)	48 (16.0)	79 (26.3)	52 (17.3)	300 (100)	4.58
Widowed	0 (0.0)	1 (25.0)	1 (25.0)	0 (0.0)	1 (25.0)	1 (25.0)	0 (0.0)	4 (100)	4.00
Divorced	0 (0.0)	2 (28.6)	3 (42.9)	1 (14.3)	1 (14.3)	0 (0.0)	0 (0.0)	7 (100)	3.14
Children									
0	2 (1.8)	9 (8.2)	16 (14.5)	6 (5.5)	20 (18.2)	37 (33.6)	20 (18.2)	110 (100)	5.04
1	2 (2.2)	10 (11.0)	16 17.6)	4 (4.4)	12 (13.2)	30 (33.0)	17 (18.7)	91 (100)	4.89
2	6 (3.8)	18 (11.5)	27 (17.2)	9 (5.7)	31 (19.7)	38 (24.2)	28 (17.8)	157 (100)	4.70

Continue next page …

Abbreviation: Fq: Frequency, %: Percentage

Appendix D Continued

	Strongly disagree Fq (%)	Disagree Fq (%)	Slightly disagree Fq (%)	Neutral Fq (%)	Slightly agree Fq (%)	Agree Fq (%)	Strongly agree Fq (%)	Total Fq (%)	Mean
3	10 (27.8)	9 (25.0)	4 (11.1)	2 (5.6)	4 (11.1)	4 (11.10	3 (8.3)	36 (100)	3.14
4	2 (28.6)	1 (14.3)	0 (0.0)	0 (0.0)	1 (14.3)	3 (42.9)	0	7 (100)	3.62
5	0 (0.0)	1 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0	1 (100)	2.00
Employment status									
Permanent	19 (5.1)	47 (12.6)	58 (15.5)	18 (4.8)	63 (16.9)	105 (28.2)	63 (16.9)	373 (100)	4.68
Contract	3 (10.3)	1 (3.4)	5 (17.2)	3 (10.3)	5 (17.2)	7 (24.1)	5 (17.2)	29 (100)	4.62
Type of employment									
Civil	3 (8.6)	5 (14.3)	6 (17.1)	2 (5.7)	4 (11.4)	9 (25.7)	6 (17.1)	35 (100)	4.43
Computer	2 (4.3)	3 (6.4)	4 (8.5)	6 (12.8)	14 (29.8)	12 (25.5)	6 (12.8)	47 (100)	4.85
Chemical	2 (5.4)	8 (21.6)	8 (21.6)	1 (2.7)	5 (13.5)	11 (29.7)	2 (5.4)	37 (100)	4.08
Electrical	2 (3.1)	6 (9.4)	7 (10.9)	3 (4.7)	11 (17.2)	19 (29.7)	16 (25.0)	64 (100)	5.13
Electronic	5 (4.6)	7 (6.4)	21 (19.3)	5 (4.6)	12 (11.0)	38 (34.9)	21 (19.3)	109 (100)	4.93
Industrial	1 (2.4)	10 (23.8)	3 (7.1)	1 (2.4)	10 (23.8)	11 (26.2)	6 (14.3)	42 (100)	4.50
Mechanical	7 (10.9)	9 (14.1)	14 (21.9)	3 (4.7)	12 (18.8)	9 (14.1)	10 (15.6)	64 (100)	4.11
Telecom	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (75.0)	1 (25.0)	4 (100)	6.25

Abbreviation: Fq: Frequency, percent: Percentage

Appendix E: Bootstrapped Standard Errors

Parameter			SE	SE-SE	Mean	Bias	SE-Bias
SN	<---	NB2	.013	.000	.037	.000	.000
SN	<---	NB5	.030	.000	.297	.000	.001
PBC	<---	CB1	.031	.000	.138	.000	.001
PBC	<---	CB2	.033	.001	.009	-.001	.001
PBC	<---	CB3	.035	.001	.016	-.001	.001
PBC	<---	CB4	.024	.000	-.013	.001	.001
PBC	<---	CB5	.045	.001	.071	-.001	.001
PBC	<---	CB6	.032	.001	-.014	.000	.001
SN	<---	NB1	.012	.000	.003	.000	.000
SN	<---	NB3	.037	.001	.267	-.002	.001
SN	<---	NB4	.037	.001	.072	.001	.001
ATT	<---	BB1	.014	.000	.061	.000	.000
ATT	<---	BB2	.012	.000	.102	.000	.000
ATT	<---	BB3	.017	.000	.032	.001	.000
ATT	<---	BB4	.016	.000	.047	-.001	.000
ATT	<---	BB5	.014	.000	.039	.001	.000
ATT	<---	PBC	.035	.001	.170	.001	.001
ATT	<---	SN	.035	.001	.354	-.002	.001
ITMA	<---	PBC	.069	.001	.028	-.004	.002
ITMA	<---	SN	.086	.001	.202	-.002	.002
ITMA	<---	POC	.094	.001	-.310	.000	.002
ITMA	<---	ATT	.105	.002	.873	.005	.002
AT1	<---	ATT	.028	.000	.935	.001	.001
AT2	<---	ATT	.000	.000	1.000	.000	.000
AT3	<---	ATT	.026	.000	.985	.001	.001
AT4	<---	ATT	.029	.000	.947	.000	.001
AT5	<---	ATT	.031	.000	.936	.001	.001
SN1	<---	SN	.025	.000	.885	.000	.001
SN2	<---	SN	.000	.000	1.000	.000	.000
SN3	<---	SN	.023	.000	.963	.001	.001
SN4	<---	SN	.032	.001	.850	.001	.001
PBC1	<---	PBC	.025	.000	1.023	.000	.001
PBC2	<---	PBC	.000	.000	1.000	.000	.000
PBC3	<---	PBC	.025	.000	1.025	.000	.001
PBC4	<---	PBC	.026	.000	1.058	.000	.001
INT1	<---	ITMA	.017	.000	.935	.000	.000
INT2	<---	ITMA	.000	.000	1.000	.000	.000
INT3	<---	ITMA	.021	.000	.908	.000	.000
POC5	<---	POC	.000	.000	1.000	.000	.000
POC4	<---	POC	.037	.001	.909	.000	.001
POC3	<---	POC	.038	.001	.954	.002	.001
POC6	<---	POC	.041	.001	.964	.001	.001
POC2	<---	POC	.050	.001	.812	-.002	.001
POC1	<---	POC	.048	.001	.657	-.001	.001

Appendix F: Bootstrapping Regression Weights

			Estimate	S.E.	C.R.	P
SN	<--	NB2	.037	.016	2.364	.018
SN	<--	NB5	.297	.020	14.551	***
PBC	<--	CB1	.138	.029	4.788	***
PBC	<--	CB2	.009	.031	.305	.760
PBC	<--	CB3	.017	.033	.515	.607
PBC	<--	CB4	-.014	.022	-.633	.526
PBC	<--	CB5	.072	.037	1.962	.050
PBC	<--	CB6	-.014	.025	-.556	.578
SN	<--	NB1	.003	.013	.218	.828
SN	<--	NB3	.269	.021	12.726	***
SN	<--	NB4	.070	.022	3.246	.001
ATT	<--	BB1	.061	.014	4.366	***
ATT	<--	BB2	.102	.012	8.879	***
ATT	<--	BB3	.032	.014	2.185	.029
ATT	<--	BB4	.048	.015	3.186	.001
ATT	<--	BB5	.038	.012	3.061	.002
ATT	<--	PBC	.170	.030	5.601	***
ATT	<--	SN	.356	.032	11.106	***
ITMA	<--	PBC	.032	.060	.535	.593
ITMA	<--	SN	.204	.072	2.845	.004
ITMA	<--	POC	-.310	.060	-5.199	***
ITMA	<--	ATT	.868	.092	9.431	***
AT1	<--	ATT	.933	.041	23.046	***
AT2	<--	ATT	1.000			
AT3	<--	ATT	.984	.040	24.640	***
AT4	<--	ATT	.947	.039	24.192	***
AT5	<--	ATT	.935	.041	22.641	***
SN1	<--	SN	.885	.035	25.531	***
SN2	<--	SN	1.000			
SN3	<--	SN	.961	.031	31.005	***
SN4	<--	SN	.849	.038	22.502	***
PBC1	<--	PBC	1.023	.031	33.131	***
PBC2	<--	PBC	1.000			
PBC3	<--	PBC	1.025	.029	35.237	***
PBC4	<--	PBC	1.057	.030	35.022	***
INT1	<--	ITMA	.935	.016	60.224	***
INT2	<--	ITMA	1.000			
INT3	<--	ITMA	.908	.018	49.211	***
POC5	<--	POC	1.000			
POC4	<--	POC	.910	.048	18.776	***
POC3	<--	POC	.952	.048	19.667	***
POC6	<--	POC	.962	.049	19.800	***
POC2	<--	POC	.814	.050	16.194	***
POC1	<--	POC	.658	.051	12.833	***