



UNIVERSITI PUTRA MALAYSIA

**A CAREER GUIDANCE SOFTWARE FOR SELECTION OF COLLEGE
MAJORS IN UNIVERSITI PUTRA MALAYSIA**

WONG KOK FYE

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**A CAREER GUIDANCE SOFTWARE FOR SELECTION OF COLLEGE
MAJORS IN UNIVERSITI PUTRA MALAYSIA**

BY

WONG KOK FYE

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfilment of the Requirement for the Degree of Doctor of Philosophy**

November 2006



**ABSTRACT OF THESIS PRESENTED TO THE SENATE OF UNIVERSITI
PUTRA MALAYSIA IN FULFILMENT OF THE REQUIREMENT FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY**

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Malaysia university candidates are facing indecisiveness in college major selection in their tertiary education; and thus a career guidance tool is needed to assist them in their college majors' selection. This research was intended to develop a computer assisted career guidance (CACG) software, which consists of a vocational interest inventory (Putra College Majors Inventory) and a college major finder (Putra College Majors Finder). Putra College Majors Inventory (PCMI) is a vocational interest inventory which consisted of 360 items and was developed based on John Holland's Theory of Vocational. The process of developing PCMI followed the guideline from Brown (1983), which involved specification of instrument purpose, translating purpose into operational term, develop instrument plan, item writing, item analysis, standardization of scoring, and technical analysis of test. Reliability analysis and content validity were performed to ensure the reliability and validity of

PCMI. Putra College Majors Finder (PCMF) consisted of a list of 44 Bachelor Degree programmes of Universiti Putra Malaysia (UPM) where individual programme was assigned with a three-letter environment code. PCMF was developed by assessing the undergraduates' environment in UPM via Environment Assessment Technique (EAT). A total of 2505 second last semester (2004/2005) undergraduates from all bachelor degree programmes in UPM have been purposively sampled as the sample for this study. Statistical analysis on PCMI yielded an Alpha Cronbach of .98 and content validity index of 8.76 on a ten-point scale. The study shows that the environment profile for UPM is Social (S), Investigative (I) and Artistic (A). The SIA environment profile of UPM is in line with the university's mission to be a leading Centre of Learning and Research, contributing not only towards human advancement and discovery of knowledge but also to the creation of wealth and nation building. A CACG software was then developed based on data collected from this study. Correlation analysis was performed between the calculated result from computerized PCMI versus the paper and pencil PCMI. The Degree of Correlation was $r(335) = 1.00, p < 0.01$ proving that there were no difference found between them.

**ABSTRAK TESIS YANG DIKEMUKAKAN KEPADA SENAT UNIVERSITI
PUTRA MALAYSIA SEBAGAI MEMENUHI KEPERLUAN UNTUK
IJAZAH DOKTOR PENDIDIKAN**

**SEBUAH PERISIAN KAUNSELING KERJAYA UNTUK PILIHAN
PENGKHUSUSAN KOLEJ UNIVERSITI PUTRA MALAYSIA**

OLEH

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November 2006

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Terdapat anggapan bahawa pelajar-pelajar Malaysia sedang menghadapi masalah ketidakpastian dalam pilihan pengkhususan program universiti, dan justeru keperluan inventori kerjaya untuk membimbing para pelajar telah disuarakan. Kajian ini bertujuan untuk mencipta satu perisian kaunseling kerjaya bantuan komputer yang mengandungi satu inventori kerjaya (Putra College Majors Inventory) dan satu perisian pencarian pengkhususan program universiti (Putra College Majors Finder). Putra College Majors Inventory (PCMI) adalah satu inventori kerjaya yang mempunyai 360 item, dan telah dicipta berdasarkan teori kerjaya John Holland. Proses mencipta PCMI telah mengikut panduan daripada Brown (1983) di mana ia melibatkan proses spesifikasi tujuan inventori, menterjemahkan tujuan inventori kepada istilah operasi, membangunkan pelan inventori, menulis item, analisis item, memiawakan skor dan menjalankan analisis teknikal ujian. Analisis

keperbolehpercayaan alat ukur dan kesahan kandungan alat ukur telah juga dijalankan. Putra College Majors Finder (PCMF) pula adalah satu senarai 44 pengkhususan program ijazah yang ditawarkan di Universiti Putra Malaysia (UPM) di mana setiap pengkhususan diberi satu kod persekitaran tiga huruf. PCMF telah dibina dengan mengkaji persekitaran para mahasiswa dengan menggunakan Environment Assessment Technique (EAT). Kajian ini melibatkan subjek seramai 2505 mahasiswa daripada semester kedua sesi tahun (2004/2005). Berdasarkan analisis statistik yang dijalankan, menunjukkan nilai Alpha Cronbach PCMI ialah .98 dan indeks kesahan kandungannya ialah 8.76 pada skala 0-10. Kajian ini telah menunjukkan persekitaran UPM sebagai Sosial (S), *Investigative* (I) dan *Artisitc* (A). Profil persekitaran SIA UPM adalah selaras dengan misi UPM untuk menjadi Pusat Pembelajaran dan Penyelidikan yang unggul, yang memberikan sumbangan bukan sahaja kepada kemajuan manusia dan penerokaan ilmu, tetapi juga kepada pembentukan kekayaan dan pembangunan negara. Satu perisian Kaunseling Kerjaya Bantuan Komputer telah dicipta berdasarkan data-data yang dikumpul dalam kajian ini. Analisis korelasi telah dijalankan di antara keputusan yang dikira oleh PCMI komputer dengan PCMI kertas dan pensel. Keputusan analisa korrelasi menunjukkan $r(335) = 1.00$, $p < 0.01$ dan ini membuktikan tiada perbezaan di antara PCMI komputer dengan PCMI kertas dan pensel.

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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 UPM or other institutions.

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Date : 1 NOVEMBER 2006

TABLE OF CONTENTS

	Page
ABSTRACT	ii
ABSTRAK	iv
ACKNOWLEDGEMENTS	vi
APPROVAL	vii
DECLARATION	ix
LIST OF TABLES	xiii
LIST OF FIGURES	xiv
LIST OF ABBREVIATIONS	xv
CHAPTER	
1 INTRODUCTION	1.1
1.1 Background of Study	1.1
1.1.1 Career Indecision	1.2
1.1.2 Cost of Career Indecision	1.3
1.1.3 Indecision In College Major Selection	1.4
1.1.4 Indecision In College Major Selection In Malaysia	1.6
1.1.5 The Roles of Educational Institutions	1.10
1.1.6 The Need of Vocational Interest Inventory	1.11
1.2 Problem Statement	1.12
1.3 Research Objectives	1.14
1.4 Definitions of Terminologies	1.16
1.4.1 Personality	1.16
1.4.2 Environment	1.17
1.4.3 Congruence	1.18
1.5 Research Question	1.20
1.6 Significances of Study	1.20
1.7 Scope and Limitation	1.23
2 LITERATURE REVIEW	2.1
2.1 Introduction	2.1
2.2 Typology Approach: John Holland's Theory of Vocational	2.4
2.2.1 Four Basic Assumptions of Holland's Theory	2.8
2.2.2 Five Basic Concepts of Holland's Theory	2.10
2.2.3 Six Basic Principles of Holland's Theory	2.12
2.2.4 Six Types of Personalities and Environments	2.15
2.2.5 John Holland's Theory of Education Satisfaction	2.26
2.2.6 The Environment Assessment Technique (EAT)	2.28
2.2.7 Interest Inventories Based on Holland's Theory	2.31
2.3 Studies on Person-Environment Interaction	2.33
2.3.1 Studies on Person-High School Environment Interaction	2.35
2.3.2 Studies on Person-College Environment Interaction	2.37



2.3.3	Studies On Person-Working Environment Interaction	2.42
2.3.4	Studies On College Major Finder	2.45
2.3.5	Other Related Studies	2.48
2.3.6	Local Studies on Person Environment Interaction	2.54
2.4	Studies on Computer Assisted Career Counseling	2.55
2.4.1	Roles of Computer In Personality Testing	2.57
2.4.2	Advantages of Computer In Personality Testing	2.57
2.4.3	Disadvantages In Computer Personality Testing	2.58
2.4.4	Concerns In Computerized Personality Testing	2.60
2.4.5	Computer Version of SDS	2.61
2.5	Summary and Conclusion	2.64
3	METHODOLOGY	3.1
3.1	Introduction	3.1
3.2	Stage One : Research Methodology for Development of Research Instrument PCMI	3.3
3.2.1	Research Design	3.3
3.2.2	Sampling Procedure	3.4
3.2.3	Data Collection Method	3.5
3.2.4	Research Procedure	3.6
3.2.5	Statistical Analysis	3.17
3.3	Stage Two: Research Methodology For Development of PCMF	3.18
3.3.1	Research Design	3.19
3.3.2	Sampling Procedure	3.19
3.3.3	Data Collection Method	3.24
3.3.4	Research Procedure	3.24
3.3.5	Statistical Analysis	3.25
3.4	Stage Three: Research Methodology for Computerization of PCMI and PCMF	3.27
3.4.1	Research Design	3.27
3.4.2	Research Procedure	3.27
3.4.3	Programme Writing	3.29
3.4.4	Statistical Analysis	3.29
4	RESULTS	4.1
4.1	Introduction	4.1
4.2	Result for PCMI	4.1
4.2.1	PCMI Reliability Analysis	4.1
4.2.2	PCMI Content Validity Analysis	4.4
4.3	Result for PCMF	4.6
4.4	Result for Computerization of PCMI and PCMF	4.15
4.4.1	CACG integrity Check	4.22
4.5	Summary of Results	4.24

5	DISCUSSION	5.1
5.1	Introduction	5.1
5.2	PCMI	5.2
5.3	PCMF	5.7
	5.3.1 Consistency of Environmental Codes	5.22
	5.3.2 Differentiation of the Environmental Code	5.26
5.4	Computerization of PCMI and PCMF	5.29
6	CONCLUSION	6.1
6.1	Introduction	6.1
6.2	Summary	6.1
6.3	Research Implications	6.3
6.4	Theoretical Implications	6.4
6.5	Practical Implications	6.5
6.6	Suggestions for Future Research	6.6
6.7	Conclusion	6.7
	REFERENCES / BIBLIOGRAPHY	7.1
	APPENDIXS	8.1



LIST OF TABLES

Table	Page
1	Illustrative weights for assessing agreement between two three-letter codes for the Iachan's index (Osipow, 1987) 1.19
2	Holland's model personal styles and occupational environments 2.25
3	Application of EAT to a university faculty (Holland, 1997) 2.30
4	Instrument plans for PCMI 3.13
5	Example of the environment code frequency for various majors 3.26
6	An example of PCMF 3.27
7	PCMI Alpha Coefficient 4.3
8	Summary of PCMI content validity 4.5
9	Number of samples and the response rate for respective faculties 4.7
10	Frequency analysis for respective faculties in their selection of Realistic, Investigative, Artistic, Social, Enterprising and Conventional 4.8
11	Three-letter codes from respective faculties 4.10
12	Number of subjects, samples and response rate for respective college majors 4.11
13	Frequency analysis for respective college majors 4.13
14	Three-letter Environmental codes for respective college majors 4.14
15	Correlation analysis between manual calculated PCMI results to computerized PCMI calculated results 4.22
16	Percentage distributions of samples based on their faculties 5.11
17	Three letters environmental codes for respective faculties 5.12
18	Levels of Consistency in Two-Variable Personality Patterns 5.22
19	Levels of Consistency for Environmental Code of Respective College Majors 5.23
20	Levels of Consistency for Environmental Code of Respective Faculties 5.25
21	Differentiation index of the respective college majors 5.27
22	Differentiation index For Respective Faculties 5.28



LIST OF FIGURES

Figure	Page
1 Framework of thesis	xvi
2 Research framework	3.2
3 Stage one: Convenience sampling strategic	3.5
4 Steps in test construction (Brown, 1983)	3.7
5 Purposive sampling strategic	3.23
6 Architecture of CACG software	3.28
7 The main page of computer version PCMI	4.16
8 User personal information input page	4.17
9 Saving user personal information to database	4.18
10 PCMI part A sub-introductory page	4.19
11 Example of items in computer version PCMI	4.20
12 Three letters personality code produced by computer version PCMI	4.21
13 Percentage distributions of samples based on their ethnicity	5.7
14 Percentage distributions of samples based on their place of origin	5.8
15 Percentage distributions of samples based on secondary school type	5.9
16 Percentage distributions of the samples based on their gender	5.10
17 Percentage Distribution for Levels of Consistency	5.24



LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
ASVAB	Interest-Finder of Armed Service Vocational Aptitude Battery
CACG	Computer Assisted Career Guidance
CMF	College Majors Finder
CIRP	Cooperative Institutional Research Programme
CV	Computer Version
dF	Degree of Freedom
EAT	Environment Assessment Technique
F	Frequency
INTAN	Institut Tadbiran Awam Negara
MANCOVA	Multiple Analysis of Covariance
MBA	Master of Business Administration
MONOVA	Multiple Analysis of Variance
MVS	My Vocational Situation
N	Number of Cases
OMR	Optical Mark Recognition
P	Probability
PCMF	Putra College Majors Finder
PCMI	Putra College Majors Inventory
RIASEC	Realistic, Investigative, Artistic, Social, Enterprising and Conventional
SD	Standard Deviation
SDS	Self -Directed Search
SPSS	Statistical Package for the Social Sciences software
TESL	Teaching English as Secondary Language
U.S.	United States of America
UPM	Universiti Putra Malaysia
VPI	Vocational Preference Inventory



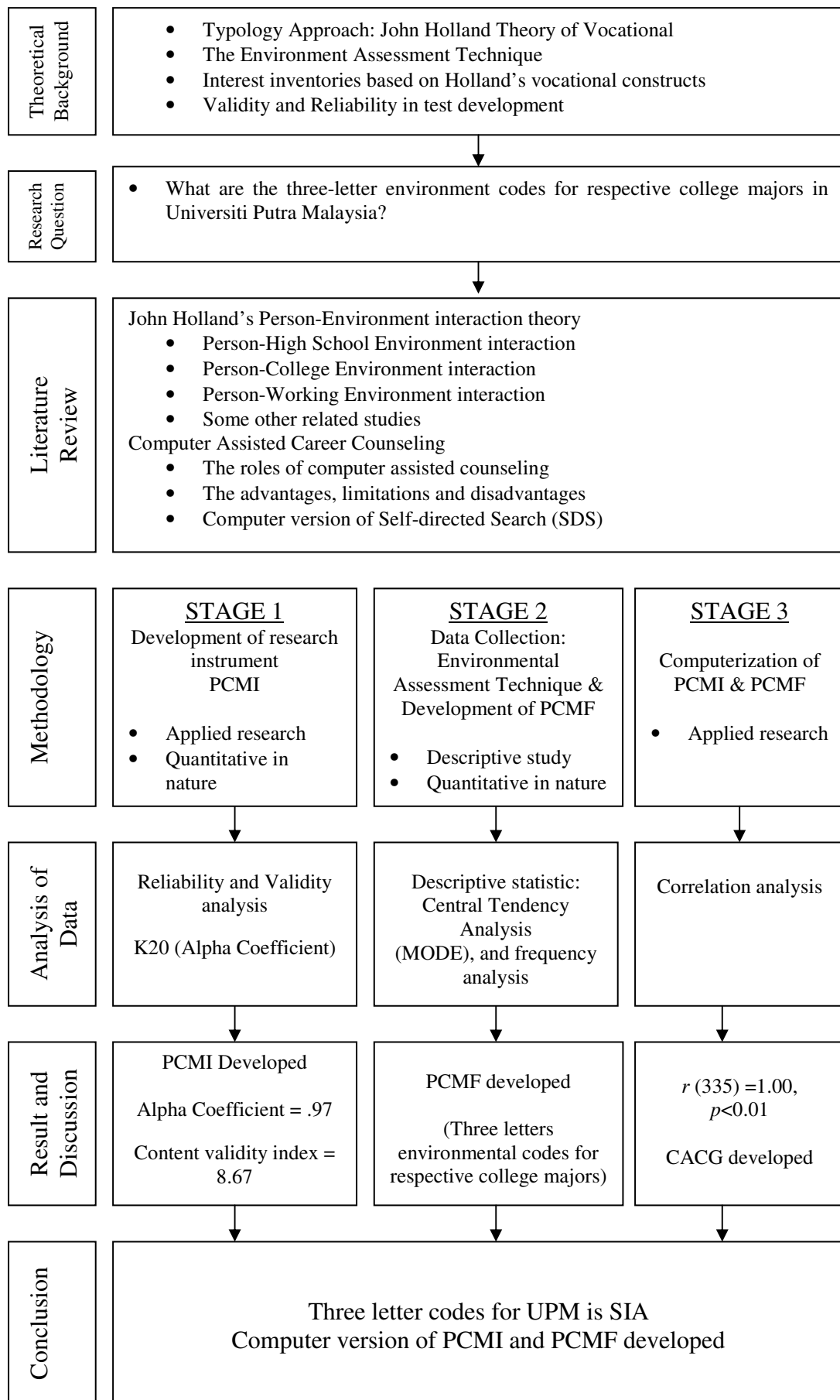


Figure 1: Framework of thesis

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Educated people are the nation's most important primary resource in this era. They are the bottom-line ingredients in economic growth as the world is facing the transformation from capitalism to a knowledge-based society. According to Drucker (1993), educated people are the society's emblem, society's symbol, and society's standard-bearer in knowledge-based society. If the feudal knight was the embodiment of society in the early-middle age, and the bourgeois under capitalism age, the educated people will represent the post-capitalist society (Drucker, 1993).

In a knowledge-based society, global trade competitions are increasing and forcing organizations to find ways to increase productivity via technological innovation, and to develop new products and services. In order to keep up to the speed of the competition, future growth will depend more than ever on highly skilled labour force. Major transformations will occur in the expectation of job that people perform. Rapid change, increased complexity, and superior quality are expected in the future occupational spectrum. Higher level, and wider range of skills together with flexibility, adaptability will be expected from the future workforce (Drucker, 1993).

Jarvis (1991) estimated that from year 1991 to 2000, two third of the jobs created in the knowledge-based society require education level more than high school graduation. Almost 50% of these jobs expect a minimum of five years post-



secondary education and training. However, existing labour force today is getting old and less adaptable to the challenges in knowledge-based society, and only 75% of them remain in the next ten years (Jarvis, 1991). In order to refill this gap in labour force, retraining and education have become an important agenda for many countries.

1.1.1 Career Indecision

According to Jarvis (1991), only 35% of youths in Canada pursued to university education and majority of them have not graduated. Those who did continue with the academic qualification and motivated to complete university education however deferred in career decisions. They were in the university educational programme because they believed that the university education programme would assure a better pay slip in whatever career they follow in the future, and were not because of their personal career goals or academic interests. On top of this, majority of them were not choosing an occupation that was directly related to their university majors five years after graduation (Jarvis, 1991).

School leavers, dropouts and graduates have difficulties finding jobs that they truly enjoy (Jarvis, 1991). The median duration for their first jobs was usually less than a year. Many of them quit their jobs because they felt the job wasn't what they were expecting in their careers and it wasn't what they wanted to do for the rest of their life. Many of them changed several jobs within the first ten years in the job market and often go on job-hopping, or remain jobless and getting unemployment welfare and other social assistance. Although the career life of these young adults got stable in their middle to late twenties, most of them were due to mortgages, rent payments

or domestic responsibilities, which confined them to continue searching for job they truly like.

1.1.2 Cost of Career Indecision

It costs more than 25,000 US Dollar to recruit, select, and train an employee to full productivity and this cost was even higher for professional career such as aircraft pilots, physicians, engineers and so forth (Jarvis, 1991). As the youths go through a succession of trial jobs in search of their careers, it only takes forty people to change their jobs once and this contributed to one million US Dollar lost in recruiting and training investment. Over three millions people changed jobs each year in Canada, and this phenomenon has added up to an estimated 7.5 billions US Dollar lost by employer each year.

In Canada, the cost of unemployment incentive payment to those 24 years old or younger unemployed youths for fiscal year 1987/88 was 2.4 billions US Dollar (Jarvis, 1991). Dividing this number by number of working days, it equaled to ten millions US Dollars every working day of that year, or over 1,0250,000 US Dollar every working hour (Jarvis, 1991). This social burden was no doubt a very high price for the country to bear.

Looking into the government-sponsored training programmes, the voluntary dropout students including those who have the ability to complete the course but dropped out in a short-term period were also expensive. This cost the Canadian government about 300 million US Dollar loss in education investment, equivalent to between 15 to 20% of the federal national training budget (Jarvis, 1991).



1.1.3 Indecision In College Major Selection

Most of the university candidates were in doubt and uncertain in the aspect of college major selection (St. John, 2000). Officials in University of New Hampshire assert that 20% of all their freshmen switched their college majors between admission and the first day of classes; and nearly 75% changed their college majors at least twice before they graduated. The officials of University of Minnesota agreed with these figures as their study has also showed that it was typical for university freshmen to test out four to five college majors before making a final decision (St. John, 2000).

Elton and Rose (1970) in predicting the occupational constancy and change in a group of male sample based on John Holland's Theory of Vocational (Holland's Theory) reported that major discrepancy was observed in the survival rates of college major decided and undecided university freshmen. In their findings, only 17% of the undecided university freshmen persisted to graduation compared to 43% of university freshmen that were decided in their college majors.

Ballo (1973) studied the graduates and dropouts from six vocational training programmes. 180 graduates and 66 non-graduates at the Vocational Division of Lewis-Clark State College attending between September 1966 and January 1970 were selected as the subjects. The students had participated in the following six vocational programmes; Auto Mechanics, Industry Mechanics, Police Officer Training, Drafting and Design, Mid-Management and Radio Communication technology and their age were ranged from 16 year to 51 year old. It was found that



variables such as age, education level, high school completion, marital status, physical or health disability, GATB scores, length of time to obtain employment, salary of first full-time job and job satisfactions were not significant factors in distinguishing between graduates and dropouts in vocational training programme. One significant difference between graduates and dropouts was in respect to whether their first choice of a vocational programme was offered. A higher percentage of graduates stated that the vocational school has offered them the first choice of a vocational major. A few non-graduates stated that they were satisfied with taking their second choice in vocational programme compared to going into the military school, but they were not as motivated as they would have if their first major choice had been offered. The other significant difference between graduates and dropouts was in relation to whether their first full-time job upon termination of training was in the area of study at vocational school. A higher percentage of graduates obtained their first full-time job in the trade or field studied compared to the dropouts. It was possible that some of the non-graduates dropped out and entered non-related trades; because they felt that they were not suited for the vocational programme or had an unpleasant experience in the programme at the vocational school.

The studies from (St. John, 2000; Elton & Rose, 1970; Ballo, 1973) showed us that college major selection is an important part of career planning for university candidates, as it will determine the completion, satisfaction and performance of the undergraduates. An effective selection of college major at the point of making college major selection is very important to the career path of the undergraduates as college major selection has a direct relationship to their future career satisfactions.



1.1.4 Indecision In College Major Selection In Malaysia

Although many researches (St. John, 2000; Elton & Rose, 1970; Ballo, 1973) have emphasized the importance of college major selection, most of the Malaysian university candidates are still indecisive in their college majors' selection. According to Othman Mohamed, Rahim Bakar and Ali Yacob (2001), most of the students in Malaysia are indecisive in careers and failed to make a sound decision in their education and career plans. Othman Mohamed et al. (2001) felt that this phenomenon might be due to lack of career guidance information and career guidance tools to assist them in planning for their career. Othman Mohamed et al. (2001) stated that students' career indecisiveness might hamper the nation's human resource planning and industrialization development process. According to them, education is an industry that involves major fund investment, and no immediate result will be seen. The nation will bear a great loss of educational cost if the students are indecisive in their careers, and this may impede the development of the country as we are training the wrong students for a wrong career.

The deputy minister of Malaysia Higher Education ministry, Yang Berhormat Dato' Ong Tee Keat in his exclusive interview with Sin Chew Daily (2006) stated that the phenomenon of mismatch between personality and college major selection in tertiary education is getting more serious. He stated that this mismatch phenomenon has existed for sometime and is causing ineffectiveness in human resources training of the country. He pointed out that the ministry of higher education is getting many colleges major transfer application from undergraduates, and most of them have given the reason as wrong selection of college major. Yang Berhormat Dato' Ong Tee Keat also stressed that this unhealthy phenomenon need to be addressed not

only by the ministry but also from all levels of the society including the universities, students and parents.

In his study, Amir Awang (1983) concluded that career selection is one of the biggest problems faced by students in Malaysia. He listed three major reasons why Malaysian students are facing difficulties in making career selection. According to him, students have difficulties in making decision in career selection because they have multiple interests in multiple fields and unclear or did not have any interest in any particular field. He also pointed out that students were unable to estimate their own interests, abilities and personalities. This caused them to make a decision that was not congruence with their personality. Students were also lack of knowledge and information about the career world and this also gave rise to the difficulty in determining their career paths.

Wan Marzuki Wan Jaafar (1999) studied the career indecision among students age ranged from 16-19 in the state of Selangor and sampled 365 students from different ethnicities and religions in seven secondary schools in Selangor. His study found that variables among students; such as gender, origin, social economic status, career values and locus of control were not significant factors for career indecision. However, factors such as the ethnicity and religion were found to be significant factors for career indecision. One Way ANOVA analysis indicated that there was a significant difference in career indecision among students from different ethnic groups and religions. Wan Marzuki Wan Jaafar (1999) concluded that students with different ethnicities and religions do have different level of career indecision. He also commented that influences such as family, ethnicity cultural values; religion

beliefs and values do play a strong role in determining the level of career indecision among students. In his dissertation, he also urged parents, school counselors, educators and administrators to have bigger responsibility in understanding and correcting this unhealthy social issue.

Suradi Salim (1998) studied the career aim and awareness of secondary schools' students in the Klang Valley. 23 secondary schools have participated in this study and 1823 secondary students have been studied. According to him, majority of secondary school students have an ambition to further their study to university level and majority of them felt that getting a good occupation was the motivation for them to pursue university education. At the first look, these findings seem encouraging; however, the outcome was very disappointing as Suradi Salim further understand the knowledge of the students in the world of work, and their academic preparations toward achieving their career goals. When the students were asked to name as many occupations that were available in Malaysia, only 1.0% (18 students) was able to name more than 50 occupations. 19 students (1.9%) were totally unable to name any occupations and majority of them (80 %, 1467 students) of them were only able to name 11 to 20 occupations. He commented that the numbers of occupations named by the students were low and has exposed the phenomenon of students' indecision in their career planning. The finding also proved that students were insufficient in knowledge of the career world and their inability in deciding their career paths selection. Looking into the career preparedness, Suradi Salim (1998) explored if students have ever discussed about their career paths, and found that majority of the students have never discussed their career plan with anybody at all. This exposed the fact that majority of the local students have never received any career guidance and