

RETURNS TO INVESTMENT IN EDUCATION AT
DIPLOMA LEVEL:
A CASE STUDY IN IPOH, MALAYSIA

by

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ABSTRAK

Tajuk tesis ini ialah Pulangan Pelaburan Pendidikan pada Peringkat Diploma: Satu Kajian Kes di Ipoh, Malaysia. Penyelidikan ini meliputi konsep asas pendidikan ekonomi iaitu sumber manusia berhubungan dengan pendidikan. Di bawah konsep ini, pendidikan dianggap sebagai satu pelaburan dan sumber. Oleh itu, masalah kajian yang penyelidik ingin menjawab secara empirikal adalah keberuntungan pelaburan dalam sumber manusia khususnya pendidikan dari segi perspektif persendirian dan sosial. Ia bertujuan untuk menentukan pulangan pelaburan pendidikan persendirian dan sosial pada peringkat diploma dan kursus diploma seperti kejuruteraan dan perniagaan. Di samping itu, ia juga bertujuan untuk mengkaji hubungan di antara pendidikan dan pendapatan serta menentukan saiz perbezaan pendapatan di antara seorang graduan lepasan diploma dengan pelajar lepasan sekolah menengah. Penyelidikan ini berguna kepada bakal lepasan sekolah menengah, perancang pendidikan dan pembuat polisi. Kerangka konseptual disumbangkan oleh konsep sumber manusia, satu kerangka asas bagi penganalisan pelaburan dalam sumber manusia.

Penyelidikan ini menggunakan kaedah kadar pulangan dalaman dan fungsi pendapatan Mincerian dalam menentukan pulangan pelaburan pendidikan. IRR merupakan kadar pulangan yang menyamakan nilai kini bersih (NPV) bersamaan dengan sifar. Ini bermaksud, nilai diskaun faedah pendidikan adalah sama dengan nilai diskaun kos pendidikan. Fungsi pendapatan Mincerian merupakan satu model regresi dimana log pendapatan diregresikan ke atas tahun persekolahan, tahun pengalaman bekerja dan tahun pengalaman bekerja kuasa dua. Koefisien bagi tahun persekolahan dalam fungsi pendapatan Mincerian normal menunjukkan pulangan purata atas pelaburan pendidikan. Di samping itu, koefisien bagi tahun persekolahan dalam fungsi pendapatan Mincerian lanjutan menunjukkan saiz perbezaan pendapatan di antara dua peringkat persekolahan. Pengumpulan data bagi pengiraan kadar pulangan

pendidikan dikutip daripada satu kajian kes di Ipoh, Malaysia, bermula dari Februari 19, 2003 sehingga Mei 12, 2003. Ipoh dipilih sebagai lokasi pengumpulan data demi tujuan kesenangan. Ini kerana penyelidik mempunyai “network” yang kukuh di Ipoh. Sampel terdiri daripada mereka yang berada di pasaran buruh selepas tamat pendididkan. Jumlah sampel seramai 452, terdiri daripada 284 respondens lepasan diploma dan 168 lepasan sekolah menengah. Di samping itu, sampel dipilih daripada ekonomi sektor seperti pembuatan, pemborongan, kewangan, insurans and perkhidmatan perniagaan. Penyelidikan ini menggunakan persampelan jenis “network” disebabkan oleh kesukaran untuk megenalpasti sifat semulajadi dan saiz populasi.

Menurut kaedah pulangan dalaman, kadar pulangan persendirian dan sosial masing-masing ialah 12.87% dan 10.39%, manakala kadar pulangan baru ialah 9.37% dan 7.34% selepas penyelarasan atas “ability and cognitive skills”. Bagi kursus diploma, kadar pulangan persendirian dan sosial kejuruteraan adalah tinggi daripada perniagaan. Sebelum penyelarasan, kadar pulangan persendirian dan sosial atas kejuruteraan dan perniagaan masing-masing ialah 14.33% dan 11.35%. Walaubagaimanapun, selepas penyelarasan, kadar pulangan persendirian dan sosial atas kejuruteraan dan perniagaan adalah lebih rendah, bersamaan dengan 11.01% dan 9.17%. Sementara itu, fungsi pendapatan Mincerian melaporkan kadar pulangan persendirian 15% pada peringkat diploma dan kadar pulangan persendirian atas pendidikan secara puratanya pada 12%, bagi setiap tambahan satu tahun persekolahan. Kadar pulangan Mincerian 12% adalah selari dengan negara Asian seperti Singapura 13.1%, Jepun 13.2%, Korea 13.5% dan Thailand 11.5%. Sebagai kesimpulan, hasil penyelidikan menunjukkan bahawa pendidikan mempunyai hubungan positif dan signifikan dengan pendapatan. Tambahan pula, saiz perbezaan pendapatan adalah 45% di antara seorang graduan lepasan diploma dengan pelajar lepasan sekolah menengah.

ABSTRACT

The title of the thesis is Returns to Investment in Education at Diploma Level: A Case Study in Ipoh, Malaysia. This research covers the basic concept in the field of economics of education, that is, the human capital in relation to education. Under this concept, education is viewed as an investment and a form of capital. Therefore, the research problems here that the researcher wants to answer empirically is the profitability of investing in human capital particularly in education from the private and social perspectives. It is aimed to determine the private and social returns to investment in education at diploma level, as well as by diploma courses such as engineering and business. Further, it aims to examine the relationship between education and earnings, as well as to determine the size of earnings differential between a diploma graduate and a secondary school leaver. All these are useful to future school leavers, educational planners as well as policy makers. The conceptual framework is provided by the human capital concept, a basic framework for analyzing investments in human capital.

This research employed the Internal Rate of Return method (IRR) and the Mincerian Earnings Function method in determining the returns to investment in education. IRR is a rate that equates the net present value (NPV) to zero. This is where the discounted benefits of education are similar to the discounted costs of education. The Mincerian Earnings Function is a regression model where the log of earnings is regressed on years of schooling, work experience and work experience squared. The coefficient of years of schooling in the basic Mincerian Earnings Function reflects the average return to investment in education. Note also, that the coefficient of years of schooling in the extended Mincerian Earnings Function reflects the size of earnings differential between the two levels of education. Data for the rates of return computation were collected through a cross sectional study conducted at one single point in time in Ipoh, Malaysia from February 19, 2003 until May 12, 2003. Ipoh was chosen

as a geographical area for the sake of convenience. The main reason is that the researcher was born in Ipoh and has a well-established business and friendship network in Ipoh. Samples were selected from those who are now in the labor market working after they have finished schooling. Total samples were 452, with 284 diploma graduates and 168 secondary school leavers. Additionally, samples were selected from the economic sectors such as manufacturing, wholesale trade, finance, insurance and business services. This research employed the network sampling due to the difficulty in identifying the nature and size of the population.

According to the IRR method, private and social rates of return to diploma level were 12.87% and 10.39% respectively, before adjusting for ability and cognitive skills. After some adjustments on ability and cognitive skills, the new rates of return are somewhat lower. These private and social rates of return were 9.37% and 7.34% respectively. By diploma courses, the private and social returns to engineering were higher than business. The unadjusted private and social rates of return to engineering and business were 14.33% and 11.35% respectively. However, the adjusted private and social rates of return to engineering and business were somewhat lower at around 11.01% and 9.17% respectively. Meanwhile, the Mincerian Earnings Function reported a private rate of return to diploma level of 15% and an average private rate of return to education of 12%, for one additional year of schooling. This Mincerian private rate of return of 12% is similar to some Asian countries like Singapore 13.1%, Japan 13.2%, Korea 13.5% and Thailand 11.5%. To conclude, the findings indicate that education was significantly and positively related to earnings. In addition, the size of earnings differential between a diploma graduate and a secondary school leaver was 45%.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

The Third World nations believed that education is the key to national development. They see a positive relationship between education and development. The more education the citizens receive, the more rapid is the national development. Todaro (2000) viewed Malaysia as one of the top performing developing nations that has invested heavily in education. For instance, in 1996, recurrent expenditure for primary education was RM2.6 billion and this figure increased to RM3.7 billion in year 2001, showing an increment of 41.36% (Malaysia Educational Statistics 1996 & 2000). In addition, as reported by the World Bank Group, youth literacy rate ages 15-24 in Malaysia was 97.6% in the year 2000 and 97.3% in the year 1999. The percentage of educational expenditure against Gross National Product (GNP) in Malaysia from 1991-2001 is as summarized in Table 1.1.

Todaro (2000) perceived human resources as the ultimate source in determining the economic and social development, as agreed by most economists. As Professor Harbinson says:

“Human resources... constitute the ultimate basis for the wealth of nations. Capital and natural resources are passive factors of production; human beings are the active agents who accumulate capital, exploit natural resources, build social, economic and political organizations and carry forward national development. Clearly, a country which is unable to develop the skills and knowledge of its people and to utilize them effectively in the national economy will be unable to develop anything else.”
(Professor Harbinson cited in Todaro 2000:326)

Education plays an important role in contributing to economic growth. Hicks (1995) argued that countries with higher level of education are those countries with higher income as in the example of the United States. Hicks further explained that education contributes to economic growth through the productive labor force in the market.

Nowadays, most parents expect their children to do better than them in the future. They want their children to excel, to have a brighter future, brighter prospects and subsequently a better life. In short, they see the importance of education in determining the social and occupational mobility from generation to generation. Therefore, parents of today are willing to sacrifice time and money to invest in their children's education. These situations are likely to be continued in the future. This is due to the fact that education is a profitable investment for both individuals and society. Whether government or families, all know the importance of education, for each and every opportunity education offers today.

Since education has a profound and positive impact on improving and enriching lives, both government and families are concerned about costs, returns and efficiency of educational investment. If education is a form of capital, what is the rate of return? Or how big is the return? This is an economic aspect of education, because people all walks of life are interested and keen to know the level of profitability of investing in education as compared to investment in physical capital, different levels of schooling, different programs and courses as well. This study concentrates on four types of analysis. The first is the determination of the private and social rates of return to investment in education by IRR and Mincerian Earnings Function at diploma level. The second type of analysis is the determination of private and social rates of return by fields of study. The third type of analysis is to examine the relationship between education and earnings. The final is to determine the size of earnings differential between a diploma graduate and a secondary school leaver. The primary objective of this study is to access and examine the economic value of educational investment at diploma level. Hence, this research will provide the readers some kind of information on the returns to investment at diploma level.

Table 1.1
Educational Expenditure against GNP (1991-2001)

Year	Educational Expenditure (RM)	GNP at market price (RM'000,000)	Percentage (%)
1991	6,269,962,850	123,232	5.09
1992	7,959,762,010	140,547	5.66
1993	8,525,411,610	159,043	5.36
1994	8,954,979,220	178,090	5.03
1995	9,734,107,320	202,389	4.81
1996	10,846,486,650	227,368	4.77
1997	12,031,102,900	262,193	4.59
1998	12,510,391,200	269,137	4.65
1999	13,462,340,030	280,932	4.79
2000	14,079,737,820	295,843	4.76
2001	18,601,959,600	326,071	5.70

Source: Economic Report 2000/2001

Federal Expenditure 2001, cited in Malaysian Educational Statistics 2001

1.1 Education in Malaysia

Education in Malaysia consists of 3 levels of primary, secondary and tertiary education. Before enrolling in primary education, most children between 4 to 6 years old begin their education at pre-school (kindergartens). Pre-school education is important because before the age of 6, a child is very 'absorbent' and this is a sensitive period when he or she is experiencing a window of opportunity to learn. There are some objectives in the establishment of pre-school education in Malaysia. Among these objectives are fostering of love for the country, instilling moral values, developing basic communication and critical thinking skills, acquiring the English language proficiency and appreciating physical activities. Government, non-government agencies and the private sector are responsible for setting up the kindergartens throughout the country.

Primary education lasts 6 years and there are two levels of primary education. One is from Year 1 to 3 and the other is from Year 4 to 6. Primary level I, Year 1-3 focuses on the mastery of 3R's, the development of personality, attitude and values. Primary level II, Year 4-6 concentrates on the reinforcement and application of complex skills of the 3R's, acquisition of knowledge, pre-vocational education, development of personality, attitude and values. In other words, the earlier focuses on acquiring strong reading, writing and arithmetic skills while the latter focuses on building a strong foundation in sciences and basic skills. There are 3 types of primary schools. The national schools use Bahasa Malaysia as the medium of instruction, the national type Chinese schools and the national type Tamil schools that use Mandarin and Tamil respectively as the medium of instruction. At the end of Year 6, students have to sit for the Primary School Assessment Test (PSAT).

Secondary education comprises lower, upper and pre-university education. Lower secondary education lasts 3 years and at the end of this level of education, students have to take the Lower Secondary Assessment (PMR), formerly known as Sijil Rendah Pelajaran (SRP). Lower secondary education, Form 1-Form 3 emphasizes on general education, consolidation of skills, development of aptitude, interests, personality, attitude and values. This is followed by the 2 years upper secondary education in arts, science, religious, vocational or technical schools. Then, students from normal academic schools will sit for Malaysia Certificate of Education (MCE) Examination, which is equivalent to the British O-level.

On the other hand, technical and vocational education prepares students for higher education. These schools offer education at upper secondary level and most subjects are career oriented. The length of technical and vocational education is 2 years. Another type of education is offered by the national religious secondary schools. These schools offer specialized courses Islamic studies. Pre-university education comprises sixth form and the matriculation courses. Sixth Form lasts 2 years and there is selective entry to Sixth Form. At the end of the second year, it leads to the STPM (Malaysia Higher School Certificate), which is equivalent to the British A-level.

With the educational reforms in the 1990s, the educational system in Malaysia has changed from an elitist secondary education to universal secondary education. The Malaysian education system was lengthened from 9 years of basic education to 11 years in 1993. In other words, it provides 11 years of free education to every child in the country with the educational structure of 6 years of primary education, 3 years of lower secondary education and 2 years of upper secondary education. Tertiary education is higher education for academic and knowledge advancement leading to a certificate, diploma and degree. Institutions of higher education are the universities, colleges and polytechnics. All institutions of higher education are under the

supervision of the Ministry of Education. Universities are self-managed and financed by the government. Recently, private institutions have been established in the country. Polytechnics were established to provide relevant training in engineering, commerce, technological and entrepreneurial education to upper secondary school leavers. Higher education in Malaysia is aimed at producing quality manpower to meet the labor force demand in the market. Since, Malaysia needs to urgently build a critical mass of creative and innovative manpower, the public and private institutions together play important roles to fulfill the national needs. Towards this end, the education system will be reviewed to produce labor with the required skills (Eighth Malaysia Plan 2001-2005). Thus, higher education plays an important role to social and economic development of a country because higher education will benefit not just the person being educated, but also the society as a whole.

1.2 Problem statement

Returns to investment in human capital, particularly in education have been the dominated subject of research since 1960's till today. Most research has been widely performed all over the world to measure the rates of return to investment in different types of education and different levels of schooling. In United States, the profitability of investing in education, namely the rates of return studies, has flourished since 1960 because of the data availability in the country. This enables the United States to compute the returns to investment in education by levels of schooling, for particular regions, particular group of people, by types of education, types of courses, subjects and different points in time. The first rate of return analysis in United States was done by Becker in 1960. According to Psacharopoulos (1973), the rate of return to education declines by levels of education. For instance, the average social rates of return were 19.4% for the primary education, 13.5% for the secondary education and 11.3% for the higher education. This pattern is proved to be statistically significant when Psacharopoulos reviewed the

experience of 32 countries as regards their returns to education, including Malaysia. As reported by Psacharopoulos, a research done in Malaysia in year 1970 by Hoerr of the Harvard Development Advisory Service found that the social returns to secondary and university education were 12.8% to 15.6% and 5.8% respectively. From the private perspective, returns to secondary and university education were 15.6% to 21.1% and 11.4% respectively. The internal rate of return (IRR) was highest for engineering and lowest for social sciences. Students who were being financed by their families or by private funds, tended to choose courses that yield greater private benefits, mainly in the technological and physical sciences.

Malaysia is experiencing a shortage of professional, skilled, specialized, experienced and technical workers especially in textiles and apparel, chemical, resources based sector and transportation industry groups. The types of manpower needed are the chemical, electrical, mechanical engineers, technicians and managers. They are those trained in the engineering-related fields and in general skills like computer science, accounting, architecture, pure sciences, business and law (Source: The Second Industrial Master Plan 1996-2005).

At the same time, Malaysia has always been concerned for the economy in facing greater challenges looming ahead from the impact of globalization, liberalization and technological changes especially in information and communications technology (ICT). In order to further strengthen the economy and increase the market competitiveness, priority is given to enhance the total factor productivity (TFP) and the development of the knowledge-based economy. With regard to this, greater emphasis is placed on supplying more quality manpower, enhancing research and development (R&D) and accelerating the development of growth sectors.

Towards becoming a united and fully developed nation by the year 2020, the Eighth Malaysia Plan has identified the steps to be undertaken. Under the human resource development, greater emphasis is given to create a strong human resource base, in order to support the

development of the knowledge-based economy. Until the mid 1990s, Malaysia depended largely on capital investment for the economic growth. Due to the decreasing marginal productivity of capital, it then shifted from input-driven to knowledge-driven strategies. The shifting of the key economic sectors towards more efficient production process and high-value added activities require more quality manpower.

Thus, the quality of education is important in supplying more quality manpower, that is, workers who are multi-skilled and high-skilled. Moreover, they must also be knowledgeable, informative, creative and flexible, who are in line with the market demand. With respect to the strategic shift towards higher value-added activities and more efficient production processes, the labor market will demand more from the workers with high educational attainment and professional training. For example, the demand for the professional and technical category grew 5.2% during the Eighth Malaysia Plan. Its contribution to total employment accounted for by this group people was 9.9% in 1995 and increased to 11% in 2000. The forecast is 12.1% in 2005. The amount of new jobs created by this group is 17.9%, which is equivalent to 227,900 new jobs in Seventh Malaysia Plan. It is projected to be 18.5% (294,200 new jobs) for the following plan (Source: Eighth Malaysia Plan 2001-2005).

Besides that, the demand for the administrative and managerial workers recorded the highest annual growth in Eighth Malaysia Plan, accounting for 6.9%. With respect to total employment, the number of such workers is on a rising trend from 1995, with 3.2% to 4.2% in 2000 and projected to be 5% in 2005. Based on the annual growth rate, it would mean that these two occupational groups received greater attention by the labor market demand than the rest like clerical, sales, service, production and agricultural workers (See Table 1.3). Similarly, Singapore also experienced a shortage of manpower needed for the industrial diversification, as pointed out by Toh et. al (1999). This is because of the imbalance in supply and demand, whereby manpower

demand exceeds the supply, leading to higher wages paid to technicians and engineers who were short in supply. Research in Singapore indicates that this is the main contributing factor, where the rate of return to polytechnic education in Singapore was the highest among all the levels of education from the private and social perspectives. Research indicated that the social and private rates of return to polytechnics were 19.89% and 22.25% respectively. This was more than the rates of return for secondary, post secondary and university's rates of return (See Table 1.2).

Table 1.2
Rates of return to education in Singapore

Level of education	Social rate of return	Private rate of return
Secondary	7.52	6.63
Post-secondary	14.90	14.82
Polytechnic	19.89	22.25
University	14.41	14.85
Source: Toh et. al (1999)		

The same is true of Canada, where Allen (1999), a Professor of Economics at the University of British Columbia, found that in the 21st century, the labor market in Canada shows a rising demand of educated manpower as a result of the rising rates of return in Canada in the 1990's. He also found that the best educational investment is the completion of secondary education with either a diploma or a trade certificate with the social rate of return of 28.4%-39.8%. This is because specific skills training are vital in getting a good job. In addition, 37% of the responses in Angus Reid Survey of Ontario residents done in 1998, thought that a high school diploma with job training was the best preparation for the future economy.

Coming back to Malaysia, as explained earlier, the same situation concerning the shortage of manpower is soon apparent. Therefore, there is a need to produce more skilled manpower to achieve efficient utilization and continuous development of human resources. As a result, the supply of highly skilled and trained manpower in the Eighth Malaysia Plan is projected to increase, resulting from increasing investments in education and training. Under the Human Resource Development in the Eighth Malaysia Plan, Malaysia is emphasizing on increasing investments in human capital. The continued priority given by the government in education and training could be seen in the increased development allocation for education and training programs in the Eighth Malaysia Plan. For instance, the Seventh Malaysia Plan had allocated RM17.95 billion on the development expenditures to education. The amount has jumped to RM18.66 billion in the Eighth Malaysia Plan with an increment of 3.96%. The same goes for the training and development allocation that has increased from RM2.24 billion to RM4 billion in the Eighth Malaysia Plan, an increment of 78.79%. In this context, the education and training system will be upgraded to improve quality and accessibility, accommodating the increasing demand for places in order to produce more multi-skilled, high-skilled and knowledgeable manpower. Besides that, they have to ensure that the manpower supply is in line with the market and technological changes.

Therefore, in Malaysia, the number of polytechnics is growing and at the same time, the Ministry of Education is upgrading the polytechnics system. The objectives of the polytechnics are in line with those listed in the Human Resource Policy Thrusts and the prospects of 2001-2005. For instance, students are trained to become skilled personnel and all courses require students to go for industrial training. Students are also equipped with the technological and entrepreneurial skills. With respect to this, policy decisions of building more public institutions of higher learning, for example polytechnics, are aimed to increase the supply of manpower with

the educational attainment, skills, knowledge, the right mindset and the positive attitudes that can support the base of the economy as well as to ensure the economic growth. A subsequent question from the investments in human capital will be "How is the return like?"

From the social point of view, rates of return will be useful to the policy makers and educational planners in knowing which types or levels of education that brings the most return as well as on how to invest wisely in human resources for the nation's continuous development. Most research done in this field has been about the returns to investment in education at levels like primary, secondary, technical training, university level and for different professions. The rates of return studies tend to overlook rates of return at the diploma level. The researcher has noticed that little research has been conducted in Malaysia in this field, economics of education, especially in measuring the returns to investment in education. Based on the researcher's reading, there is none at diploma level. What is therefore needed, is the research on the returns to investment in education at diploma level. Thus, the researcher feels that there is a need in this area of study and must be given some attention. Therefore, this has prompted the researcher to carry out this study. This study is carried out in the district of Ipoh, Malaysia and calculates the private and social returns to investment in education at diploma level as well as by diploma courses such as engineering and business. In addition, it examines the relationship between education and earnings as well as determines the size of earnings differential between the two levels of education.

Table 1.3
Employment By Major Occupational Groups, 1995-2005 ('000 persons)

Occupational groups	1995	%	2000	%	2005	%	Average growth (% per year)		Net job creation			
							7MP	8MP	7MP	%	8MP	%
Professional, technical & related workers	791.9	9.9	1,019.8	11	1,314	12.1	5.2	5.2	227.9	17.9	294.2	18.5
Administrative & managerial workers	256	3.2	389.4	4.2	543	5.0	8.8	6.9	133.4	10.5	153.6	9.7
Clerical & related workers	871.9	10.9	1,029.1	11.1	1,216.2	11.2	3.4	3.4	157.2	12.4	187.1	11.8
Sales Workers	871.9	10.9	1,019.8	11	1,227.1	11.3	3.2	3.8	147.9	11.6	207.3	13.1
Service workers	887.9	11.1	1,094	11.8	1,346.6	12.4	4.3	4.2	206.1	16.2	252.6	15.9
Production & related workers	2,711.8	33.9	3,041	32.8	3,355.4	30.9	2.3	2.0	329.2	25.9	314.4	19.8
Agricultural, husbandry & forestry workers	1,607.8	20.1	1,678.1	18.1	1,856.6	17.1	0.9	2.0	70.3	5.5	178.5	11.2
Total	7,999.2	100	9,271.2	100	10,858.9	100	3.0	3.2	1,272	100	1,587.7	100

Source: Eighth Malaysia Plan 2001-2005

1.3 Justification of the study

This research is carried out to determine the profitability of investing in education in the form of rates of return from the individual and social perspectives. By this is meant that it aims to determine the private and social rates of return to education at diploma level. Apart from determining the rates of return, it also aims to examine the relationship between education and earnings as well as to determine the earnings differential between a diploma graduate and a secondary school leaver. This research is not the only solution to every question in educational planning and manpower analysis, but it will be one of the good references for educational planners and policy makers. Then, it would therefore make a significant contribution to the body of literature in the Economics of Education in Malaysia. Furthermore, there have been few studies done in Malaysia on the rate of return to education at diploma level. Hence, this study is justified to fill in the knowledge gap and dearth of information in this area. Admittedly, all the countries across the globe are so concerned about the knowledge-based economy in this new era, thus, in this context, knowledge is viewed as the power of sustaining the economic development of a nation. In moving towards achieving this knowledge-based economy, Malaysia invests heavily in education and training. It is thus not surprising to see the growing numbers of polytechnics, colleges and universities throughout the country. This is because a good human formation is crucial for the development of a country. Hence, government needs some careful and wise decision on spending and investing their scarce resources. All these spending and investing should be in line with global and local market changes. It should be noted that this study would provide them with the relevant information concerning the educational investment at diploma level.

1.4 Research Objectives

- 1) To determine the private and social rates of return to education at diploma level.
- 2) To determine the private and social rates of return to engineering as well as business studies at diploma level.
- 3) To examine the relationship between education and earnings.
- 4) To determine the earnings differential between a diploma graduate and a secondary school leaver.

1.5 Research Questions

- 1) What are the rates of return to education at diploma level?
- 2) What are the rates of return to engineering and business studies at diploma level?
- 3) What is the relationship between education and earnings?
- 4) To what extent do earnings differential exist between a diploma graduate and a secondary school leaver?

1.6 Significance of the study

This research focuses on determining returns from the educational investment in the form of rates of return from the private and social perspectives. In this context, what are to be investigated would be the returns to investment in education at diploma level as a case study in Ipoh, Malaysia. If education is an investment and a form of capital formation, then determining the returns to investment in education at diploma level may help to extend the understanding of investments in education. The foundation of this research is the human capital concept that is widely used in estimating rates of return. Such concept carries two assumptions. One is that education enhances productivity and the other is productivity enhances earnings. What is crucial in this research is it measures the economic value of education or the economic value of human capital investment.

Extensive research has been conducted in this field in the United States and in some other parts of the world, but not extensively in Malaysia. Therefore, this research is one of the few studies conducted in Malaysia to fill the knowledge gap. Even though, it is just a small case study conducted in one of the states in Malaysia, it would definitely contribute to knowledge in the discipline of Economics of Education. It should be noted that future researchers can use it as a guide for further research, investigation. It may also provide them with the advance knowledge in both theoretical and practical experiences on a topic of relevance to their programs.

1.7 Definition of terminologies

1.7.1 Returns

According to Mayo (2000), returns are most frequently expressed in the form of annual rates of return. They are expressed in percentages as gains from the investment relative to its costs. Psacharopoulos (1987) commented that there are two types of rates of return, which are known as private and social rates of return.

Another researcher, Carnoy (1995) defined the rate of return to investment in education as follows:

“...it is a measure of the future net economic payoff to an individual or to society of increasing the amount of education taken.” (Carnoy 1995:364)

According to him, this rate can be compared to the savings rate or the rate of return to capital investment that will receive a stream of income over time. He further mentioned that this rate of return is calculated by solving for the value of r , the discount rate at the time when net present value is equal to zero.

1.7.2 Returns to investment in education

In parallel to Mayo (2000), Levin (1995) viewed the return to investment in education as the annual percentage return rather than the cost benefit ratio or net present value. Besides that, according to Chung (1995), productivity is reflected by the earnings in a labor market and this leads to a widely used measurement of earnings as economic returns. He explained that the returns from investing in education could be viewed from private and social perspectives.

1.7.3 Investment

To understand what investment is, it is rather important to differentiate between saving and investment. Saving is setting money aside for future use and investment is setting money aside for future gain. A simple example of saving is the bank deposit. To Alexander et. al (2001), investment means to sacrifice the present money for future money. The current sacrifice is certain and happens in the present, whereas returns are something uncertain or unknown in the future. To Winger et. al (1995), investment comprises the tangible and intangible assets with the attributes that can create returns over a period. Their values have the potential to appreciate. Investing is not an easy task because it is a serious business. Hence, every investor should decide carefully before he or she invests. Whether it is a good investment or not, it depends very much on the investment made today, which in turn will affect the returns gained in the future.

According to Shim et. al (1993), before investing, potential investors should have access to investment information from different sources as related to their investments. This is to make sure that they make a wise investment decision. For example, in the stock market, investors should gather information on what moves the market. Besides that, basic investment analyses that consist of economic, market, industry and company analysis are very important for the investors to understand well before investing. For most of our life, we will be earning and spending. When current income exceeds current consumption, people tend to save the excess. One possibility is to forgo the current consumption for a higher level of consumption in the future, according to Reilly et. al (1995). In short, investment is defined as putting the money aside for future gains or to forgo the current consumption for future benefits. Indeed, it is a complex task.

From the perspective of an economist, investment means the process of creating new capital assets like new buildings, factories, new equipment and increase in inventories. Yohe (2000), defined the investment demand curve as the relationship between the total amount of investment and the rate of return from an extra dollar of investment. According to Yohe (2000), producers like consumers are influenced by rates of interest. They must decide whether or not to expand their productive capacities by investing in new buildings, factories, new equipment and inventories. Whether they will invest or not depends very much on the rates of interest, the return that they would earn from the investment and the borrowing rate. From the economic point of view, producers should make an investment if the rate of return that they would earn from an investment exceeds the interest rate they would have to payback or in other words the borrowing rate. In addition, this rule would hold even if they did not borrow money to finance the investment. For example, a firm invests in a project with a 10% rate of return and borrows the money at 11% interest, it would mean an annual loss of 1% on every dollar invested.

1.7.4 Investment in education

Human capital is acquired through education. Investment in human capital is similar to investment in education. For example, as pointed out by Perlman (1973), investment in education is just the same as the investment in physical capital because of the uncertainty in the future returns. Perlman also viewed man as similar to an unimproved land, with limited prospect for productivity if there is no investment in him. This investment could be in education, training or health. Thus, investment in human capital is the same as other types of investment such as investment in physical assets. This means to sacrifice present consumption to create higher future earning capacity.

This was similar to Woodhall (1987), who found that many economists viewed expenditures on education as a form of investment because they are similar to investment in physical capital that will generate future benefits over many years. She then acknowledges that education produces assets in the form of knowledge and skills that can increase the productivity of the manpower and raise the level of earnings. The same goes for the physical capital investment that will raise the capacity of producing more outputs. According to Schultz (1987), the acquisition of knowledge and abilities is a part of investment that can increase the economic value of human beings. Such investment will benefit the individual himself and the society as a whole, which in turn opens the country for globalization. Such investment provides both the consumption and investment benefits.

Investment in human capital can be viewed from individual and social perspectives. People's investment means that they are going to forgo their current consumption for investing in education for future benefits. From a social perspective, investing in education or human capital means that the government has to forgo other projects or assign reduced budget for other projects. Investment in human capital is seen as a good investment because it provides higher income, increases productivity, helps in technological progress and contributes to innovation and modernization. Besides that, human capital is core element for the high tech industries to move our country to a higher level of opportunity for globalization.

Past research has shown that individuals' education and earnings are highly correlated. Admittedly, countries with better-educated citizens are generally richer and grow faster. For example, the East Asian Tigers like Hong Kong, Singapore, South Korea and Taiwan invested heavily on education. Thus, these countries grew rapidly. This could be seen

by their consistent growth rates of real per capita gross domestic product (GDP) from 1960 to 1995 were around 6% per year (Barro 1998). Similar to Schultz and Becker, Psacharopoulos (1995) pointed out that expenditures on education are treated as investment on whether they are paid by individuals or government. Since investment deals with costs and benefits, it requires a cost benefit analysis. The concept of costs and benefits of profitability of investments in education can be analyzed in the same way as other investment projects. Results found that private rates of return for all levels of education were higher than social rates of return and primary education yield the highest returns among the others.

Education has both aspects of investment and consumption. This research looks at the investment aspects of education. This is similar to Rogers et. al (1971:171) who says:

“...The weight of research in the area of Economics of Education deals with the investment aspects of education and it is an investment good...(page 151). The use of investment theory in education decision making is one of the most extensively research areas in the field of economics of education...Macro studies analyze the aggregate return to an educational investment on a national or regional level, whereas micro studies focus on particular educational decisions or projects.”
(Rogers et. al 1971:171)

McConnell et. al (1999:109) are in line with Rogers’s view who says:

“...it is not correct to treat all expenditures for education as investment because in fact, a portion of such outlays are consumption expenditures...It is true of course, that a course in nineteenth-century English literature not only yields consumption benefits but also enhances the capacity of oral and written expression. And this ability has value in the labor market; it increases productivity and earnings. The problem however is that there is no reasonable way of determining what portion of the expense on a literature course is investment and what part is consumption. The main point is that by ignoring the consumption component of educational expenditures and considering all such outlays as investment, empirical researchers understate the rate of return on educational investments.”
(McConnell et. al 1999:109)

Most of the empirical research in this area of evaluating educational investment has been conducted in the late 1950s and early 1960s. Since then, this area has tremendous publications and given more attention by economists. As Hansen (1963:128) says:

“...The costs of schooling and the money returns resulting from investment in schooling are currently receiving more and more attention by economists, not only because of their possible implications for economic growth, but also because they may help individuals to determine how much they should invest in the development of their own human capital.”
(Hansen 1963:128)

1.7.5 Educational costs

Are the economic values of the real resources used in the production of the education. At the school level, educational costs break down into institutional costs and private resources. Cost classification provides a convenient way to identify and label the different types of costs involved in educational inclusion. The total educational costs of all programs are the sum of the costs of all the inputs used in the production of the programs. For example, the cost of a diploma course consists of the economic value of the resources used in the production of the program.

(Woodhall 1970; Tsang 1994; Levin 1995)

1.7.5.1 Opportunity costs

The term of opportunity costs are widely used especially in microeconomics and educational researches dealing with the profitability of investing in higher education. It means that they are the sacrificing costs associated with the alternative opportunities that are forgone when making a specific decision. For example, suppose students enroll in higher education for three years rather than entering labor market, so they have to sacrifice the income that they could earn while studying. The opportunity costs here are the forgone earnings for three years.

(Woodhall 1970, 1987; Coombs et. al 1987; Tsang 1994; Pindyck et. al 2001)

1.7.5.2 Public costs

Public costs are those costs borne by the government. These are public expenditures spent on education like recurrent expenditures and capital costs.

(Coombs et. al 1987; Tsang 1994; 1995)

1.7.5.3 Private costs

Private costs are those costs borne by individuals and families. These costs exist in three categories namely direct private costs, indirect private costs and household contributions.

These costs are not borne by the government.

(Coombs et. al 1987; Tsang 1988, 1994, 1995; Carnoy 1995; Rumble 1997)

1.7.5.4 Social costs

Social costs consist of private and public costs. In other words, the total costs borne by the society. According to Perlman (1973), the social direct costs are usually higher than the private direct costs for both lower and higher schooling levels.

(Coombs et. al 1987; Woodhall 1987; Tsang 1994; Carnoy 1995; Rumble 1997; Belfield 2000)

1.7.5.5 Direct private costs

Direct private costs refer to the expenditures spent by parents on their children or costs that represent direct outlay by participants and their families. For instance, school fees, tuition fees, uniforms, transportation, books, stationary, school bags, pocket money and others.

(Tsang 1988, 1994, 1995)

1.7.5.6 Indirect private costs

Indirect private costs are opportunity costs in terms of forgone earnings. Woodhall (1987) viewed these opportunity costs in a similar way as defined by the other authors like Coombs et. al (1987), Tsang (1994) and Pindyck (2001). They viewed the indirect private costs as the economic values of the alternative opportunities when the resources are allocated to education rather than to other activities.

1.7.5.7 Household contributions

Household contributions refer to the contributions by parents, other community members and community organizations to the school or program. Such contributions can be in cash or in kind.(Tsang 1995)

1.7.5.8 Personnel and non-personnel costs

Personnel costs consist of the salaries paid to the teachers, school administrators and other staff. Non-personnel costs consist of the expenditures spent on educational resources like students' welfare, instructional materials, regular maintenance, minor repairs, subsidies, books, utilities and others.

(Tsang 1988, 1994)

1.7.5.9 Institutional costs

Institutional costs at school level refer to the costs spent on educational inputs and services incurred by schools. To some, these institutional costs refer to public costs spent on the educational resources. They consist of recurrent costs and capital costs.

(Tsang 1988, 1994, 1995)

1.7.5.9.1 Recurrent costs

Recurrent costs are also known as operating costs that are regularly renewed. They are expenditures spent on educational inputs and services with one-year life or less. Normally, these expenditures yield short term benefits and can be categorized into two types, namely personnel and non-personnel costs. Among these costs are expenditures on teaching aids, instructional materials, supplies and others.

(Coombs et. al 1987; Woodhall 1987; Tsang 1988, 1994, 1995)

1.7.5.9.2 Capital costs

Capital costs are also known as non-recurrent costs spent on durable assets with life of more than one year. Among capital costs are expenditures associated with the use of buildings, land, equipment and other programs related facilities. Normally, capital costs yield long-term benefits.

(Coombs et. al 1987; Woodhall 1987; Tsang 1988, 1994, 1995)

1.7.6 Educational Benefits

1.7.6.1 Monetary benefits

Monetary benefits according to Solmon et. al (1995) are also known as pecuniary or economic benefits of education. These monetary benefits are usually expressed in monetary terms, dollars and cents. Monetary benefits are thus measurable in nature like earnings exist in the form of total lifetime earnings differential up to the age of retirement. For instance, educational benefits are derived by comparing the earnings of diploma graduates and secondary school leavers throughout their working lifetime. Thus, the additional lifetime earnings differential would provide an estimation of higher productivity of the diploma graduates.

(Woodhall 1970)

1.7.6.2 Non-monetary benefits

Non-monetary benefits to Solmon et. al (1995), are those educational benefits that are subjective, not measurable and difficult to identify. Admittedly, these benefits are just the opposite of the monetary benefits because these benefits cannot be expressed in monetary terms. For instance, job satisfaction, better health, higher social status, challenges in job and others.