SOCIAL CAPITAL AND INDIVIDUAL INCOME LEVEL IN PENINSULAR MALAYSIA

MOHD NASIR BIN MOHD SAUKANI

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SOCIAL CAPITAL AND INDIVIDUAL INCOME LEVEL IN PENINSULAR MALAYSIA

ABSTRACT

For decades-long, economists have been relying on the existing conventional capital (i.e. physical capital, financial capital, and human capital) in finding an exact explanation on factors that contributes to income inequality. The new wave of economic thinking has proposed that the scope of analysis should be broaden by taking into account social capital i.e. the relational aspect (capabilities to interact and build relation/networks) of human as another potential determinant of inequality. Theorists and advocates of this relational capital firmly believe that social capital acts as a lubricant to smooth the economic activity and complement the existing conventional capital as an engine of economic growth, enhances individual income/wellbeing and alleviate income inequality. The potential influence of this new economic capital has been supported by an increasing volume of empirical studies that has come out with a promising significant result. Nevertheless two main issues need to be tackled before the potential of social capital can be recognized and accepted especially by the main stream economist. First on the issue of definition and second on the measurement of social capital. In a developing country such as Malaysia, income inequality remains an unresolved issue despite lot of efforts has been taken by government to tackle it. The aim of this study is three-fold: first, to propose a new precise definition of social capital and to determine components of social capital from the Malaysian perspective: second, to construct the composite score of social capital in Malaysia perspective; and finally to analyze the impact of social capital on individual income using the composites scores of social capital as a proxy. The outcome of this study is crucial in giving a wider perspective on factors that determine the prolonged issues of disparity in income facing by Malaysian. Using data of 2,443 individual (head of household and working household member), collected from field

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study in selected states and Federal Territory (i.e. Kedah, Selangor, F.T. Kuala Lumpur, Johor and Terengganu) between 2012 and 2013, this study applied the multilevel modeling (MLM) analysis technique in analyzing the impact of social capital on individual income. MLM technique enable the influence of social capital on individual income to be analyzed accordingly to the individual-level (i.e. head of household and working household member) and the group-level (district) in this study. Result indicates that influence of spirituality and culture is the new component of social capital in the Malaysian perspective. MLM analysis too indicates the significant influence of social capital on individual income at individual and within-group level. In line with empirical studies, the influence of social capital on income was found to be lower compared to human capital and other control variable. This study too indicates that social capital variable was actually a moderator and not a mediators in influencing individual income in Malaysia.

Keywords: social capital, individual income, inequality, multilevel modeling (MLM)

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MODAL SOSIAL DAN TINGKAT PENDAPATAN INDIVIDU DI SEMENANJUNG MALAYSIA

ABSTRAK

Untuk berdekad lamanya, ahli ekonomi bersandarkan kepada modal ekonomi konventional (iaitu modal fizikal, modal kewangan dan modal manusia) dalam mencari penjelasan terperinci berhubung faktor-faktor penentu ketaksamaan pendapatan. Skop pemikiran ahli ekonomi seharusnya diperluaskan dengan mengambil kira modal sosial iaitu aspek perhubungan manusia (keupayaan berinteraksi dan membentuk hubungan/jaringan) dikalangan pemain-pemain ekonomi sebagai salah satu faktor penentu baru yang berpotensi untuk ketaksamaan. Penteori dan pendokong modal sosial percaya bahawa modal ini berperanan sebagai pelincir untuk melancarkan aktiviti ekonomi dan menjadi pelengkap kepada modal konventional sedia ada sebagai engin pertumbuhan ekonomi, meningkatkan pendapatan/kebajikan individu dan menyederhanakan ketaksamaan pendapatan. Pengaruh potensi modal ekonomi baru ini telah disokong oleh bukti emperikal yang menunjukkan pengaruh penting modal sosial. Walau bagaimanapun dua isu utama perlu ditangani sebelum potensi modal sosial boleh diiktiraf dan diterima terutamanya oleh aliran ekonomi utama. Pertama mengenai isu definisi dan kedua mengenai pengukuran modal sosial. Di Malaysia, ketaksamaan pendapatan kekal menjadi isu yang gagal diselesaikan walaupun pelbagai usaha telah dilakukan untuk menanganinya. Matlamat kajian ini terbahagi kepada tiga: pertama, untuk mengemukakan definisi modal sosial dan untuk menentukan komponen modal sosial dari perspektif Malaysia: kedua, untuk membina skor komposit modal sosial berdasarkan perspektif Malaysia; dan akhirnya untuk menganalisis pengaruh modal sosial ke atas pendapatan individu menggunakan skor komposit modal sosial sebagai proksi. Hasil kajian ini adalah penting dalam memberi perspektif yang lebih meluas mengenai faktor-faktor yang

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menentukan tingkat pendapatan penduduk Malaysia. Menggunakan data sebanyak 2,443 responden (ketua isi rumah dan ahli isirumah bekerja), yang dikutip menerusi kajian lapangan di negeri dan Wilayah Persekutuan terpilih (iaitu Kedah, Selangor, Wilayah Persekutuan Kuala Lumpur, Johor dan Terengganu) sekitar 2012 dan 2013, kajian ini mengaplikasikan kaedah permodelan bertahap (*multilevel modeling technique* [MLM]) dalam kajian analisis ketaksamaan pendapatan. Kaedah MLM membolehkan pengaruh faktor-faktor penentu (modal sosial) ke atas isu ekonomi yang di kaji (tingkat pendapatan individu) di analisis berdasarkan tingkat individu (ahli isi rumah bekerja) dan kumpulan (daerah di mana ahli isi rumah tinggal dan bekerja dalam kajian ini). Keputusan kajian menunjukkan bahawa pengaruh kerohanian dan budaya adalah komponen baru modal sosial dalam perspektif Malaysia. Analisis MLM juga menunjukkan pengaruh besar modal sosial ke atas pendapatan individu di peringkat individu dan kumpulan. Selaras dengan kajian empirikal, pengaruh modal sosial ke atas pendapatan didapati lebih rendah berbanding pengaruh modal insan dan pembolehubah kawalan yang lain. Kajian ini juga menunjukkan bahawa pemboleh ubah modal sosial sebenarnya merupakan *moderator* dan bukan sebagai *mediators* dalam mempengaruhi pendapatan individu di Malaysia.

Kata kunci: modal sosial, pendapatan individu, ketaksamaan, multilevel modeling (MLM)

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LIST OF SYMBOLS

Symbol	Description
-2LL	-2 restricted log likelihood
ρ	intra-class correlation
σ^2	variance
χ^2	Chi-square
γ_{00}	grand mean
u_{0j}	residual or random effect
r_{ij}	variance of individual income in level-1 (within-group)
u_{oj}	variance of individual income between group (level-2)
σ^2	denote variance of level-1 r_{ij}
τ_{00}	denote variance for level-2 u_{oj}
(Y_{ij})	the income score of individual *i* in district *j*
n_c	the number of working individuals per district

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LIST OF ABBREVIATIONS

Abbreviation	Description
AFC	Asian Financial Crisis
CATPCA	Categorical Principal Component Analysis
DCI	Development Composite Index
D.E	Design Effect
DE	Demographic Variables
Eq.	Equation
D.O.S	Department of Statistic, Malaysia
EB	Enumeration Blocks
EDI	Economic Development Index
FPC	Finite Population Correction
HC	Human Capital
HH	Household
ICC	IntraClass Correlation
ICT	Information, Communication and Technology
LQ	Living Quarters
MASCO	Malaysia Standard Classification of Occupations
MLM	Multilevel Modeling
NLPCA	Nonlinear Principal Component Analysis
OLS	Ordinary Least Square
PCA	Principal Component Analysis
PPS	Probability Proportionate to Size
RIFS	Random Intercept Fixed Slope

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RIRS	Random Intercept Random Slope
RSE	Relative Standard Error
SC	Social Capital
SCC	Social Capital Score
SC-IQ	Social Capital-Integrated Questioners
SDI	Social Development Index
SRS	Simple Random Sampling
VAF	Variance Accounted For
WVS	World Value Survey

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CHAPTER 1: INTRODUCTION

1.1 Background of the study

We are living in the 21st century, a challenging era in which the diffusion of the economic liberalization, globalization, and the information communication technology (ICT) revolution is rapidly taking place. As a result, this era brings stunning facts such as ample opportunities, benefits, and potentials of economics and welfare that are generated from tremendous liberalization and globalization. ICT is being secured and utilized by all countries and their citizens around the world. Ironically, these huge potentials have not been translated into reality for the majority of the population. This new epoch has been exaggerated and given a mixed picture and many unresolved economic issues have been faced by a lot of people around the globe in their daily lives. One of the most controversial and sensitive issues being widely discussed is the persistence of disparities in the sharing of national income or the distribution of wealth (Piketty, 2014). Inequality, whether between or within countries, has remained unresolved; and for the last two centuries, the gap has gotten bigger particularly within countries (Bourguignon, 2015).

Today, this phenomenon, better known as the "*80/20 law*", symbolizes the prolonged unresolved issue of inequality in income received by a population within or among nations. The reality is that in any developed or developing country, 20 percent of people control 80 percent of national income while the remaining 80 percent of people only receive 20 percent of the total income (Milanovic, 2011). Malaysia, too, has not been spared and in recent years the "*80/20 law*" has been showing an accelerating trend. Implicitly, the persistence of inequality demonstrates the failure of the trickle-down effect of growth and development to be dispersed equally throughout the world's countries. However, some countries are enjoying

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equal access to technology, resources and markets in this era of globalization and economy lead by ICT. Much of the answers are known to be present in the circle of the existing theories which adhere strongly to the ideas of differences in possession, investment and accumulation of standard production factors such as natural resources, physical capital, financial capital, human capital and technology. Unfortunately, the exact explanation as to the causes and links between growth and inequality still remain uncertain and poorly understood.

Prior to the establishment of human capital theory, natural, physical and financial capital were highly regarded by conventional and mainstream economists as the main sources of growth and development (Piazza. Georgi, 2002). Apparently, these theories are highly depended on non-human based capital. Empirically tested and proven to contribute significantly to growth for over hundred years, possession, investment and accumulation of these capitals were the benchmarks used to ascertain the level of economic growth and the well-being of people. During that era too, countries with ample natural resources and fertile land were considered as winners while the reverse was true for those with scarce resources and scarce fertile land. Actually, these ideas are rigid as they do not even consider other factors that might lead to growth and undesirable outcomes generated from the process. The fact that inequality persists particularly in countries which strive to progress due to their bountiful natural and land-based resources clearly indicates the failure of advocates of non-human based capital to provide a full answer to the undesirable outcomes generated from growth and development.

Economists have recently found interest in exploring the potential of human beings as a new source of growth and a potential solution to the persistence of undesirable issues created by the economic growth process at the beginning of the 20th century. Although the importance of human beings had been anticipated and highlighted long before the 17th

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century by Adam Smith in his ideas of labor specialization, it had remained largely unexplored until the early 1990's (Piazza.Georgi, 2002). The rejection of conventional ideas saying that capital exclusively belongs to natural, physical and financial capital was initiated by Fisher in 1906. In contrast to this tradition, Fisher argued that capital is all inclusive of other factors particularly human capital. Refinement and empirical work done by Joseph Schumpeter, Mincer, and Schultz in the middle of that century particularly on aspects of human capital, relationships between skill and labor income, and comparison on factors of growth in the agriculture sector in America has further strengthened the important role of human capital as compared to other capital sources in the growth process (Piazza-Georgi, 2002). Human capital was acknowledged officially as the new economic capital in 1962 when a specific formulation done by Gary Becker was introduced. Becker's novel ideas stressed on the importance of investment in qualitative dimensions of humans (i.e. knowledge, skill and health) whereby productivities are stimulated to contribute to a positive rate of return in income accruals to workers, firms and the nation.

The inclusion and acceptance of human beings as another important source of economic capital marks a significant departure from conventional beliefs and shows a way to deepen the exploration and understanding of the important role played by human beings in the growth process. Human capital has been extensively studied as one of the key explanatory factors of economic growth and inequality. At both macro and micro level studies, the impact of investment in human capital on household income has been one of most popular subjects of interest. In both levels of study, education, training and health, coupled with other variables such as literacy rate, government expenditure on education, training, and health have been frequently used as explanatory variables and proxies of human capital.

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Abundant literature in this area have demonstrated the significant influence of humans on household income and well-being.

Human capital theory has also paved the way for the development of the new growth model in the late 1980's. Lead by Romer (1986) and Lucas (1988), the new model of growth extended the potential of human by focusing on the importance of innovation and invention of technology which are derived from high knowledgeable and innovative workers. Nevertheless, the persistence of inequality particularly among groups of people between or within countries has left economists in limbo as to the true factors that have actually caused undesirable inequality. Recently, a surging wave of critics has encapsulated the failure of the standard production factors to provide a better and more comprehensive explanation of inequality. Critics, especially those who emphasize the importance of social and cultural factors in economic growth and development, firmly believe that social relational aspects of humans as another potential capital source need to be given focus and priority in finding a better explanation regarding what causes inequality (Easterly & Levine, 2001; Bhandari & Yasunobu, 2009).

Immense concentration on standard production factors to ascertain how the market and economy work and are interrelated without considering the social relational aspect of players in the market might impede the overall efforts to tackle the above mentioned economic issues (Fachamps, 2006). The surges of the new wave of economic thinking during the late 1980's have emphasized the importance of the social relational aspect of humans and how this relation might contribute to the improvement in economic outcomes. In layman's terms, social capital is all about the interaction/relation between at least two people and how this relation tends to improve efficiency and productivity in similar ways to physical and

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human capital. Investment in natural, physical, and human capital is essential because it will transform raw material to intermediate input and final product. This will increase people knowledge, skill, and health levels, thereby making people more skilled and productive in their labor. All of these will ultimately increase productivity and income accrued to investors. Interaction among players in the market is another prerequisite that theorists of social capital believe would act as a lubricant to smooth the economic activities and complement the existing conventional capital as an engine of economic growth (Fukuyama, 1995 & 1999; Woolcock & Narayan, 2000; Piazza-Georgi, 2002; Fachamps, 2006; Hayami, 2009; Woolcock, 2010).

The novel aim of this study is to investigate the impact of social capital on individual income levels in Malaysia. Income inequality remains as an unresolved issue in Malaysia although a lot of efforts have been taken to tackle the problem. The Ninth and Tenth Malaysia Plan and the New Economic Model unveiled the undeniable facts about the increasing trend of the phenomenon of "*80/20 law*" (Malaysia, 2010; 2006). This evidence is further strengthened with the unveiling of The Malaysia Human Development Report 2013 which revealed the widening gap of inequality particularly within ethnic groups. The Report shed light on the undeniable fact that despite the prevalent gap between rural and urban areas, inequality in Malaysia has shifted from inter-ethnic groups to intra-ethnic groups issue. Although social capital is now fast gaining popularity and widely considered as another important capital and potential determinant of growth, with the inverse being true in Malaysia, its potential is still not deeply explored. Income inequality is one of the most undesirable outcomes generated from growth and development process. In recent years too, social capital is widely predicted as the new capital that will complement previous standard economic capital in providing the exact answer of what actually causes inequality. This

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research is conducted with the novel aim to explore the potential impact of social capital on individual income levels in Malaysia.

1.2 The rise of Social Capital

Currently, social capital enjoys over 100 times the citations it did about 20 years ago when it was first introduced (Woolcock, 2010). At the same time, the volume of studies has continued to increase, covering every discipline including economics. In the economic context, this new concept has been explored at both high and low levels. Table 1.1 below synthesizes the outcome from 97 studies on the impact of social capital on economic performance at both macro and micro levels. At the macro level, the studies focus on the impact of social capital on economic growth. Meanwhile, the studies at micro level focus on the impact of social capital on individual, household, and firm income or welfare level. Table 1.1 shows that the outcomes of the empirical studies were mixed but undeniably the majority of data indicated a positive impact of social capital. Particularly, most of the studies done at the individual/households/firms level (37 out of 51 studies) indicated a positive relationship between different measures of social capital including individual, household, firm's income, and welfare level. This is a positive sign that social capital is a promising concept and need to be considered wisely by economic scholars in finding the exact explanation on the pervasiveness of inequality among individuals or households particularly in Malaysia. Details on the 51 studies done at the micro level are discussed in Chapter 2 and synthesized in Appendix A.

Measurements used also varied where by macro studies, “trust” and “association” were the most used measures of social capital. Furthermore, sources of data for macro studies were mostly from documented international survey likes World Value Survey (WVS). In

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contrast, studies at the micro level used mixed measures (mostly the combination of trust, association, norms and other related variables of social capital) and the data were commonly gathered from specific surveys done by researchers. Details on the 51 studies done at the micro level are discussed in Chapter 2 and synthesized in Appendix A.

Things that might impede the popularity of this concept lie on the definition and measurement of this intangible capital. Until now, no consensus has been reached regarding the definition of social capital (Knowles, 2005; 2006). Past studies tend to include too many topics mixed with social relation like, "elements in social relation" or "features of social relation". These were among the most commonly used in the definition of social capital (Fachamps, 2006; Hayami, 2009; Bhandari & Yasunobu, 2009; Poder, 2011). In an economic context, the difficulty of economists to reach a consensus on the definition of social capital to a large extent is exaggerated by their insufficient efforts to try to translate the concepts into the standard terms of economics (Hayami, 2009). Nevertheless, advocates of this concept have agreed that social relation is actually the core/fundamental part and any attempt to define social capital needed to consider this part of their definitions (for details see Chapter 2).

Table 1.1: Studies on the impact of social capital on economic growth at various levels, 1993- 2015

Level of study	Number of study	Social capital measure	Result	
Macro:			positive	negative
Country or cross-country	23	Trust Associations	10	4
Region/state in one country	14	Trust Associations	5	2
Region/states in several countries	9	Trust Associations	4	2
Micro:				
Individual, household and firm[a]	51[a]	Mixed - (mostly the combination of trust, association, norms and other related variables of social capital)	37	1
Total:	97		56	9

Note: [a] Details on 51 studies done at the micro level is discussed in Chapter two and synthesized in Table A.1 in Appendix A.

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Similar to human capital, social capital is difficult to define but not impossible to measure. Consensus has been reached regarding this issue where advocates of this relational capital will not reject any studies that include at least one or two out of three elements of social capital in the measurement (Knowles, 2005 & 2006). Social relation/networks, norm and trust are elements of social capital firmly regard by pioneers and advocates as vital in the formation of social capital. Unfortunately, the search for the best way to define, measure and classify the appropriate components of this intangible capital is far from being reached. A composite score is widely used by economist as a proxy of measurement of social capital in the actual analysis. Until recently, this composite score remains as one of the most popular options among economists in analyzing the influence of social capital on economic performance. Nevertheless, the development of more sophisticated methods of dealing with qualitative data like social capital has provided a better option for this study to construct a more precise factor or component score to represent social capital variables.

This study is initiated by the facts that social capital is predicted to promise a better explanation on the persistence of inequality particularly in Malaysia (see section 1.3 below). This is further strengthened by the outcomes of 97 studies synthesized in Table 1.1 which indicated mostly positive influences of social capital on individual and household income. Finally, the advancement in data reduction methods particularly for qualitative data like social capital, and the consensus reached on the guideline of the elements that should be included in the definition and elements of social capital, inspire the researcher to carry out this study.

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1.3 Social Capital from the Malaysia Perspective

The important role of spirituality or religion as one of the sources contributing to the formation of social capital has been discussed by pioneers (Bourdie, 1988; Coleman, 1990 & 1993; Putnam, 2000) and studied by researchers (for example, Kaasa 2013, Huang, Y. 2015, Lim, C. & Putnam 2010, Kaasa & Parts, 2008). Although it does not exactly belong to any of the three main elements of social capital (see Chapter 2), the influence of spirituality and culture on norms, trust, and ultimately on social relationships has been discussed in the literature and has indirectly been covered as variable to represent the main element or component of social capital (Robison and Siles, 2011; 1999; Grootaert and Bastelaer, 2002; Krisna and Uphoff, 2002; Putnam, 2007). Spirituality (especially through religious participation/involvement) has been considered a primary source of social capital because it serves as an incubator for institutionalized norms and values of reciprocity, formal and informal social relationships and networks with other people in society (Huang, Y. 2015; Cnaan et al. 2003). Nevertheless, spirituality and cultural influences have long been omitted from the definition and measurement.

This gap needs to be overcome and in a pluralistic society such as Malaysia, where spirituality is expected to have a significant impact on individual or household income. Since the majority of our population still adheres to their religious beliefs and practices, with whom social relation is going to be created will actually be influenced by our religious and culture background. In the Malaysian context, spiritually is predicted not only as one of the potential elements in the definition and measurement of social capital but also might be a strong determiner to income levels and income distribution among multiracial individuals. Shared norms and trust among individuals or groups in a pluralistic society are predicted to have an impact not only on the formation of social capital but also on individual or household income.

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Norms and trust are highly influenced by homogeneity or heterogeneity in individual culture and religion, and this will influence social relationships. Realizing that many countries consist of plural societies where most of the population adheres to their own religious beliefs and practices, this study believes that "spiritual and cultural influences" is the fourth element of social capital that needs to be considered in the definition and measurement (see Chapter 2 for details).

1.4 Trend of Income Inequality in Malaysia

As discussed in previous sections, the aim of this study is to analyze the potential influence of social capital on individual income level. In other words, this study attempts to focus on the link between social capital and the existing conventional economic capital (especially human capital) in influencing individual income level in Peninsular Malaysia. After 58 years of independence, income inequality remains an alarming and unresolved issue in Malaysia. The Ninth, Tenth, and Eleventh Malaysia Plans, released in 2006, 2010, and 2015, respectively, and the New Economic Model (2010) unveiled the undeniable facts of income inequality in Malaysia. This section will elaborate the trend of income inequality in Malaysia from the perspectives of the overall, location, state and ethnicity viewpoints. The trend of inequality discussed in this section is to give a current picture on the reality of income inequality in Malaysia. More importantly, based on current trends and supported by abundant past studies on the potential of social capital impact on individuals', households' and firms' income and profit level (discussed in details in Chapter 2), this study will investigate the causes of inequality from social relational aspect of human interactions (i.e. social capital).

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1.4.1 Overall Income Inequality

Overall, Malaysia managed to reduce its inequality but at a very moderate rate (see Table 1.2). A widely used measurement of inequality is the Gini coefficients and in this study, both (inequality and Gini coefficients) will be used interchangeably. The steepest divide in inequality was shown in the period from 1970 to 1976 with the Gini coefficient (the Gini coefficient is a measure of inequality of income concentration) rising from 0.513 to 0.557. From the year ending 1976 toward the end of the 1980's, Gini's coefficient showed improvement in the share of total income with the moderated decline from 0.505 in 1979 to 0.446 in 1989. Nevertheless, in the 1990's inequality in Malaysia accelarated. The Gini coefficient rose to 0.459 in 1997. The severe impact of the Asian economic crisis was one of the factors contributing to an upward trend of inequality in the late 1990's (Ragayah, 2012). In 1999, the Gini values stabilized at 0.443 before it started to rise again from 2000 until 2004. Later, inequality showed a fluctuating trend and the latest figure shows the Gini coefficient contracting to 0.401 in 2014 from 0.431 in 2012 (ibid Table 1.2). Although the government has targeted the overall income inequality by reducing the Gini coefficient from 0.441 in 2009 to 0.420 in 2015 the target was achieved with a reduced value of the Gini coefficient to 0.401 in 2014 (Malaysia, 2015), the overall trend observed indicates a moderate reduction in inequality.

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Table 1.2: Gini Coefficient and Mean Monthly Gross Household Income (RM) by Strata, and Ethnic Groups, 1970-2014

	1970[a]	1974[a]	1976[a]	1979	1984	1987[a]	1989[b]	1992	1995	1997	1999	2002	2004	2007	2009	2012	2014
Malaysia:																	
Gini	0.513	0.530	0.557	0.505	0.483	0.456	0.446	0.459	0.456	0.459	0.443	0.461	0.462	0.441	0.441	0.431	0.401
Mean Income	264	362	505	678	1,098	1,083	1,169	1,566	2,020	2,606	2,472	3,011	3,249	3,686	4,025	5,000	6,141
Ethnic group:																	
Bumiputeras																	
Gini	0.466	0.476	0.506	0.468	0.464	0.447	0.429	0.442	0.441	0.448	0.433	0.435	0.452	0.430	0.440	0.421	0.389
Mean Income	172	242	345[a]	492	844	868	940	1,268	1,604	2,038	1,984	2,376	2,711	3,156	3,624	4,457	5,548
Chinese																	
Gini	0.466	0.520	0.541	0.474	0.452	0.428	0.419	0.420	0.428	0.416	0.434	0.455	0.446	0.432	0.425	0.422	0.405
Mean Income	394	534	787[a]	1,002	1,552	1,488	1,631	2,192	2,890	3,738	3,456	4,279	4,437	4,853	5,011	6,366	7,666
Indians																	
Gini	0.472	0.451	0.509	0.460	0.419	0.402	0.390	0.402	0.404	0.409	0.413	0.399	0.425	0.414	0.424	0.443	0.396
Mean Income	304	408	538[a]	756	1,107	1,105	1,209	1,604	2,140	2,896	2,702	3,044	3,456	3,799	3,999	5,233	6,246
Others																	
Gini	0.667	0.665	0.630	0.598	0.570	0.663	0.404	0.556	0.414	0.555	0.393	0.449	0.462	0.545	0.495	0.435	0.433
Mean Income	813	1,299	1,268[a]	1,475	2,957	2,992	955	1,163	1,284	1,680	1,371	2,165	2,312	3,561	3,640	3,843	6,011
Disparity ratio																	
Chinese:Bumiputera	2.25	2.21	2.28	2.13	1.76	1.65	1.74	1.73	1.80	1.83	1.74	1.80	1.64	1.54	1.38	1.43	1.38
Indian:Bumiputera	1.75	1.69	1.56	1.51	1.28	1.25	1.29	1.26	1.33	1.42	1.36	1.28	1.27	1.20	1.10	1.17	1.13
Strata:																	
Urban																	
Gini	n.a	0.541	0.531	0.491	0.468	0.449	0.444	0.439	0.431	0.427	0.432	0.439	0.444	0.427	0.423	0.417	0.391
Mean Income	428	570	843	1,045	1,573	1,488	1,606	2,032	2,589	3,357	3,103	3,652	3,956	4,356	4,705	5,742	6,833
Rural																	
Gini	n.a	0.473	0.540	0.471	0.450	0.427	0.416	0.401	0.410	0.424	0.421	0.405	0.397	0.388	0.407	0.382	0.355
Mean income	200	269	385	523	842	881	957	1,024	1,326	1,704	1,718	1,729	1,875	2,283	2,545	3,080	3,831
Urban/rural disparity ratio	2.14	2.12	2.19	1.90	1.87	1.72	1.68	1.98	1.95	2.04	1.81	2.11	2.11	1.91	1.85	1.86	1.78

Note: [a] Refers to Peninsular Malaysia only [b] Starting 1989, data is based on Malaysian citizens

Source: Malaysia Household Income and Basic Amenities Survey Report 2014. www.dosm.gov.my ; Ragayah, 2008; 2009; 2011; 2012

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1.4.2 Income Inequality by Urban-Rural Location

In reality, the distribution of income is more unequal in urban areas compared to rural areas and Malaysia is not spared from this pattern. The Gini ratio for urban areas peaked at 0.541 in 1974 and for rural area, the highest inequality was stated in 1976 (0.540) [see Table 1.2]. In the years after 1976, Malaysia witnessed a continuous fall in the inequality pattern particularly for urban areas with the Gini ratio finally moderating to 0.427 in 1997. Inequality in rural areas decreased continuously until it reached the lowest Gini ratio of 0.401 in 1992. The impact of the Asian Financial Crisis (AFC) that effected Malaysia was particularly felt by urban household who witnessed a surge in inequality starting from 1999 onwards reaching a peak of 0.444 (2004) before the inequality trend reversed to 0.417 (2012) and 0.391 (2014) from 0.427 (2007) and 0.423 (2009). The AFC also affected rural areas but with more moderate impact compared to urban areas with inequality shown as a reversal trend, increased from 0.410 (1995) to 0.424 (1997). Post AFC, the Gini coefficient continued to show a more moderate inequality trend in rural areas. The latest figure shows that inequality surpassing the lowest point of 0.355 in 2014 from 0.382 in 2012 (ibid Table 1.2).

Nevertheless, the urban-rural income ratio remains higher with an upward and downward trend having been recorded in the period of observation. After rising to the highest of 2.19 in 1976, the disparity ratio managed fall to 1.72 in 1987 before it started to increase to 1.92 (1995) and eventually rise to 2.04 (1997). A fall by 0.23 in 1999 was temporary before the disparity started to increase (triggered by the impact of the AFC) and stabilize at 2.11 in 2002 and 2004. The years after this show a fluctuating trend of disparity between urban and rural areas from 1.91 and 1.85 respectively in 2007 and 2009 to 1.86 and 1.78 in 2012 and 2014 (ibid Table 1.2).

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1.4.3 Income Inequality by Group of Household

The sharing of total national income in Malaysia reflects a close resemblance to Pareto "*80/20 law*" which shows that the top 20% of the population dominated the share of wealth as compared to the remaining 80% of the population. The top 20 % of Malaysian households continue to dominate the share of total income with almost half of the total income under the elite's control. Nevertheless, the income disparity managed to be reduced slightly from 55.7% (1970) to 50.5% (1989), 49.8% (2007), 49.6% (2009), 48.6% (2012) and 46.6% (2014) [see Table 1.3]. The bottom 40% of Malaysian households, on the other hand, received a small portion of the total national income. The share of the bottom 40% of households increased from 11.5% (1970) to 14.5% (1989), and 14.6% (2007), before slightly reducing to 14.3% (2009). In 2012 and 2014, the share of national income received by this group increased to 14.8% and 16.5% respectively. The increase in the share of the bottom 40% was very marginal and this contributed to the widening overall gap of income between the rich and poor in Malaysia (Rogayah, 2011; 2008).

Similar to the trend which is shown at the national level, the domination of the top 20% of households continues in both urban and rural areas. The share of income received by this group remains higher in both locations with only marginal improvements in reducing the portion of top 20% of households. In urban areas, the share has moderated from 55% (1970) to 48.6% (2007), 48.2 (2009), 47.5% (2012) and 45.9% (2014). Meanwhile, for rural areas, improvement had been achieved to reduce the control of this top group from 51% (1970) to 49.8% (2007) before the shares increased slightly to 47.4% in 2009. In 2012 and 2014, the share of top 20% of households in rural areas were both moderated to 44.8% and 42.7% respectively (ibid Table 1.3).

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Table 1.3: Income Share (%Y) and Mean Monthly Gross Household Income Share (RM) of Top 20%, Middle 40% and Bottom 40% of Households by Strata, Malaysia, 1970-2014

	Top 20% Households																
	1970[a]	1974[a]	1976	1979	1984	1987	1989[b]	1992	1995	1997	1999	2002	2004	2007	2009	2012	2014
Malaysia:																	
Income (% Y)	55.7	58.0	57.9	55.5	53.5	51.5	50.5	51.5	51.3	52.4	50.5	51.3	51.2	49.8	49.6	48.6	46.6
Mean Y (RM)	735	1,092	1,464	1,877	2,938	2,789	2,925	3,965	5,202	6,854	6,268	7,745	8,337	9,173	9,987	12,159	14,305
Strata																	
Urban (%Y)	n.a	59.5	56.2	54.1	52.3	50.6	49.6	50.1	49.8	50.2	48.7	49.6	49.8	48.6	48.2	47.5	45.9
Urban (RM)	n.a	1,798	2,384	2,827	4,114	3,770	3,981	4,981	6,474	8,470	7,580	9,085	9,863	10,576	11,348	13,654	15,690
Rural (%Y)	n.a	52.6	54.6	52.1	50.1	49.2	47.6	46.2	47.4	48.2	47.9	46.7	46.0	45.7	47.4	44.8	42.7
Rural (RM)	n.a	735	1,051	1,365	2,110	2,169	2,277	2,369	3,153	4,130	4,124	4,057	4,330	5,220	6,033	6,905	8,180
	Middle 40% Households																
	1970[a]	1974[a]	1976	1979	1984	1987	1989[b]	1992	1995	1997	1999	2002	2004	2007	2009	2012	2014
Malaysia:																	
Income (% Y)	32.8	30.6	31.3	32.7	33.8	34.8	35.5	34.8	35.0	34.4	35.5	35.2	35.3	35.6	36.1	36.6	36.9
Mean Y (RM)	216	288	396	554	929	943	1,037	1,388	1,777	2,250	2,204	2,660	2,875	3,282	3,631	4,573	5,662
Strata																	
Urban (%Y)	n.a	29.1	31.4	33.3	34.4	35.2	35.7	35.3	35.7	35.6	36.5	35.7	35.6	36.2	36.5	36.9	36.9
Urban (RM)	n.a	441	663	869	1,355	1,308	1,435	1,827	2,323	3,000	2,844	3,265	3,524	3,947	4,296	5,294	6,311
Rural (%Y)	n.a	34.3	34.1	34.9	36.0	36.1	36.8	37.5	37.1	36.6	36.5	37.2	37.4	36.9	36.4	38.0	38.9
Rural (RM)	n.a	240	328	457	756	793	882	962	1,235	1,564	1,577	1,612	1,762	2,104	2,313	2,930	3,729
	Bottom 40% Households																
	1970[a]	1974[a]	1976	1979	1984	1987	1989[b]	1992	1995	1997	1999	2002	2004	2007	2009	2012	2014
Malaysia:																	
Income (%)	11.5	11.4	10.8	11.9	12.7	13.7	14.5	13.7	13.7	13.2	14.0	13.5	13.5	14.6	14.3	14.8	16.5
Mean Y (RM)	76	107	136	201	347	371	424	545	693	867	865	1,019	1,101	1,345	1,440	1,847	2,537
Strata																	
Urban (%Y)	n.a	11.4	12.1	12.7	13.3	14.2	14.7	14.6	14.5	14.2	14.8	14.7	14.6	15.2	15.3	15.6	17.1
Urban (RM)	n.a	172	255	331	521	527	590	761	942	1,193	1,155	1,344	1,450	1,655	1,794	2,235	2,928
Rural (%Y)	n.a	13.1	11.3	12.9	13.9	14.7	15.6	16.3	15.5	15.2	15.6	16.1	16.6	17.4	16.2	17.1	18.4
Rural (RM)	n.a	92	109	169	292	324	373	413	515	649	670	699	783	994	1,033	1,319	1,760

Note: [a] Refers to Peninsular Malaysia only [b] Starting 1989, data is based on Malaysian citizen n.a denotes not available

Source: Malaysia Household Income and Basic Amenities Survey Report 2014. www.dosm.gov.my ; Ragayah, 2008; 2009; 2011; 2012

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The share of income received by the middle 40% and the bottom 40% of households increased as well, albeit at a very moderate rate. For the period observed, the share of the middle 40% of households increased from 32.8% (1970) to 35.5% (1989) before it was reduced slightly to 34.4% in 1997. Post AFC indicates a moderate increase in the share of total income by the middle 40% of households from 35.5% (1999) to 35.6% (2007) and 36.1% (2009). The shares continue to increase to 36.6% and 36.9% respectively in 2012 and 2014 (ibid Table 1.3). By location, the same pattern was shown where the share of the middle group in urban areas increased from 29.1% (1970) to 36.2% (2007), 36.5% (2009), and 36.9% in 2012 and 2014. In rural areas, the share of income of this group increased from 34.3% (1974) to 36.9% (2007) before reducing slightly to 36.9% and 36.4% in 2007 and 2009, respectively. In 2012 and 2014, the portion received by the middle 40% of Malaysian households indicates an increase of 1.6 point and 2.5 point or 38.0% and 38.9%.

Meanwhile the bottom 40% of households remain as the smallest recipient of total income in both urban and rural areas. Although progress has been achieved to increase the share of the bottom group from 11.5% (1970) to 14.6% (2007), the share fell slightly by 0.3 points to 14.3% in 2009 before increasing back by 0.5 points and 2.2 points to 14.8% and 16.5% respectively in 2012 and 2014 (ibid Table 1.3). In both urban and rural locations too, the bottom group is still left behind compared to the other groups because the rate of increase in their share of total income was marginal (ibid. Table 1.3). The bottom 40% of households in rural areas also received the higher share of total income compared to their counterpart in the urban areas. This development indirectly indicates the accelerating trend in inequality among bottom groups in urban areas compared to their counterpart in rural areas.

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1.4.4 Income Inequality by Ethnic Groups

In Malaysia, inequality, measured by the Gini coefficients tends to be higher among Bumiputera compared to Chinese and Indian ethnic groups but ironically, the latest figures indicate the landscape of inequality has changed. In 2014, inequality was higher among the Chinese ethnic group (0.405), followed by Indian (0.396) and Bumiputera (0.389). This figure is needs to be further investigated because prior to 2014, monthly income for all main ethnic groups increased for the period observed. Compared to the Chinese and Indian ethnic groups, Bumiputera mean monthly income remained the lowest (see Table 1.2).

For the period observed too, progress has been achieved to reduce the income disparity ratio among ethnic groups, nevertheless the figures indicate that income received by Chinese and Indians are still higher compared to Bumiputera. In 2012, disparity, shown in relative income ratio of the Chinese and Indians ethnic was 1.43 times and 1.17 times higher compared to the Bumiputera (ibid Table 1.2). The ratio reduced slightly in 2014 by 0.05 and 0.04, respectively, and this made the portion of income received by the Chinese and Indian ethnic groups to be 1.38 times and 1.10 times higher than the Bumiputera ethnic groups. The latest development, too, indicates an accelerating trend of inequality in urban areas as compared to rural ones although the gap has been reduced. Compared to the 2009 value (0.423), in 2012 and 2014 the Gini coefficient indicated a much lower inequality with values of 0.417 and 0.391, respectively in urban areas. Nevertheless, in rural areas inequality displayed a better moderation trend with a value of 0.382 and 0.355, respectively for the period observed. This was further strengthen by the disparity ratio (e.g. in 2014 the disparity of income was 1.78 times higher in urban compared to rural area (ibid Table 1.2).

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1.4.5 Income Inequality by State

Kuala Lumpur, Putrajaya and Selangor emerged as the Federal Territory and state with highest mean monthly income in 2014 (Table 1.4). In 2014, mean monthly household income of Kuala Lumpur, Putrajaya and Selangor were RM10,629, RM10,401, and RM8,252, respectively. Penang also enjoys the same privilege due to its position as the most developed state in the Northern region. Meanwhile, the latest ranking placed Kelantan in the top position followed by Perak and Pahang for states with the lowest mean monthly household income of RM3,715, RM4,268 and RM4,343 respectively in 2014 (ibid Table 1.4). Overall, examination of the Gini values for all states/federal territories (with a few exceptions) indicates a negative correlation between mean monthly household income and income disparity. When the mean income increased, the distribution of income in all states and Federal Territories in Malaysia was found to become more equal.

The above discussion clearly indicates the persistence and the widening gap of inequality in Malaysia at all level discussed. The trend of inequalities discussed in this section give a signal that a more thorough study needs to be conducted to find out the exact causes of inequality. Income inequality is the final result from the entire economic process and many factors contribute to the incidence of inequality within or among countries. Although the benefit of economic growth is potentially likely to contribute to the reduction in inequality, the persistence of income inequality particularly in Malaysia clearly indicates that efforts need to be taken to tackle this issue from the fundamental level. Knowing that our daily life and economic activities cannot be spared with conversation and networking with other people, and realizing that the current trend in development studies is incorporating social capital as another potential determinant of income, this study will look at the potential

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Table 1.4: Gini Coefficient and Mean Monthly Household Income (RM) by State, Malaysia 1970-2014

State	1970		1989[b]		1997		1999	2004			2007	2009			2012		2014
	HH Income	Gini Ratio	HH Income	Gini Ratio	HH Income	Gini Ratio	HH Income	Gini Ratio	HH Income	Gini Ratio	HH Income	Gini Ratio	HH Income	Gini Ratio	HH Income	Gini Ratio	HH Income
Johor	237	0.431	1,220	0.381	2,772	0.397	2,646	0.386	3,076	0.395	3,457	0.368	3,835	0.393	4,658	0.383	6,207
Kedah	189	0.438	860	0.428	1,590	0.429	1,612	0.409	2,126	0.387	2,408	0.392	2,667	0.408	3,425	0.391	4,478
Kelantan	151	0.486	726	0.407	1,249	0.442	1,314	0.424	1,829	0.416	2,143	0.405	2,536	0.428	3,168	0.410	3,715
Melaka	265	0.467	1,190	0.396	2,276	0.371	2,260	0.399	2,791	0.352	3,421	0.380	4,184	0.411	4,759	0.355	6,046
N.Sembilan	286	0.507	1,162	0.366	2,378	0.408	2,335	0.392	2,886	0.380	3,336	0.385	3,540	0.372	4,576	0.382	5,271
Pahang	286	0.455	1,092	0.350	1,632	0.359	1,482	0.332	2,410	0.389	2,995	0.380	3,279	0.382	3,745	0.354	4,343
Penang	292	0.493	1,375	0.406	3,130	0.398	3,128	0.399	3,531	0.398	4,004	0.411	4,407	0.419	5,055	0.370	5,993
Perak	254	0.473	1,067	0.421	1,940	0.381	1,743	0.387	2,207	0.393	2,545	0.399	2,809	0.400	3,548	0.417	4,268
Perlis	140	0.400	852	0.377	1,507	0.412	1,431	0.394	2,046	0.423	2,541	0.454	2,617	0.434	3,538	0.455	4,445
Selangor	421	0.515	1,790	0.444	4,006	0.409	3,702	0.394	5,175	0.443	5,580	0.418	5,962	0.424	7,023	0.396	8,252
Terengganu	173	0.478	905	0.459	1,497	0.466	1,600	0.440	1,984	0.443	2,463	0.399	3,017	0.418	3,967	0.426	4,816
Sabah/F.T. Labuan	n.a	n.a	1,358	0.459	2,057	0.454	1,905	0.448	2,487	0.477	2,866	0.450	3,144	0.453	4,089	0.428	4,985
Sarawak	n.a	n.a	1,199	0.441	2,242	0.447	2,276	0.407	2,725	0.440	3,349	0.442	3,581	0.448	4,293	0.440	4,934
F.T.Kuala Lumpur	n.a	n.a	2,102	0.428	4,768	0.417	4,105	0.414	5,011	0.467	5,322	0.446	5,488	0.374	8,586	0.442	10,629
F.T. Putrajaya	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	5,294	0.362	6,747	0.342	8,101	0.305	10,401
Malaysia	264	0.513	1,169	0.446	2,606	0.459	2,472	0.443	3,249	0.462	3,686	0.441	4,025	0.441	5,000	0.431	6,141

Note: HH = household n.a denotes not available F.T denotes Federal Territory

Source: Malaysia Household Income and Basic Amenities Survey Report 2014. www.dosm.gov.my ; Ragayah, 2011; 2012

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of social capital in influencing individual income in a multi-racial society of Malaysia. The next section will elaborate in detail on the importance of social capital to be considered in economic studies of income inequality, especially in the Malaysian perspective. The next section, too, will highlight the gap in past studies and on how this study will try to overcome all the controversy surrounding the potentiality of social capital as the new economic capital.

1.5 Statement of the Problem

The emergence of social capital theory in the late 1980's has altered the landscape of economic thinking which, depending on conventional production factors (physical capital, financial capital and human capital), has been prolonged as a determinant of income distribution. From an economics perspective, the importance of social capital can be seen from the influence of social relation on the *terms of trade* for goods and services. Income distribution largely depends on terms of trade and capabilities of individuals or firms to build a relation with other players in the market (supported by shared norms and trust) which will indirectly determine terms of trade and income distributions (Easterly & Levine, 2001; Bhandari & Yasunobu, 2009). Shared norms and trust are essential elements in the formation of social capital where the function of these elements is to facilitate relation and cooperation. Norms and trust also are highly influenced by homogeneity or heterogeneity in individual culture and religious and this will ultimately influence social relations (Robison & Siles, 2011; 1999; Grootaert & Bastelaer, 2002; Krisna & Uphoff, 2002).

One of the main issues that might impede the potential of social capital to be accepted and recognized as economic capital is the ambiguity surrounding the definition. Until now no consensus has been reached on the standard definition of social capital. The problem occurs because of the tendency of researchers to include too many things in the definitions

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and not even trying to explain what social capital is (Woolcock, 2000; Robison et al., 2002; Quibria, 2003; Bhandari & Yasunobu, 2009). Generally, most definitions have one commonality i.e. they emphasize social relations as the basic foundation of social capital. Advocates also agrees with any definition and measurement that includes either one or more of the three main elements of social capital i.e. network, trust and norms. In economic context, involvement in association and trust towards other people are the most commonly used proxies of social capital (Knowles, 2005 & 2006; Westlund & Adam, 2010).

The importance of religious institutions in the formation of social capital has been discussed in the theory of social capital (Bourdie, 1988; Coleman, 1988 & 1990). Scholars have also notified that norms and trust are highly influenced by homogeneity or heterogeneity of individual culture and religious and will ultimately influence social relations. Unfortunately, none of the past studies considers spirituality as an element and proxy of social capital including a few studies done in Malaysia. This study will overcome the gap by categorizing the influence of spirituality and culture as the fourth elements of Malaysian social capital. In a Malaysian context, this study firmly believes that spiritually will determine income level and income distribution among multiracial households.

Recently in any country, inequality in income distribution is showing an accelerating trend. In Malaysia, the phenomenon of the "*80/20 law*" is apparent with the domination of almost 50% of the total income by the top 20% of household groups compared to 14.8% received by the bottom 40% of households. Similarly, urban areas indicate higher Gini ratio (0.423) exceeding rural areas (0.407) while among ethnic groups, the Gini ratio for Bumiputera (0.440) superseded Chinese (0.425) and Indians (0.424) (Malaysia, 2010). This undesirable trend of inequality has raised questions and doubt on the reliability of existing

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conventional economic theories in proving an exact answer. Investment in conventional economic capital is a must and vital but it is not the final answer to the growth and inequality problem. How the players and owners of these capitals interact among each other in daily economic activities is now firmly believed to be a complement and provides a more accurate explanation on the persistence of inequality (Poder, 2011).

Growing numbers of empirical studies in this new area of research demonstrates the influence of social capital on household income and well-being. Economic studies on social capital are conducted at both macro and micro levels (ibid Table 1.1). At a micro level (with household and firm as their main focus groups), although the results were mixed, there frequently seems to show a positive relation between different measures of social capital and household income/wellbeing (see among others Isham et al.,2002; Knowles, 2006; Robison & Siles, 2011; 1999; Narayan & Pritchett, 1999; Tiepoh & Reimer, 2004; Sirven, 2006; Gravemeyer et al. ,2008; Lu and Zhao, 2009). Limited studies done in Malaysia also indicate a positive impact of social capital on household income although in certain cases, the impact was lower compared to human capital (Yokoyama & Ali, 2009; Roslan et. al., 2010; Nasir et. al., 2010; Rahmah et al., 2011; Rahmah et al, 2016). While a gap in inequality is fast growing in both urban and rural areas, and social capital has been identified to provide a better explanation, past studies including those done in Malaysia were found to concentrate only on households in specific locations and sectors in rural areas and agriculture. This has resulted in a wider gap in finding and comparing the impact of social capital on household income at both urban and rural areas and in all economic sectors. It is a prerogative of this study to fill this gap to enable a thorough comparative analysis on the exact impact of social capital on households in both areas and all sectors to be identified and compared.

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Growth with equity continues to be the government development philosophy in line with the vision to transform Malaysia's economic status from middle income to high income nation by the year 2020. In the Tenth Plan (2011-2015), 'a fair and socially just society with national unity' has been outlined as an ultimate objective under the spirit of 1Malaysia to ensure all Malaysians, regardless of ethnic group, share equitable access to economic opportunities to improve and enhance their well-being. However, one of the biggest challenges that might impede the government novel objective is the persistence of income inequality that continues to show an accelerating trend. To ensure all Malaysians an inclusive and fair access to economic opportunities, social capital is seen here to play a significant role. All economic and daily life activities of humans involve conversations and networking between players and people in the market and society. How we build good relations with other people will indirectly determine our chances to get more access to any economic opportunities/externalities and mutually beneficial collective action and decision making channels and are shared through social relations (Grootaert & Bastelaer, 2002; Krishna & Uphoff, 2002).

Norm, trust, and spirituality, as elements of Malaysian social capital, are predicted to have an influential impact not only on the social relation process but also on determining an equal access to economic opportunity in a multicultural a society like Malaysia. A question raised is to what extend does social capital influence income level and income distribution among individuals in Malaysia? Furthermore, what is the actual role played by social capital in influencing income level and income distribution in the multicultural societies of Malaysia?

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This study will attempt to find an explanation on the following questions:

1. What is the exact relationship between individual's social capital and income levels?

2. What is the actual impact of social capital (social relation, norms, trust and spirituality) on income level among working individuals in both urban and rural areas in Malaysia?

1.6 Objectives of the Study

1. To determine elements of Malaysian social capital.

2. To construct the dimensions of social capital from the Malaysian perspective.

3. To analyze the impact of social capital on individual income in Peninsular Malaysia.

1.7 Contribution of the Study

1. This study contributes to a new refinement of the definition and measurement of social capital according to Malaysia's perspective that can be used as a guideline by policy makers and researchers in planning policy and future studies.

2. Finding of this study is expected to provide a comprehensive understanding on the exact role play by social capital variables i.e. social relation, norm, trust and spirituality (elements of social capital in the Malaysia's perspective) on individual income level and income distribution. The inclusion of spirituality as a new element is predicted to provide an interesting explanation on the causes of inequality among individual in the multicultural society of Malaysia.

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CHAPTER 2: THE THEORETICAL BACKGROUND AND LITERATURE REVIEW

2.1 Introduction

This study is a departure from the normal practice of individual income studies in Malaysia which emphasize standard conventional economic capital. The central focus of this study is social capital which is in line with the current, surging interest shown by economists particularly from developed areas and due to limited study focusing on analysis of the impact of social aspects of human on individual income in Malaysia. Human capital is an established theory and abundant volumes of past studies have demonstrated the mixed effects of the impact of human knowledge and skills on individual or household income. This is also the main reason that human capital is not highlighted but will be included as control variables in this study. The first part of this chapter will discuss the origin, refinement, and issues surrounding the definition of social capital done in past studies. Discussion will also cover the definition of income distribution. A proper definition of social capital in the Malaysian context will then conclude the first part. The second part will discuss the theory of social capital and theory of income distribution. Then, the theory of human capital will be compared with theory of social capital to identify the differences and similarities in both theories. Then discussions will proceed with details on forms, elements and measurements of social capital. This will be followed by a literature review on the impact of social capital on individual, household, and firm income or welfare level. Theoretical framework of this study synthesized from theoretical and empirical studies will conclude the second chapter of this study.

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2.2 Social Capital

2.2.1 Definition and refinement of the concept of Social Capital

Social Capital is a concept that originated from the sociological and political science background and the discussion on this section is based on the initial idea set forth by its pioneers (Figure 2.1 illustrates the roots of this concept). Historically, this idea had been mentioned as early as 1916 by sociologist Hanifan to explain the importance of social connection in the building of society, spirit, and joint activities to achieve their own purpose (Castiglione et al., 2008). Prior to that, the concept had been discussed indirectly by prominent scholars like Karl Marx (1818-1883), Emile Durkheim (1858-1917), George Simmel (1858-1918), John Dewey (1859-1952) and Max Weber (1864-1920) under the rubric of the influence of culture in economic development (Bhandari & Yasunobu, 2010). Hanifan's idea has been left idle without any effort to explore it in detail until the mid of 1990's when the concept was given a new breath and discussed by Canadian sociologists in the study of urban life and relationships among urban neighbors (Seely et al., 1956; Jacobs, 1961), and theory of social interactions (Homans, 1961). It was in this period too that the concept of social capital was first introduced to economic research by economist Loury (1977) in his study of income distribution. Loury firmly believed that disparities in income between ethnic peoples is influenced by social network where an individual's capability to interact and build connection will determine their chances to get access to economic opportunities (cited by Quibria, 2003, pg.22). Same as Hanifan, Loury's idea only captured interest among social sciences particularly economics a decade after it was mentioned, thanks to an effort done by sociologists Bourdie (1986), and Coleman (1988) and political scientist Putnam (1993) who through their landmark studies and have properly translated this idea into a theory of social capital. After this historic study had been made, many did not expect that

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despite criticism and rejection by some parties, social capital to have continued to soar to stardom. It being studied and reviewed by scholars from various disciplines including economics.

Until now, the main barrier that impedes the smooth acceptance and recognition of social capital in the main stream lies with ambiguity surrounding the definition. There are two streams of literature regarding the definition of social capital. The discussion on these streams will be based on the taxonomy of the definition depicted in Figure 2.1. The first stream lead by French sociologist Bourdieu (1986), refers to social capital as resources i.e. information, ideas, assistance, etc. that individuals can get through interactions/relationships with others (Poder, 2011). With focus of the definition given to individual involvement in group membership, social relation according to Bourdieu is a source or mechanism for individuals to create a relation and to achieve their own objective. Bourdieu too described resources as valuable information of incomes/job prospects etc. that can be used by individuals to improve their well-being/welfare. Since the formation of social capital is determined by individual efforts and ability to involve and built social relation with others, Bourdieu firmly believed social capital benefits were exclusively for individuals.

As shown in Figure 2.1, the second stream of definition was led by an American sociologist Coleman (1988) and political scientist Putnam (1993) who refers social capital as the relationship itself and not as the resources generated from the relations between people (Poder, 2011). Coleman's definition centered on the functional nature of social capital. According to Coleman, social capital embedded in the structure of relations built between and among individuals in a group will facilitate the actions of individual members and form the basis of social capital. Social relation consists of different entities (obligation, expectation

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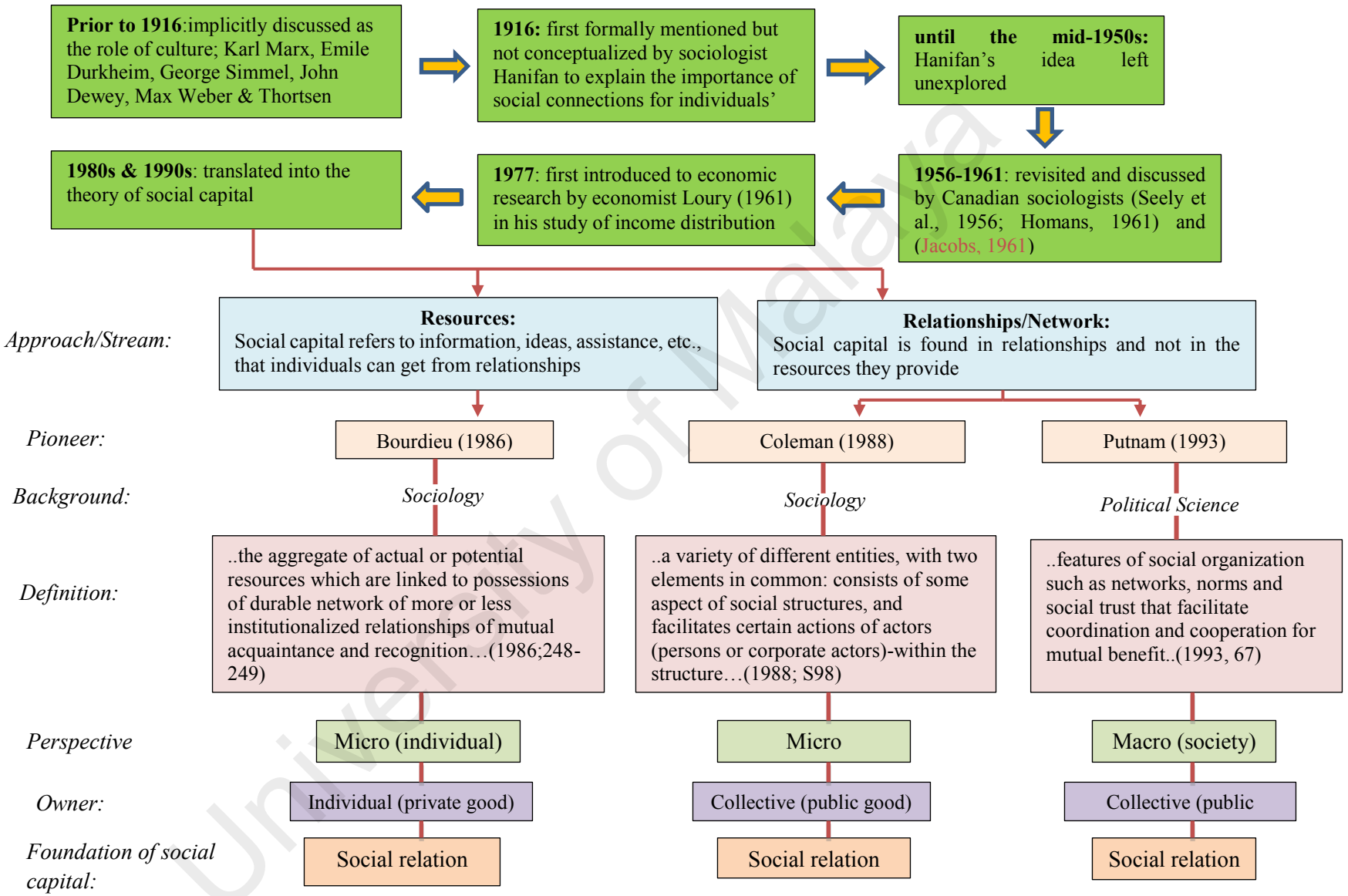

Figure 2.1: Taxonomy of the Roots and Definition of Social Capital from Pioneers' Perspectives

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, trust and information flow) belonging to every member in the relation and these entities will ensure the smooth process for social capital to emerge and benefit those involved. Since social capital is created from the relation between and among individuals, social capital is viewed by Coleman as a public good.

Contrary to Bourdieu and Coleman, Putnam defined social capital from the macro perspective where social capital is referred as a feature of social organization such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions (Putnam, 1993). Agreeable with Bourdieu and Coleman, Putnam considers social relation as a source for social capital formation (ibid Figure 2.1). Participation in civic association not only provides individuals with opportunities to interact but most importantly will facilitate the creation of social relationships. Number of involvements and degree of individual participation in civic association, according to Putnam, will stimulate social relation, foster strong norms of reciprocity and trust, and ultimately determine the richness of social capital possessed by society (Bhandari & Yasunobu, 2009). Social relation benefits individuals and society in many ways not only to facilitate social cooperation and strengthen reputation but also to overcome problems of collective action. Similar to Coleman, Putnam viewed social capital as public good because of the nature of its formation and the benefits that its offered which was collectively shared by members.

From the two stream of ideas discussed based on the taxonomy in Figure 2.1, all pioneers agreed that social relation is a source/foundation for the formation of social capital. Without social relation, social capital would not be created, and any attempts to define social capital should take into account social relation as the main criteria (Poder, 2011: Bhandari & Yasunobu, 2009). Distinctions between them lies on whether to treat social capital as resources or relationships and whether or not social capital belongs to the private or public

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sphere. These differences will be clarified thoroughly latter after considering the refinement of the definition given by studies in the next section.

In the field of social science, efforts to define social capital in past studies have been conducted by many researchers, especially from sociology, political science and economics. The most commonly cited definition of social capital in past studies is the one given by Putnam (1993) which emphasizes trust, norms and networks. These notions according to Knowles (2005) appear in most definitions, with norms and networks featuring most often. Although most past studies were found to adopt the definition given by pioneers, attempts have been done by some studies to refine it. Table 2.1a and 2.1b elaborate the refinement on the definition of social capital done by advocates at an international and Malaysian level. Fukuyama (1995) contributes to the new refinement with priority given to the importance of trust. The quality of social relation (especially interpersonal trust, reciprocity, shared norms, and understanding) is viewed as crucial and will influence the formation of social capital. Fukuyama's definition is closely related and essential with economic activities because mutual trust between individuals/players is fundamental to improving cooperation, reducing transaction costs, and increasing business transactions (cited by Quibra, 2003;p.24). After Fukuyama, a number of studies have included trust together with networks and norms as elements in the definition of social capital (see among others Knack & Keefer, 1997; Whitely, 2000; Durlauf & Fachamps, 2005 [ibid Table 2.1a]). In Malaysia, although social capital study is still considered new, there have been attempts by sociologists and economists to refine this concept. Studies by Nasir et al., (2010), Azeem Fazwan & Azrina Husin, (2015) and Rahmah Ismail et al., (2016) are in sync with other researchers who have followed Fukuyama's footprint - incorporating the elements of trust in refining the definition of social

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capital (ibid Table 2.1b). However, no attempt has been made by these studies to refine the Malaysian perspective of social capital.

Social relation continues to be a main priority given by scholars in the refinement of the definition. Lin (2001) defined social capital as a resource embedded in social networks accessed and used by actors for actions with expected returns in the marketplace. This resource refers to interpersonal relationships considered by Lin as a useful source in the creation of social capital. Social relation is treated as an individualistic approach because according to Lin the purpose of individual involvement in interactions and networking is to gain benefits. Studies done by Baker (1990), OECD (2001), Collier (2002), Van Ha, N., et al. (2004), Dasgupta (2005), Cheung & Chan (2008), Johannes (2011), Chung, et al., (2014), are parallel with Lin which emphasize social relation in their definition of social capital (Table 2.1a).

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Table 2.1a: Definition of social capital: Refinement by advocates

Author	Background	Level	Definition of social capital
Baker (1990)	Sociologist	Micro: firms	..a resource that actors derive from specific social structures and then use to pursue their interests; it is created by changes in the relationship among actors… (Baker 1990, p. 619).
Fukuyama, F. (1995)	Political Scientist	Macro: groups/communities	..the ability of the people to work together for common purposes in groups and organizations..(Fukuyama, 1995:p.10)
Knack & Keefer, (1997)	Economist	Macro: collective (cross country)	..trust, cooperative norms, and associations within groups (Knack & Keefer, 1997:p.1251)
Woolcock & Narayan (2000); Woolcock (2010)	Economist	Micro: individuals	..the norms and network that enable people to act collectively..(Woolcock & Narayan, 2000:p.226; Woolcock, 2010:p.471)
Whitely, (2000)	Economist	Micro: individuals	..the willingness of citizens to trust others including members of their own family, fellow citizens, and people in general (Whitely, 2000:p.450)
Lin, (2001)	Sociologist	Micro: individuals	..investment in social relationships with expected returns in the marketplace..(Lin, 2001:p.19) ...resources embedded in social networks accessed and used by actors for actions..(Lin, 2001:p.24-25)
OECD (2001)	International Development Agency	Micro: groups	..networks/relationships together with shared norms, values, and understandings facilitating cooperation within or among groups..(OECD, 2001:p.42)
Collier, (2002)	Economist	Micro: individuals	..social interaction (among households, firms) that generates an externality (Collier, 2002:p.20)
Grootaert & van Bastelear (2002).	Economist	Micro: individuals (households)	..network and associations that operate at the local level…
Bowles & Gintis, (2002)	Sociologist	Macro	..trust, concern for one's associates, a willingness to live by the norms of one's community and to punish those who do not (Bowles & Gintis, 2002:p.419)
Glaeser, et al. (2002)	Economist	Micro: individuals	..a person's social characteristics (including social skills, charisma, etc.), which enable him to reap market and non-market returns from interactions with others.(Glaeser, et al., 2002:p.438)
Robison, et al. (2002; 2011)	Economist	Micro: individuals/groups	…sympathy (relationships with others) that might produce potential benefits for those involved…(Robison, et al., 2002:p.6)
Sobel, J. (2002)	Economist	Micro: individuals	..circumstances in which individuals can use membership in groups and networks to secure benefits. (Sobel, 2002:p.139)

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Table 2.1a (continued): Definition of social capital: Refinement by advocates

Author	Background	Level	Definition of social capital
Durlauf & Fafchamps (2004)	Economist	Micro: individuals	..a feature that generates positive externalities for members of a group through share trust, norms and values and their consequent effects on expectations and behavior.. (Durlauf & Fafchamps, 2004:p.5)
Grootaert & Narayan (2004)	Economist	Micro: individuals (households)	..the norms, networks and social relationships embedded in formal and informal institutions of society that enable people to coordinate collective action. (Grootaert & Narayan, 2004:p.1184)
Van Ha, N., et al. (2004)	Economist	Micro: individuals (households)	..resources embedded in relationships among households that facilitate productive capacity of households. (Van Ha, N., et al., 2004:p.374)
Dasgupta (2005)	Economist	Micro: individuals/groups	..interpersonal networks (Dasgupta, 2005:p.10)
Fafchamps (2006)	Economist	Macro:	..the role of interpersonal relationships and social network in social exchange (Fafchamps, 2006:p.1181)
Woodhouse (2006)	Social Scientists	Micro: individuals/groups	..a resource that may be used to achieve a variety of ends. (Woodhouse, 2006:p.84) resource, individual/groups
Groot, et al., (2007)	Economist	Micro: individuals	..all factors (such as the size of an individual's social network and membership in unions or associations) that foster social relationships and social cohesion (Groot, 2007:p.189) individual/micro
Yang, (2007)	Sociologist	Micro: individuals	..features of social relationships that can be used by individual members to achieve ends…(Yang, 2007:p.22)
World Bank (2007)	International Development Agency	Macro:	..the institutions, relationships and norms that shape the quality and quantity of a society's social interactions (World Bank, 2007)
Cassar, et al., (2007)	Economist	Micro: individuals/groups	..relational social capital in the form of personal trust between individuals and social homogeneity within groups that has positive effects on borrowing group performance (Cassar, et al., 2007:p.86)
Chau-kiu, Cheung & Raymond Kwok-hong Chan (2008)	Sociologist	Micro: individuals/groups	..the potential of achieving valuable resources through social connection. (Cheung, Chau-kiu & Chan, Kwok-hong, 2008:p.2262)

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Table 2.1a (continued): Definition of social capital: Refinement by advocates

Author	Background	Level	Definition of social capital
Hayami, (2009)	Economist	Macro:	..structure of informal social relationships conducive to developing cooperation among economics actors and aimed at increasing social product. (Hayami, 2009:p.98)
Ajani & Tijani, (2009)	Economist	Micro: individuals (households)	..the process between people that establishes networks, norms and society and facilitates coordination and cooperation for mutual benefits. (Ajani & Tijani, 2009:p.126)
Bhandari & Yasunobu (2009)	Economist	Macro:	..a collective asset in the form of social relations, shared norms and trust that facilitate cooperation and collective action for mutual benefit. (Bhandari & Yasunobu, 2009:p.491)
Wolz et al., (2010)	Economist	Micro: individuals/ households	..networks, norms and trust that facilitate information sharing, collective decision-making and collective action (Wolz, A. et al., 2010:p.57) micro/individual
Hassan & Birungi, (2011)	Economist	Micro: Individuals/ households	..membership of social organizations positively effects household income and reduces poverty.(Hassan & Birungi, 2011:p.19)
Johannes (2011)	Economist	Micro/macro: Individuals/ collective groups	..the quality of human relationships and the opportunities that emanate from them that could be of benefit to the population concerned. (Johannes, 2011:p.6)
Han et al., (2013).	Political Scientist	Micro/macro: individuals/ collective groups	..resources available to and accessed by individuals and community.. (Han, A., et al., 2012:p.186)…micro/macro. individuals/groups
Chung et al., 2014	Sociologist	Micro: individuals	..a set of resources, which is created when individuals formulate social relationships, and that can enhance an individual's efficiency. (Chung et al., 2014:p.47)

Most past studies in Malaysia too were found to adapt Lin's approach in their refinement of social capital. Noorasiah & Nasir, (2007), Yokoyama, S. & Ali, A.K, (2009), Roslan et al., (2010), Hazlina Hamdan, et al., (2014), Wan Munira, (2014), Geraldine KL Chan, (2015), Ahmad Shukri & Noor Azizah, (2015), Hamedi & Samira, (2015), Muniandy, R. et al., (2016), Al Mamun, A. et al., (2016) and Viapude, G.N., et al., (2017) emphasized social capital as a resource embedded in social networks in their refinement of social capital (ibid Table 2.1b).

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Table 2.1b: Definition of social capital: Refinement by advocates (Malaysia perspective)

Author	Background	Level	Definition of social capital
Noorasiah & Nasir (2007)	Development Economist	Micro: Firms	… relationships and networks established between individuals and organizations on the basis of expectations, obligations, honesty and trust and values and norms of social life…(Noorasiah & Nasir, 2007: p.95)
Yokoyama, S. & Ali, A.K (2009)	Agricultural Economist	Macro	…institutions, relationships, attitudes, and values that govern interactions among people and contribute to economic and social development..(Yokoyama, S. & Ali, A.K., 2009: p.324)
Nasir et al., (2010)	Development Economists	Micro: individual/ household/firms	…the level of trust, communication, relationship, cooperation and good norms nurtured, formed, maintained and shared by at least two individuals or firms…(Nasir et al., 2015:p.256)
Roslan et al., (2010)	Economists	Micro: Household	… positive socioeconomics consequences generate from individuals involvement in groups (i.e. having social ties and relation with others in society)…(Roslan et al., 2015: p.557)
Hazlina Hamdan, et al., (2014)	Pure Scientist	Macro: Households	…network, interaction and connection of people around…(Hazlina Hamdan, et al., 2014:p.170)
Wan Munira (2014)	Sociologist	Micro: Collective groups	…collective resources (information and knowledge) gained from the members in the networks…(Wan Munira, 2014:p.172)
Hamedi & Samira (2015)	Sociologist	Micro: individuals/ collective groups	..a positive outcomes like emotional support and ability to mobilize others derive from social networks among individual's..(Hamedi & Samira, (2015: p.2)
Geraldine KL Chan (2015)	Sociologist	Micro	…social networks, norms and sanctions that facilitate co-operative action among individuals and communities… (Geraldine KL Chan, 2015:158)
Azeem Fazwan & Azrina Husin (2015)	Sociologist	Macro	…the stock of norms of reciprocity, trust, and organizing within groups…(Ahmad Farouk, A.F., & Husin, A., 2015: p.27)

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Table 2.1b (continued): Definition of social capital: Refinement by advocates (Malaysia perspective)

Author	Background	Level	Definition of social capital
Ahmad Shukri & Noor Azizah (2015)	Sociologist	Micro	…a resource that emanate from tight community setting…(Ahmad Shukri & Noor Azizah, 2015**:**p.33
Muniandy, R. et al., (2016)	Sociologist	Macro: Cross-states	… the resources (such as business opportunities, information, financial capital, ideas, leads, emotional support, trust, cooperation, and even goodwill that are available from and through personal and business networks…(Rajend et al., 2016: p.350)
Al Mamun, A. et al., (2016)	Sociologist	Macro: Cross-states	… the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit…(Al Mamun, A. et al., 2016:365)
Rahmah Ismail et al., (2016)	Development Economists	Micro: Household	…social networks, trustworthy and norms that generates positive externalities and improve individual or society competence…(Rahmah Ismail et al., 2015: p.102)
Viapude, G.N., et al., (2017)	Psychologist	Micro: Individuals	…sets of norms and networks that enable individuals to act as a group and the interaction between these groups will influence the community dynamic...(Viapude, G.N., et al., 2017:p.105)

Nevertheless, these studies did not make any attempt to properly define social capital from the perspective of the multiracial and multicultural society of Malaysia. Spirituality and cultural elements that have been discussed by this theory are vital in the formation of social capital particularly in the pluralistic society. This key issue has not been incorporated by these studies in defining the concept from the Malaysian perspective.

Robison et al. (2002 & 2012) defined social capital as a person or group sympathetic towards another person or group that might produce a potential benefit for those involved. Social capital is seen here as a feeling of sympathy and caring towards other people and social relation is the channel to express and realize it (ibid Table 2.1a). Sympathy will encourage

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individual or groups to offer their help or proposing others to lend their help to the affected group regardless of knowing or not knowing them. Ultimately, social relation might overcome misery and help those affected to improve their well-being. Definition given by Robison et al. is consistent with the economists' interpretation and consensus of what capital means. Social capital equates to productive resources which can be transformed into a productive consumption i.e. capability to change and improve people's lifes using social relation as a channel to achieve the objective.

Refinement by Yang (2007) is a departure for tracing a better solution on the issue of individual or collective assets of social capital (ibid Table 2.1a). Most studies, according to Yang, treated social capital as a collective asset although the measurement used is actually the individual level approach. Since social capital only exists when at least two individuals interact, one individual is actually the basic unit in the formation of social capital. Yang acknowledges that social capital can be considered both as an individual or collective asset but it is best to consider it as an individual asset before we aggregated it as collective assets (Yang, 2007). This was due to the nature of the formation of the individual as the main creature in the creation of social capital. Social relation, again, is the central focus in the definition and structure as four main features of social relation (Yang, 2007). Prior to Yang's works, these features were discussed implicitly under the rubric of forms of social capital.

Refinement by Hayami (2009) and Bhandari & Yasunobu (2009) also emphasized on social relation but both with economic influences (ibid Table 2.1a). Hayami stressed on informal social relations that are not enforced through governmental laws as the foundation of social capital. Social relationship is conducive for developing cooperation among economic actors with the ultimate aim to increase social products of those involved in the relations (Hayami, 2009). To enable social to be called capital, Hayami has expressed that

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this social product is expected to accrue by time for a group of people who shares this capital.

Bhandari & Yasunobu (2009) defined social capital as a collective asset in the form of social relations, shared norms, and trust that facilitate cooperation and collective action for mutual benefits. Social capital is regarded as a collective asset because this capital resides in relation between people and it needs at least two persons to invest (interact and form a relation) before it can be nurtured. The shared norms and trust will give strength to the relation and facilitate cooperation among individuals to achieve their targets. Social relation is considered an asset of an individual because the information and trust possessed by individuals can only be transformed to capital when connection and relation exist with other individuals. What is certain is both definitions by Hayami and Bhandari & Yasunobu agree that the ultimate outcome from social relation is to develop and facilitate cooperation, and collective action among economic actors aimed at increasing social products and mutual benefits to those involved in the relationships (ibid Table 2.1a).

Although many versions have been proposed, what is certain is most past studies done in Malaysia have been found to include too many items in their definition of social capital. It has been suggested that any definition should be limited to only explanations in systematic ways as to what is meant by social capital (Woolcock, 2001:Robison et al., 2002). In order to answer this suggestion, this study will try to tackle three issues surrounding the definition. The first issue is whether social capital deserves to be treated as economic capital. Second, on the elements that need to be included in the definition of social capital. Finally on issues regarding the properties of social capital. Until recently, no universal consensus has been achieved among scholars regarding these issues.

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To answer the first issue, we need to understand and trace the similarity between social capital and other economic capital thus to counter the argument made by mainstream economists. Prior to the emergence of human capital theory in the early 1960s, the widely recognized capital importance for economic growth and development lies on non-human based, particularly physical, capital (Table 2.2). These non-human based capitals fulfilled the requirement of economic capital where all these assets are productive resources that need to be created (through investment) and to be maintained (by applying human effort) [Piazza-Georgi, 2002]. Furthermore, investment on these assets will generate a stock of capital goods (input/final product) that will produce a flow of benefits/income for those who own it (Grootaert & Bastelaer, 2002; Krishna & Uphoff, 2002: Piazza-Georgi, 2002). Conventional economic thinking, too, argued that capital is something that is tangible, involves time and opportunity cost in the creation process, and measurable directly in material forms.

The landscape of economic thinking then had been altered with the introduction of human capital theory in the mid 1950s and early 1960s which highlighted the importance of human knowledge and skills as another important economic capital (ibid Table 2.2). This human-based capital which resides in the human body and mind (that makes it unobservable, and difficult to measure) totally gave a new interpretation of economic capital which has prolonged stagnation under the rubric of non-human based dimensions. Although facing the same obstacle like social capital since the origin of human capital is from an economic background, the path that the later had to go through was not to complicated compared to the later. Human capital resides in the human mind and/or body and exclusively belongs to individuals who own it. Investment in education, training and health will result in individual education, skill, and health level, thus will enable individuals who possess it to be rewarded with a better income/wage through job/works incentive.

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The same process applies to social capital although the final outcome of the investment is more indirect compared to human capital. On the other hand, social capital resides in relation to at least two people and the uniqueness of its nature makes it the only form of capital not under any individual's property (Yang, 2007). Although the nature of social capital is the center of controversy among mainstream economists, both human and social capital need to be created (through investment) and maintained in order for a flow of benefits/income to be enjoyed by those who own it (ibid Table 2.2).

Like non-human based capital and human capital, social capital, too, deserves to be treated as capital because it fulfills the criteria of capital from an economic perspective (Table 2.2). In conventional economic thinking and belief, capital is something that will produce income, encompass the non-consumable, depreciate, and act as an input into the production process. Furthermore, capital needs to be created rather than be maintained by applying human effort (Piazza-Georgi, 2002). Based on this believe, a proper definition of capital should be a productive resource that is the result of investment. Similar to other conventional forms of economic capital that were created through monetary investment, the formation of social capital is a result of investment in social relation. Time, effort, and opportunity cost are also involved in the creation of social capital although in certain cases, these do not matter (especially if the relationship stems from heritage, friendship, or good connections whereby the current generation find it easy to maintain and continue the relation without any worry as to the time that needs to be incurred to form the tie).

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Table 2.2: Type, Characteristics and Measurement of Capital

Type of capital:	**Non-human-based capital**	**Human-based capital**	
	Physical capital	Human capital	Social capital
Origin of idea:	Economist	Economist	Sociologist
Characteristics of capital: **i. Nature**	Tangible-observable, touchable and resides in land, building, machine, money, etc.	Less intangible-resides in people's mind and body (knowledge, skills, health)-not observable but still measurable	Intangible-resides in the relationships between people
ii. Creation	Through investment in productive resources (i.e., land, machinery, etc.)	Investment in education, training and health	Investment in social relation/networking between people
iii. Time and effort	Yes-to produce final or intermediate goods involves a certain time frame and efforts from management and workers	Yes-certain years or time involved to develop the level of education, skills and health	Yes-creation of social capital also involves time and effort, although in certain cases, it does not matter (such as a relationship inherited through family connection)
iv. Opportunity cost and forgone consumption	Yes-production of product will have to forgo other production and technology and delay current activities for future use. Time and effort also part of the process	Yes-investment in human capital involves forgone or delayed wages/salary and leisure time from work done prior to investment.	Yes-relationships involved cost even if not in monetary terms. Time and effort are needed and sometimes money (to entertain friends or clients, etc.). This commitment means forgone time for other activities.
v. Transformative ability	Yes-easily transferable into intermediate input to be used in other products (capital goods) or as final product	Yes-knowledge/skills gained from investment in human capital will enhance individuals' ability and marketability (supply of knowledge and skilled labour). The higher the knowledge and skills, the higher is the reward (wages/salary)	Yes-trust building relationships will ease transaction process/deal, reduce cost involved, enhance efficiency and increase productivity. Information (regarding job/income) and assistance from friends will enhance the chances of gaining a better job/income/salary and ease burden (financial difficulties, etc.)
vi. Alienability	Yes-certain physical capital is inherited from family members, etc.	No-totally belongs to the individual who possesses it.	Yes-Social capital can be inherited, such as family connections passed from generation to generation.
vii. Durability and maintenance	Yes-but value will depreciate with an increase in use over time and if not maintained properly (like machines, tools, buildings, arable land, etc.)	Yes-value will increase with use but depreciate with time (as workers get older, their ability and productivity will be reduced) or when not used (knowledge and skills will become obsolete if no longer used or practiced)	Yes-but *fragile*. Strong or weak ties depend on individual effort to maintain the relationship. Termination of relationship by any party will make social capital obsolete
viii. Measurement	Yes-Measureable using direct economic proxy like numeric figures (total amount, sale, profit etc.)	Yes–not really observable but still measurable using a direct proxy such as years of schooling and work experience and less direct proxy such as level of health, healthy life style, etc. (ordinal or nominal data)	Yes-observable but still measurable using a direct proxy such as number of people involved in associations and less direct proxy such as perception toward trust and norms

Sources: Adapted from Piazza-Georgi, 2002; Robison et al., 2002; Bhandari & Yasunobu, 2009; Akcomak, 2011.

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Nevertheless, by taking into consideration the unique nature of social capital which resides in relation between people and not like its counterpart which is totally owned by individuals who invest in it, the importance of time, effort, and opportunity cost is paramount. The fragility of social capital means that effort and time from all parties involved are needed to ensure the sustainability of the relation. To create a solid relation also means that opportunity cost will also be incurred in the process. The only major concern is that social capital is more fragile compared to non-human based and human capital because of its nature residing in human relation. Here, efforts from all parties involved are needed to ensure the sustainability of the relation (ibid Table 2.2).

From economic point of view, the importance of social capital can be seen from the influence of social relation/networks on the *terms of trade* for goods and services. According to Robison & Siles (1999), income distributions are largely dependent on the terms of trade and the capabilities of an individual or firm to develop relation/networks (supported by on shared norms and trust) indirectly will determine terms of trade and income distributions. Trust-based relationships will enhance individual or firm efficiency and productivity by easing and reducing transactions cost. Obtaining trust from other will benefit individual/firm in terms of access for information on employment, contract deal and flexibility, payment method, trade credit and business warranty etc. (Fafchamps & Minten, 2002). Furthermore, opinion, helps or any mutually beneficial collection action and decision making will also be channelled through this interaction. This relational information is considered informative and has a characteristic of economic capital if it is useful and can lead to higher incomes or revenues to individuals, households, communities and nations (Gootaert & Bastelaer, 2002; Krishna & Uphoff, 2002).

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Since the process involves creating social relation is resembled to the process to create other economic capital, social capital also deserves to be considered as economic capital (Isham et al., 2002; Krishna & Uphoff, 2002: Piazza-Georgi, 2002). The characteristics of capital possesses by social capital as depicted in Table 2.2 is an evidence to counter claim the rejection made by prominent scholars like Arrow (1999) who proposed the abandonment of this intangible asset because of not exactly fulfilling the criteria of conventional capital (see Poder, 2011; Akcomak, 2011).

Regarding the second issue, social relation/networks, norms, and trust are elements of social capital firmly regard by pioneers and advocates as vital elements in the formation of social capital (Knowles, 2005 & 2006). Social relation is actually a source through which an individual or a group will channel and share any relevant or potential information regarding job or income prospects. Besides information, opinions, help, or any other factor, mutually beneficial collective action and decision making will also be channeled through this interaction. If the relational information is useful and can lead to higher incomes or revenues to individuals, households, communities and nations, this information is considered informative and holds a characteristic of economic capital (Gootaert & Bastelaer, 2002). Relational information is considered productive assets or capital because it provides externalities or benefits (informative information) for individuals or groups inside or maybe outside the relation (Krishna & Uphoff, 2002).

Most definitions commonly agree that the social relation is the main element and source of social capital (Knowles, 2005; 2006). The next step is to refine the term and Yang (2007) built the path for a better explanation on what social relation is actually about. Yang identified four features of social capital i.e. *basic*, *structural*, g*eneralized* and *specific* (Table 2.3). The first two features describe the external part of social relations (which is observable

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and measureable in quantity). Strength and frequency of contact, number of memberships and degree of involvement, and decision making in association, etc., are among indicators to describe these features. Generalized and specific features on the other hand describe the subjective part of the social relations. Personally known or not known colleagues, friends, association members, etc., trust and respect towards other, and willingness to help others are among indicators to describe these features. The first two features discussed actually fall under the structural while the latter two fall under the cognitive part of social capital, the two widely agreed and accepted forms of social capital in past studies.

Norm and trust are essential elements in the formation of social capital. The function of these elements is to foster and facilitate cooperation between and among individuals or groups for the purpose of channeling and sharing insightful information. Norms can be defined as the good behavior of individuals or society based on region, ethnic, culture, language etc. Meanwhile, trust refers to the level of trustworthiness between people or groups (ibid Table 2.3). Sharing the same norms will be an advantage for an individual or a group because this will help ease the process to build a relation and foster the transformation of information from one individual or group to others. Trust on the other hand can be considered as an output and also as a source of social capital. A good social relation supported by the shared norms for example will foster a trust between individuals or groups thus increase the chance to acquire useful information. Trust also can be seen as the convincing sources for individuals or groups to get immediate assistant when facing financial difficulties or emergencies. This study will emphasize on the later because financial difficulties and emergencies are considered vital and have a strong impact on individual financial sources. Which person or people can help during difficulties and on what basis they can be trusted will have a significant influence on individual or group welfare/income level.

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Shared norms and trust among individuals or groups in a plural society are predicted to have an impact not only on the formation of social capital but also on household income. Norms and trust are highly influenced by homogeneity or heterogeneity in individual culture and religion and this will influence social relationships. Realizing that many countries consist of plural societies where most of the population adheres to their own religious beliefs and practices, this study believes that spiritual and cultural influence is the fourth element of social capital that needs to be considered in the definition (ibid Table 2.3). Although not exactly belonging to any of the three main elements, the influence of spirituality and culture on norms, trust and ultimately on social relationships has been discussed in the literature and indirectly covered as a variable to represent the main element of social capital (Robison & Siles, 2011; 1999; Grootaert & Bastelaer, 2002; Krisna & Uphoff, 2002). Spirituality (especially through religious participation/involvement) has been considered as a primary source of social capital because it serves as an incubator for institutionalized norms and values of reciprocity, formal and informal social relationships and networks with other people in society (Huang, 2015; Cnaan et al., 2003).

There have been several studies in Malaysia that have highlighted the importance of spirituality and cultural elements to be considered in defining and measuring social capital. Social relation built on the basis of participation in religious or culture activities is said to play a vital role in facilitating the formation of social capital and to secure benefits of social capital. In a pluralistic society such as Malaysia, compatibility based on understanding of different religious and cultural believes and practices will facilitate and foster social relations, trust and norms between individuals, households, and society groups thus increase the chances to get and use informative information channeling from it (Ahmad Shukri & Noor Azizah, 2015; Ahmad Shukri Abdul Hamid et al., 2013; Adam Ng et al., 2014; Najib Ahmad

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Marzuki et al, 2014). Realizing the importance and significant influence not only on the formation of social capital but also on improving various aspects of people's lives as discussed by theories, past studies including those done by local researchers above, this study will categorize spirituality and culture as the new element of social capital from a Malaysia perspective.

On the final issue, since the nature of social capital resides in relation between individuals and it is the individual who possesses the valuable information, this study firmly believes that social capital is actually an individual good. This view is strengthened by Yang (2007,page 20-21) when he reviewed the definition given by pioneers. Yang indicates that although pioneers did not explicitly declare social capital as an individual asset, implicitly their definition clearly implied that an individual was the beneficial recipient of collective resources (i.e. benefits) channeled through social relation. Social relation is not social capital, it is a channel whereby all individuals involved in the relation will have access to social capital. Collective resources channeled by individuals are actually what social capital is. It is individuals, per se, that will receive this resource and social relation is a platform to channel and to give individual access to these resources. Information and trust possessed by individual can only be transformed to capital when connection and relation exist with other individuals.

Individual is the foundation for the formation of any relation or interaction and at least two individuals are needed for any interaction to take place and this is the unique aspect of social capital (Woolcock, 1998 & 2010: Knowles, 2005 & 2006; Yang, 2007; Hayami, 2009). On the other hand, benefits of social capital might be individual or even public depending on circumstances. For example, when one individual gets involved in an

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Table 2.3: Features, Forms, Elements and Measurements of Social Capital

<table>
<tr><th>Feature</th><th colspan="3">Basic</th><th>Structural</th><th>Generalized</th><th>Specific</th></tr>
<tr><td>Description of features and forms</td><td colspan="4">-the pattern/shape and density of the relationship/interaction
-involvement/membership in association/group (formal/informal) that promotes the interest of members or non-members
-external, observable</td><td>-people's perceptions of the level of interpersonal trust, sharing, and reciprocity
-internal, intangible, subjective – resides in people's mind</td><td></td></tr>
<tr><td rowspan="2">Form</td><td colspan="4">Structural</td><td>Cognitive</td><td></td></tr>
<tr><td colspan="3">Horizontal:
-relationship with people on equal basis/similar status and power in a community
Bonding:
-Strong ties between or among people who are close and know one another such as immediate family, close friends and neighbours
Bridging:
-Distance ties that exist with people from different backgrounds and friends from different social niches</td><td>Vertical:
-relationship between people based on unequal basis - different hierarchical levels and unequal power in a community</td><td>Norms:
good values, attitude</td><td>Trust:
perception towards other people</td></tr>
<tr><td>Element</td><td colspan="4">Social relationships/networks:
• interaction/relationships with or among peoples/individuals..</td><td>Norms:
• Cooperative/reciprocity

Trust:
• Generalized/thin trust:
- Trust of people in general
• Thick trust:
- Trust in people with whom we are close and interact regularly

Spirituality/culture:
• spirituality/culture influences on willingness to interact, trust others, etc.</td><td></td></tr>
</table>

Sources: Adapted from Putnam, 1993; Grootaert & Bastelaer, 2002; Krishna & Uphoff, 2002; Knowles, 2005 & 2006; Yang, K., 2007; Bhandari & Yasunobu, 2009; Westlund & Adam, 2010; Wolz et al. 2010; Huang, 2015; Cnaan et al., 2003; Ahmad Shukri & Noor Azizah, 2015; Ahmad Shukri Abdul Hamid et al., 2013; Adam Ng et al., 2015

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association that represents his work/interest, any informative information or aid that he can glean and use to foster his career will eventually contribute not only to the improvement of his personal income/welfare but also to households and the nation (by paying higher tax, increase in saving and consumption etc.).

Based on the thorough discussion from the previous above section, this study will propose the proper definition of social capital from the Malaysian perspective. The framework for the definition depicted in Figure 2.2 was developed based on a comprehensive study (discussed above) of the origin of the definition, refinement by researchers (including in Malaysia), and after considering three issues pertaining to the definition of social capital. The stronger definition of social capital, too, must be based on three pillars extracted from reviews on past studies discussed above. First, the definition needs to take into account social relations as the core or foundation of social capital insofar as what has been agreed to by advocates and opponents (Fachamps, 2006; Westlund & Adam, 2010; Poder, 2011). Second, clarification must be made on whether to refer to social capital as social relation, elements, or features of social relation in the definition (Robison et al. 2002; Yang, 2007). Finally, from an economic perspective, social capital must be defined accordingly to the standard term of economics to avoid any confusion and rejection (Hayami, 2009).

This study firmly believes that social relation is the foundation and features of social relation are what supposed to be referred to as social capital. The nature of this capital which resides in relation is a basis for this new interpretation. Social relation exists when at least two people interact in a formal conversation (through involvement in association) or informal (interaction with family, relatives, neighbors, close friends, officemate, etc.). Social relation is the foundation, a channel through which an individual or group will share any relevant or potential information regarding job or income prospect etc. If the information is useful and

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contributes to improvement in people's income level and well-being, in economic terms, this information is actually an asset or capital. Features of social capital will facilitate and smooth the process of channeling and sharing informative information and other benefits generated from social relation (ibid Figure 2.2).

Apart from social relation, this study firmly beliefs that shared norms, trust and spirituality are vital elements constitute the formation of social capital in the pluralistic society of Malaysia. Norms and trust will foster and facilitate interaction, cooperation and trustworthiness between and among individuals or groups for the purpose of channeling and sharing informative information. Spirituality on the other hand will complement this process because willingness to help and trust others is actually influenced by our religion/culture belief and practice. In a plural society like Malaysia, with different cultural and religion believe (as indicates in past studies including those done in Malaysia), these elements are predicted to have a significant role on the formation of social capital (ibid Figure 2.2). In line with economic thinking of what capital is all about, following Bhandari & Yasonobu (2009), this study agreed that any informative information which was found to be useful & contributed to improvement in individual income/welfare levels was actually relational assets/capital. Finally, this study firmly believed the proper definition of social capital from the Malaysian perspective was a collective relational asset/resources generates from features of social relations (norms, trust, and spirituality/culture) that provides benefits for individuals (such as to improve their income/welfare level) (ibid Figure 2.2).

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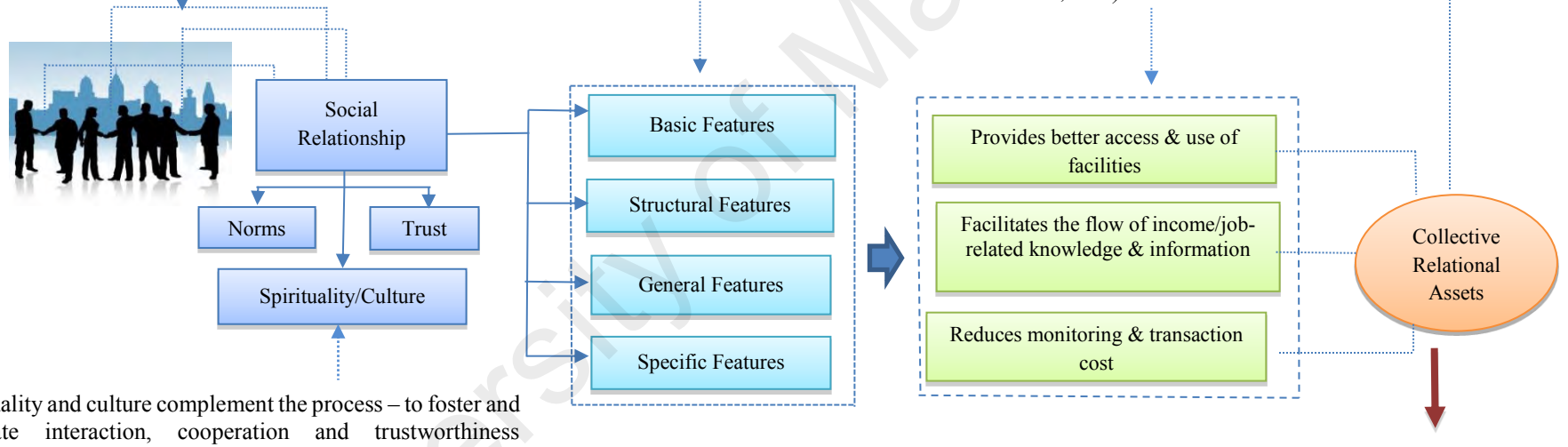
1. Social relationship/interaction is **the core/foundation** of social capital (Fachamps, 2006; Westlund & Adam, 2010; Poder, 2011)
- a channel where an individual will channel and share any relevant information regarding job/income.

2. What is social capital - social relationship, elements or features of a social relationship?
-social capital consists of four features that will facilitate and smooth the process of channeling and sharing of information (Yang, 2007)

3. *Social capital must be defined according to standard economic terms (Hayami, 2009)*
►any information that is useful and contributes to improvement in individual income/welfare level is actually a relational asset/capital (Bhandari &Yasonobu, 2009)



Spirituality and culture complement the process – to foster and facilitate interaction, cooperation and trustworthiness influence between and among individual or group for the purpose of channeling and sharing informative information (Huang, 2015; Cnaan et al., 2003; Ahmad Shukri & Noor Azizah, 2015; Ahmad Shukri Abdul Hamid et al., 2013; Adam Ng et al., 2015)

What is social capital? Collective relational assets generated from features of social relationships that provide benefits for individuals to improve their income/welfare levels

Figure 2.2: Definition of social capital in Malaysia perspective

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2.2.2 Theory of Social Capital

The earliest expressions and uses of social capital in social science study can be found in Lyda J. Hanifan in the second decade of the twentieth century (Castiglione et al. 2008). Hanifan (1920) had expressed the importance of social connection in the building of society, spirit, and joint activities. Social gathering, according to Hanifan, not only plays a role as a form of entertainment and interaction but most importantly it will facilitate a society to achieve its constructive purpose. However there are no such specific and systematic concepts and theories of social capital don't appear until the publication of the seminal studies done by Pierre Bourdieu (1986), James Coleman (1988), and Robert Putnam (1993).

Bourdieu (1986) depicted his idea of social capital as the process of income accumulation in a society. According to Bourdieu, economic, cultural and social capital is the three main ways in which resources/wealth can be accumulated. However the possibilities to accumulate and retain income from these three sources depend on the ability of individuals, families, groups and classes in a society to transfer resources/wealth across generations. The transference process is socially and historically determined and depends crucially on individuals abilities to build social connection. Social connection/relation is an important element that will facilitate the reproduction process of resources or income in a society. This is what has been considered by Bourdieu as the basic of social reproduction and successful transference of income/resources. This element was also a feature in the two components of social capital. Bourdieu idea clearly stated social connection (especially in the form of durable relationship among individuals) as a productive investment which will determine the advantages that can be acquired by different classes of societies.

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Coleman (1988) gave a new dimension on the relevance of Bourdieu's concept of social capital. His main purpose was to explain social relation by its function as an important characteristic of the social structure/organization which facilitates interaction among individuals in a society. According to Coleman, social capital is not a single entity, but a variety of different entities having two characteristics in common; consisting of some aspect of social structure and facilitates certain actions of individuals who are within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that would not be attainable in its absence. The possession of social norms among individuals will determine their capabilities to form social relation/connection thus to achieve their end objectives. Coleman considered social capital as a way to reconcile individual action and social structure, normative-driven and self-interested behavior in social analysis. Coleman stated that the practice of social capital by individuals through association will lead to the formation or creation of human capital. His study on People Teacher Association (PTA) run schools shows that parental involvement in school affairs has a beneficial external effect on student achievement. Probably according to Coleman, this was caused by students who believe that their parents are more concerned and worried about their study. Student whose parents are involved in running the school adopt a more positive attitude towards study. By showing concern and voluntary involvement, parents are actually acted as a role model in inducing chances in student attitude towards study.

The possession of social norms among individuals will determine their capabilities to form social relation/connection thus to achieve their end objectives. Coleman considered social capital as a way to reconcile individual action and social structure, normative-driven and self-interested behavior in social analysis. Coleman's idea on social capital has a root of rational choice theory. He expressed that in economic context, social capital can be seen as

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an additional tool available to rational economic agents to increase their present or future production and to reduce transaction cost. In other words, based on Coleman's idea, the capabilities of an economic agent to build a good relation and interacts with other players in the market will determine their chances to secure bigger benefit and value added.

Using Coleman idea's on social capital, Putnam et al. (1993) carried out a famous research on local government in Italy. His research demonstrated that the performance of social and political institutions is greatly influenced by citizen involvement in community affairs. Following Coleman, Putnam termed this involvement as "social capital". Social capital was defined by Putnam as features of social life-networks, norms and trust that enable participants to act together more effectively to pursue shared objectives. According to Putnam, institutional performance depends on institutional design, organizational determinants, and socio-economic and socio-cultural factors. In particular, Putnam emphasized that the character of civic life or civic community will have a great impact on institutional performance. Civic community referred to the density of local, cultural and recreational association. Putnam expressed his concern that association is the main engine behind the constitution and development of civic community.

Civic community referred to the density of local, cultural and recreational association. Putnam expressed his concern that association is the main engine behind the constitution and development of civic community. Putnam idea shows that civic society involvement in association is supported by the good norms and value that they shares and practices. These norms and value will influence the character of civic society and the formation of civic association. A strong civic association is a reflection of good morality adopted by civic society and together they will play an important role as a monitors and criticizers for the local government agencies.

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From the above discussion, social relation, norms and trust are the three main elements constitute to the formation of social capital in a society. Social capital is considered as an important tool to facilitate the accumulation and reproduction of income/resources. Social capital also means to accomplish the achievement of individual self-interested objectives. The fact is that capability and ability of individual or society to success and survive is not only determined by the possession of physical capital (including monetary capital) and human capital (level of education and skill). Social relation is a complementary, another sources of capital that had been recognized as an engine of economic growth.

2.2.3 Theory of Social Capital and the Theory of Human Capital

Basically, social capital is part of human capital because it all about idea on investment in human being. The only matter is that this unique capital has been ignored by main streams economics for too long although the important of social aspect of human had been mention in the literature (Piazza-Georgi, 2002). Unlike theory of human capital which have already established, extensively studied and genuinely from economics background, social capital is still undergoing a critical path to be recognized and accepted particularly among mainstream economics. Although the origin of social capital is from sociology and political science, novel ideas on how relation between people might generates externalities have inspires economics scholars to explore this unique capital. Knowing that human capital is already established and extensively study including in Malaysia, it is not the prerogative of this study to highlight it as the main focus. The aim of this section is to give a brief understanding on the similarities and differences between both theories.

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Theory of human capital is pioneered by Mincer (1958), Schultz (1961) and Becker (1962). Investment in education, training and health is the well-known standard definition agreed and uses for human capital. Human capital resides in people mind/body and according to pioneers investment in education, training and health will enhance human capabilities to do productive work, stimulate productivities and contribute positively to income accrues to workers, firms and nation. Human capital is a well establish theory and have been extensively study by economic scholars. Years of schooling, highest education and training attainment, on-the-job training (experiences), and level of health are among the most commonly use measurement to analyze the impact of human capital on economic growth and household income (Table 2.4).

Meanwhile, pioneering work by Bourdie (1986), Coleman (1988) and Putnam (1995) encapsulates the importance of social relations between people and how this relation might generate positive externalities to those involved. Unlike human capital, until now there is no standard definition applicable for social capital but the most commonly cited in the past studies was the definition given by Putnam (details on definition of social capital will be discussed in the following section). Network, norms and trust are the elements and measurement of social capital and most past studies employed at least one or two of the elements in their analysis (ibid Table 2.4).

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Table 2.4: Theory of Social Capital and Human Capital

	Theory of Human Capital	**Theory of Social Capital**
Pioneer:	Mincer (1958), Schultz (1961), Becker (1962)	Bourdie (1986), Coleman (1988) and Putnam (1993)
Background	Economist	Sociologist, Political science
Definition	Investment in education, training, and health will enhance human capabilities to do productive work, stimulate productivities, and contributes positively to individual income	No standard definition but the most cited by researcher was the one given by Putnam (1993) ..a features of social organizations such as trust, norms, and networks that generates positive externalities and improve the efficiency of society or members of a group by facilitating coordinated actions.
Essence of idea:	-human capital resides in people mind/body -exclusively belong to a particular individual -needs investment in term of schooling, training and health to generate it	-resides in relation between at least two people - the only capital which is shared and not exclusively belong to particular person -needs investment (relation/interaction) and this process is influenced by norm, and trust between people
Element and measurement	***Education***: education attainment, years of schooling, etc. ***Training***: training attainment, working experience, etc. ***Health***: level of health, healthy life style, etc.	***Social relation/network***: involvement/membership in association ***Trust***: perception on people than can be trusted to help during difficult times ***Norms***: good values and attitudes likes reciprocity, helping, and respecting other people

Sources: Schultz, 1961; Becker, 1993; Bourdieu, 1986; Coleman, 1988; Putnam, 1993; Grootaert & Bastelaer, 2002; Krishna & Uphoff, 2002; Piazza-Georgi, 2002; Savvides & Stengos, 2009

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Two major distinctions detected from both theories, first on the nature of capital and secondly on the focus of investment in human beings. Human capital resides in the human mind/body and exclusively belongs to individuals. On the other hand, social capital resides in relation between at least two people. The uniqueness of social capital makes it the only form of capital not under any individual's property (Yang, 2007). The focus of human capital theory is on investment in education, training and health. Meanwhile, social capital focus on investment in social relation between people but both theories have the same ultimate objective. Investment in human mind/body will increase knowledge and skill, develop mental and physical development and stimulate ability and productivity. Investment in social capital will enhance good relations/ties with others and increase the availability of income-related knowledge and information between economic agents. Ultimately, these investments (human capital and social capital) will increase individual income levels and well-being. Understanding from a comprehensive review on the similarities or differences between both human capital theory and social capital was later translated into the conceptual framework of this study (as illustrated in Figure 2.3).

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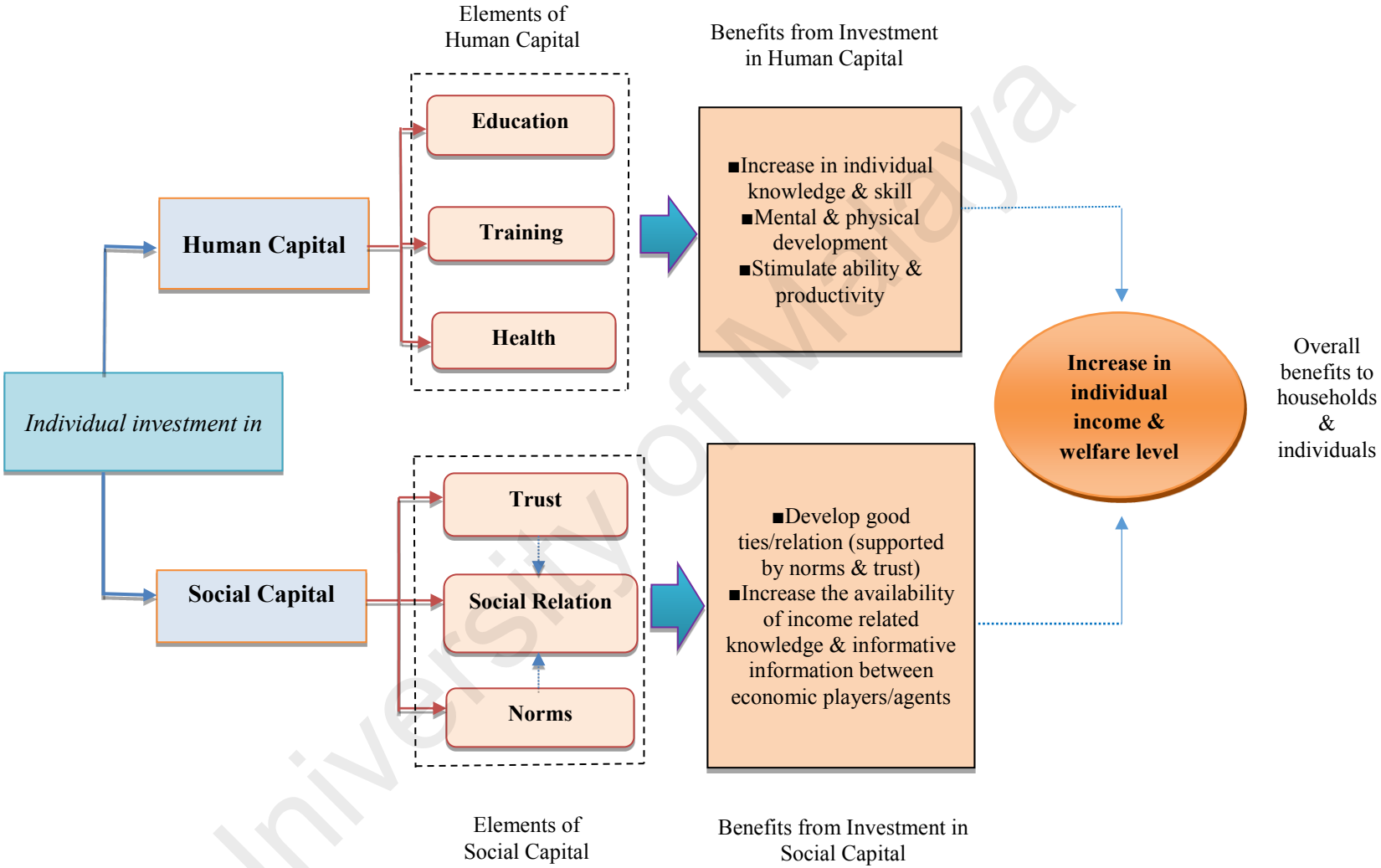

Figure 2.3: Conceptual framework on the impact of social capital and human capital on individual's income

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2.2.4 Features, Forms and Measurement of Social Capital

Yang (2007) systematically identified four features of social capital i.e. basic, structural, generalized and specific. The first two features describe social relations, in general, from external context (can be observed and measured quantifiably). Strength and frequency of contact, number of memberships and degree of involvement and decision making in association, etc. are among things described by these features. Generalized and specific features, on the other hand, describe the subjective part of the relationship between individuals. Personally known or not known colleagues, friends, association members, etc., trust and respect towards others, and willingness to help others are among things described by generalized and specific features (Table 2.5). The first two features discussed actually fall under the structural social capital while the last two fall under the cognitive social capital.

Past studies give a different interpretation on types of social capital. The categorization done in the past studies focuses on the pattern of social relation with different names given to the patterns observed. Structural and cognitive, bonding, bridging and linking, strong and weak ties, and horizontal and vertical networks, are among types of social capital identified in the past studies (see for example Knowles, 2005 & 2006; Bhandari & Yasunobu, 2009). Basically, social capital consists of two main parts i.e. structural and cognitive (see Table 2.5). Structural social capital refers to the pattern of relations that exist between people while cognitive social capital refers to shared norms, values, trust, attitudes, and beliefs be them owned or embedded in individual minds (Gootaert & Bastelaer, 2002; Krishna & Uphoff, 2002). The other types identified in the past studies actually refer to the patterns of social relations within the structural social capital.

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The structural form of social capital explains the external part of social capital (i.e. the nature of social capital that can be observed and measured). Involvement in associations which promote the interest of members or both (members or non-members) and interactions with family, relatives, neighbours, close friends, officemate etc. are what have been referred to as structural social capital. Structural social capital facilitates information sharing, collective action, and decision making through established roles, social networks, and other social structures supplemented by rules, procedures, and precedents (Grootaert & Bastelaer, 2002). The pattern of relation/interaction in structural social capital is categorized into horizontal and vertical relations. Horizontal relation/networks refer to ties with others in the community with a similar status and power (equal basis). There are two types of ties in horizontal relations i.e. bonding and bridging. Bonding or strong ties refers to relations among people who are very close and known to one another, such as immediate family, close friends and neighbors who are staying or reside within the same location/area. Meanwhile, bridging or weak ties refers to a more distant tie of like persons, such as loose friendships and workmates from different demographics/areas. Vertical networks or also known as linking social capital refers to ties among individual and groups who occupy different social positions and power (ibid. Table 2.5).

Cognitive social capital is a more subjective and intangible concept because it deals with trust and shared norms (good attitudes and values such as reciprocity, solidarity, and generosity) belongs to and embedded in people's minds and cannot be changed easily by outcome action. The cognitive part deals with people's perception, behavior and attitude which is not easy to predict or measure. Trust is an outcome from the social relation process and only when people have trust with somebody else then, and only then, will they share information or help others.

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Table 2.5: Feature, Form, Element and Measurement of Social Capital

<table>
<tr><th>Feature</th><th colspan="2">Basic</th><th>Structural</th><th>Generalized</th><th>Specific</th></tr>
<tr><td>Description of feature and forms</td><td colspan="3">-the pattern/shape, density of the relationship/interaction
-involvement/membership in association/group (formal/informal) that promotes the interest of members or non-member
-external, observable</td><td colspan="2">-people's perceptions of the level of interpersonal trust, sharing, & reciprocity
-internal, intangible, subjective – resides in people mind</td></tr>
<tr><td rowspan="3">Form</td><td colspan="3">Structural</td><td colspan="2">Cognitive</td></tr>
<tr><td colspan="2">Horizontal:
-relation with people on equal basis/similar status and power in a community</td><td rowspan="2">Vertical/Linking:
-relation between people based on unequal basis - different hierarchical and unequal power in a community</td><td rowspan="2">Norms , value, attitude</td><td rowspan="2">Trust, belief</td></tr>
<tr><td>Bonding:
-Strong/close ties between or among people who are close and known to one another such as immediate family, close friends and neighbours</td><td>Bridging:
-Weak/distance ties that exist with people from different background and friends from different social niches</td></tr>
<tr><td>Element</td><td colspan="3">Social relation/networks</td><td>Norms:
• Cooperative/reciprocity norms</td><td>Trust
• Generalized/thin trust:
-Trust to people in general
• Thick trust:
-Trust in people that we are close and interacts in regular basis</td></tr>
<tr><td>Measurement</td><td colspan="3">Proxy:
• Associational membership
• Numbers/density of membership in associations</td><td colspan="2">Proxy:
• Measures of trust and the strength of norms of reciprocity and sharing
• People that can be trusted to help during financial difficulty, etc.</td></tr>
</table>

Sources: Putnam, 1993; Grootaert & Bastelaer, 2002; Krishna & Uphoff, 2002; Knowles, 2005 & 2006; Yang, 2007; Bhandari & Yasunobu, 2009; Westlund & Adam, 2010; Wolz et al. 2010

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Trust is categorized into two i.e. generalized/thin and thick. The first refers to trust in people that we know and interact on a regular basis (such as friends and family). Meanwhile, thick trust refers to trust in people that we do not know (Knowles, 2005). Shared norms among people is highly influenced by the similarity of differences in culture (ethnic, language), religion belief and trustworthiness towards other. A good relation will foster trust and similarities in norms and culture will enable people to share and channel informative information, respect, helping, etc. (ibid. Table 2.5).

Table 2.6 summarizes levels and measurement of social capital used in empirical studies on the impact of the previous on economic performance. In this study, summation has been categorized into macro and micro levels. As discussed in subsection 1.1 in Chapter 1, the justification for categorizing these two levels is to shed light on their respective data sources and measurement indicators. In details, the categorization will enable this study to scrutinize the sources and methodology of data collection and analysis, and the measurement and variables used as a proxy of social capital in empirical studies at both levels. Second, it will enable a thorough review to be conducted to identify the connection between social capital and economic performance at both levels. Finally, this categorization will guides this study to establish the gaps at both levels.

Generally, at the macro level, the focus of past studies is on the effect of social capital on the rate of economic growth and the rate of investment. The whole countries appears to be the most common single basic unit of data at the macro level although on certain cases, data of various sub-country levels (region or states) have also been used. The sources of data for macro-level studies are single data sets obtain from international surveys such as World Value Survey (WVS), European Value Survey (EVS), Eurobarometer (EB) and European Social Survey (ESS) [ibid Table 2.6]. Meanwhile studies at the micro level focus on the

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effects of social capital on the focus group (individual, household and firm) income or welfare level. Measurement used also varies where for macro studies, trust and association were the most used measures of social capital. At the micro level, empirical studies used mixed measures (mostly the combination of trust, association, norms and other related variables of social capital) and the data were commonly gathered from specific surveys done by researchers (ibid Table 2.6).

Table 2.6: Level of Studies and Measurement of Social Capital in the Literatures Review

Spatial level: **Macro:**	**Measures of Social Capital**	**Sources of Data**	**Focus of Study**
Country or cross-country	Association Trust	• Single data set from international survey such as World Value Survey (WWS), European Value Survey (EVS), Eurobarometer (EB) or European Social Survey (ESS)	• Impact of social capital on economic growth
Region/state in one country	Association Trust		
Region/state in several countries	Association Trust		
Micro:	**Measures of Social Capital**	**Sources of Data**	**Focus of Study**
Individual, household, firm	• Mixed - (mostly the combination of trust, association, norms and other related variables of social capital)	• Field study/survey/interview using own developed questioners – using Social Capital Integrated Questioners (SC-IQ) developed by World Bank Group as guideline.	Impact of social capital on • individual, household income/expenditure/welfare • firms turnover/profits

Sources: Darlauf & Fachamps, 2004; Knowles., 2005 & 2006; Westlund & Adam., 2010; Poder, 2011.

In economics studies, The World Bank leads the effort to develop a standard measure of social capital. General agreement, too, has been reached among researchers and advocates on some important dimensions to evaluate social capital (Knowles, 2005 & 2006: Westlund & Adam, 2010; Akcomak, 2011). The World Bank has introduced Social Capital-Integrated Questioners (SC-IQ) to measure both structural and cognitive type/form of social capital (see

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discussion on page 62 in this chapter for details on types of social capital). In the field of social science and developmental study, the SC-IQ, is a bench mark for researchers who are interested in studying the importance or influence of social capital (see Grootaert et al., 2004). SC-IQ covers six dimension i.e. groups and networks; trust and solidarity; collective action and cooperation; information and communication; social cohesion and inclusion and empowerment and political action. Each dimension under SC-QI demonstrates a range of indicators to capture and measure both structural and cognitive types of social capital (see Appendix D for details of SC-IQ). Synthesization of past studies clearly indicates that social capital is observable and measurable using a direct proxy such as number of people involved in associations and less direct proxies such as perception toward trust and norms (see synthesized in Table 2.2). SC-IQ is developed as a guideline for economic researchers to conduct surveys on social capital but the question designed to capture and measure both types of this intangible capital can be adjusted and customized according to the nature and suitability of their respective countries (for details, see Krisna, 2002; Grootaert et al. 2004).

Certain proxies have been widely used to measure both structural and cognitive social capital. For structural social capital, which is more external and can be observed and modified directly, the common and widely used measurement is associational activity (involvement or participation in association) as proxy. The questions used to tackle this structural part are membership and degree of participation in associations, number of family members who work, live or are involved in political ruling parties and number and types of relations among traders. Meanwhile for cognitive social capital, which is more subjective and internal (resides in people mind and cannot be changed easily by outcome action), measures of trust and strength of norms of reciprocity and sharing are among measures used as proxies (ibid. Table 2.6). Details on questions to tackle structural and cognitive social capital in economic

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perspectives are given by SC-IQ 2004; Grootaert, et al., 2004; Dudwick, 2006; Yang, 2007; Jones & Woolcock, 2010.

The categorization of past studies in to macro and micro levels enabled this study to identify the relationship and gap between the two. Both levels investigate the impact of social capital. Nonetheless, compared to the macro level, the micro level can induce a stronger evidence of the economic impact of social capital in empirical analysis. The reason is that the latter analyses has focused on certain actors (individual, household, or firm as a basic unit of data). The micro level used a more structured questionnaire to tackle the structural and cognitive part of social capital and the result shows a strong evidence of the impact of social capital on individuals', households' and firms' income/welfare and profit levels (for details see Appendix A).

In the Malaysian context, there has been an attempt to measure social capital at both macro and micro levels. At the micro level, certain proxies have been used to measure both structural and cognitive social capital. Roslan et al., (2010), and Najib Ahmad Marzuki (2014) used the 6 components of social capital proposed by SC-IQ (2004). Meanwhile, Nasir et al., (2010) and Rahmah et al., (2011 & 2016), focused on the three main components of social capital but still used SQ-IQ as the guideline to capture indicators for both structural and cognitive types of social capital. Memberships and networking in an association, an individual that can be trusted, and norms of reciprocity are among commonly used proxies of social capital used in these studies. What is obvious is that none of these studies try to capture the influence of spirituality and culture as another potential element and proxy of social capital. At a macro level in Malaysia, until now there has been no detailed study conducted to measure social capital and its impact on economic performance.

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The Malaysia Quality of Life Index (MQLI, 1999) and the Malaysia Social Wellbeing Index (MWI, 2013) developed by EPU Malaysia to measure the quality of life and well-being of Malaysians cannot be used as a bench mark for a construction of a more comprehensive and accurate measurement of social capital. Explicitly two of the main components of MQLI and MWI (social participation and culture) represent the element/component of social capital as discussed in theory and past studies. Nevertheless, the suitability and reliability of the indicators and the components of MQLI and MWI are still questionable (Aisyah Abu Bakar et al., 2016 & 2017). Indicators chosen to represent social participation and culture are somewhat fuzzy. For the previous, concentration is given to percentage of registered voters, number of registered NGOs and residents' associations and membership in RELA and Rakan Corp. (see Table 2.7 below). While for the latter, after it was separated from leisure into two different components in MWI 2013, membership in public libraries, and number of visitors to Istana Budaya, museum, and Kompleks Kraft have been the subject matter to capture culture (ibid Table 2.7). As to how these indicators truly represent social participation and and culture (as what has been proposed by the SC-IQ) are questionable. A thorough discussion of past studies discussed in this chapter clearly demonstrates the importance of social participation and spirituality and culture influence in fostering and facilitating interaction, cooperation and trustworthiness for the purpose of channeling and sharing informative information (social capital) among individuals or groups (see discussion on subsection 2.2.1). In contrast to micro approaches, all indicators under social and cultural participation components in MQLI and MWI only tackle the structural part of social capital (ibid Table 2.7). Pertinently, it's failed to explain how social participation and cultural influence can constitute to the formation of social capital. Furthermore it's also failed to measure how it can foster and facilitate interaction, cooperation and trustworthiness for the

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Table 2.7: Reviews of method and alterations in indicators used to construct the components of social participation and culture under MQLI and MWI

	MQLI 1999	MQLI 2002	MQLI 2004	MQLI 2011	MWI 2013
Method	• Unstructured - multiplication of various quality of life and well-being components and indicators that construct the MQLI and MWI (details see MQLI 1999, 2002, 2004 & 2011; MWI 2013). • Suitability of the indicators to represent their components are tested using factor analysis. • These components are assumed to be of equal importance for the quality of life and wellbeing of the population and as such, were assigned equal weightage. • MQLI and MWI is represented by single composite index (details see MQLI 1999 &MWI 2013)				
Components of MQLI and MWI	o Consist of two component - economic wellbeing and social wellbeing. o The components of economic wellbeing - transport, communications, education, income and distribution and working life. o Components constituted of social wellbeing - housing, leisure, governance, public safety, social participation, culture, health, environment, and family. o Since MQLI 1999, the number of indicators and components evolved from 38 indicators and ten components to 68 indicators and 14 components in MWI 2013 (details see Aisyah Abu Bakar et al., 2016).				
Alterations in components and indicators of social participation	**MQLI 1999**	**MQLI 2002**	**MQLI 2004**	**MQLI 2011**	**MWI 2013**
	1. Percentage of registered voters (per population aged 21 years and above) 2. Membership In Selected Voluntary Organizations; Malaysian Red Crescent Society and St. John Ambulance Malaysia (per population aged 18 - 50)	1. Percentage of registered voters (per population aged 21 years and above) 2. Membership in Registered Non-Profit Organizations 3. Number of Registered Residents' Associations	1. Percentage of registered voters (per population aged 21 years and above) 2. Membership in Registered Non-Profit Organizations 3. Number of Registered Residents' Associations	1. Percentage of registered voters (per population aged 21 years and above) 2. Membership in Registered Non-Profit Organizations 3. Number of Registered Residents' Associations	1. Percentage of registered voters (per population aged 21 years and above) 2. Number of registered nonprofit organizations (per '000 population) 3. Number of registered residents' associations 4. Membership in RELA and Rakan Cop (per '000 population)
Alterations in components and indicators of : Leisure[1]	None	1. Membership in public libraries (per '000 population) 2. Domestic hotel guests (per '000 population) 3. Television viewers (per '000 population)	1. Membership in public libraries (per '000 population) 2. Domestic hotel guests (per '000 population) 3. Television viewers (per '000 population)	1. Membership in public libraries (per '000 population) 2. Domestic hotel guests (per '000 population) 3. Television viewers (per '000 population) 4. Number of Istana Budaya visitors (per '000 population) 5. Number of museum visitors (per '000 population) 6. Cinema goers (per '000 population)	1. Number of households with paid TV subscription ('000) 2. Domestic hotel guests (per '000 population) 3. Recreational parks visitors (per '000 population) 4. Cinema goers (per '000 population)
Culture					5. Membership in public libraries (per '000 population) 6. Number of Istana Budaya visitors (per '000 population) 7. Number of museum visitors (per '000 population) 8. Number of Kompleks Kraf visitors (per '000 population)
Limitation/ advantages	• Justification on weightage given - based on strong theoretical basis or perception? • Although leisure was said to be crucial in promoting life enriching thus contributed to the maintenance of spiritual wellbeing for individuals, its' had not been tackle by any single indicators. • In MWI 2013. Culture and leisure was separated into two different components and the definition of culture was the manifestations of behaviors and thoughts affecting manner of speech and social and religious activities of a community. However, there were no clear explanations provided and no specific indicators constructed to tackle culture effect on social and religious activities of individuals or a community.				

Note: [1] Culture was a combined component with leisure and first introduced MQLI 2002. In MQLI 2002, MQLI 2004 and MQLI 2011, culture was described as the manifestation of human thoughts and behavior that stimulates the speech and social and religious activities of a society.

Source: Adjusted from Aisyah Abu Bakar et al., (2016); Malaysia Quality of Life Index Report (1999, 2002, 2004 & 2011); Malaysia Wellbeing Index Report (2013)

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purpose of channeling and sharing informative information in a pluralistic society like Malaysia.

Measurements used to measures economic performance were also varied. At a macro level, among frequent measures have been gross domestic product (GDP)/capita, incomes, investments, employment and unemployment and their changes (Westlund & Adam, 2010). Meanwhile, at a micro level, individual, household income/expenditure/welfare together with firms, turnover and profits and their changes were the most frequently used measure (ibid Table 2.6 and for details see Appendix A). Income remains one of the key measurements of growth and economic performance. Although the relevance of income has been questionable, nevertheless the latter remains significant and widely used as an important economic indicator in the study of income determination and inequality.

This study has used income as a main indicator in identifying the potential impact of social capital on individual income. The main reason why income is used as a key indicator in this study is because this study is a continuity and an extension from the well-known and established human capital earning functions, which have been used extensively in the study of the impact of human capital on individual income/earning. The basic human capital earning function equation for the study of income determination has been introduced following the work of Becker (1964, 1975), and, especially, by Mincer (1958, 1962, 1974). Mincer human capital earning function has become a standard tool for analyzing earnings differences among individuals associated with schooling and experience. In brief, the Mincer earning function is written as below;

$$\text{InW} = \beta_0 + \beta_1 S + \beta_2 X + \beta_3 X^2 + \varepsilon$$

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LnW is the logarithm of an employee's wage/earning rate per time unit, S is years of schooling, X is years of work experience, and ε is a residual. Human capital theory gives the equation of a well-defined theoretical foundation and is a good regression parameter that can be interpreted as the rate of return on investment in education or schooling and from working experience. Mincer's earnings function has become a standard tool for analyzing earnings differences among individuals associated with schooling and experience. After four decades, the Mincer earnings function continues to be employed in almost every study on income determination, in its original specification or in its modified versions (Willis, 1986; Andrada & Galassi, 2009). The human capital earnings function also has become a fundamental tool in research on earnings, wages, and incomes in developed and developing economies (Chiswick, 1997). The adaptation of the human capital earning function will enable this study to investigate the potential of social capital in influencing individual incomes in Peninsular Malaysia. The establishment of the multilevel modeling (MLM) equation used in the main analysis (see Chapter 3, under section 3.5) of this study is originally based on the widely accepted application of the human capital earnings function in past studies but with a modification (by taking into account the social capital variables as main independent variables together with human capital, (level of education, and healthy lifestyle) and demographic variables (location, employment, sector, and ethnicity) as control variables in this study.

Apart from Mincer's income/earning function, the emergence of social capital theory along with abundant empirical studies that examine the impact of this intangible capital on individuals', households' and firms' income and profit was also a major reason why income has been treated as a key indicator in this study. Westlund & Adam (2010) has paved the way for this study to expand the scope of the impact of social capital particularly at the micro

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level. The former synthesize the impact of social capital on economic performance or growth at both macro and micro levels. Despite no uniform measurement of economic performance or growth, among frequent measures used at the macro level have been: gross domestic product (GDP)/capita, incomes, investments, employment, and unemployment and their changes (Westlund & Adam, 2010). Meanwhile, at the micro level, individual, household income/expenditure/welfare together with firms, turnover, and profits, and their changes, were the most frequently used measures (ibid Table 2.6 in Chapter 2 and for details see Appendix A). In this study, 52 studies at the micro level (including studies done in Malaysia) have been synthesized and the results indicate a promising influence of social capital. More importantly, 30 studies (see among others Narayan & Pritcheet**,** 1999; Maluccio et al., 2000; Grootaert et al., 2002; Fachamps & Minten, 2002; De Clercq et al., 2003; Grootaert & Narayan, 2004; Van Ha, N. et al., 2004; Tiepoh & Reimer, 2004; Bosma et al., 2004; Peters & Stringham, 2006; Groweic & Growiec, 2007; Yusuf, 2008; Yokoyama & Ali, 2009; Lu & Zhao, 2009; Roslan et al., 2010; Nasir et al., 2010; Rahmah et al., 2011; Gravemeyer et al., 2011; Weaver & Habibou, 2012; Li, Y. et al., 2015; Rahmah et al., 2016) has incorporated human capital and other variables (such as demographics) as control variables together with social capital as main variables (for details see Chapter 2, under section 2.4 and Appendix A). In line with the current trend on the importance of social capital in influencing individual incomes, this study will adopt the human capital earnings function as the main model for the MLM analysis but with a modification, incorporating social capital as the main independent variable together with individual income as the dependent variable.

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2.2.5 Reviews on methods used in constructing component or factor score and analyzing the impact of social capital in empirical studies

Similar to human capital, social capital is difficult, but not impossible, to measure directly. For empirical purposes, the use of proxy indicators is necessary but until recently no consensus has been reached and the search for the best proxy indicators of social capital continues (Grootaert & van Bastellar, 2002). A composite score (aggregated summation of variables) is one of the methods widely used by development economists as a proxy of measurement (Table 2.8). The inclusion of a composite score in the regression model together with other controlled variables as proxy measurements indicate the potential impact of social capital on economic performance at both macro and micro levels (Narayan & Pritchett, 1997 & 1999; Grootaert, 1999; Maluccio et al., 2000; Grootaert et al., 2002; Grootaert & Narayan, 2004; Van Ha, N., et al., 2004; Yusuf, 2008). The composite scores of these studies were obtained by the multiplication of various social capital indices (e.g. density of membership, heterogeneity index, and decision making indexs). Unfortunately, the approach adopted by these studies is subjected to two constraints. First, arguments on the basis of assumptions used (i.e. whether it is based on a theoretical basis or on a researcher perception) [ibid Table 2.8]. Second, the assumption of a single numerical index is sufficient to represent a social capital index is not appropriate because past studies show that social capital is not a homogeneous entity (Wolz et al., 2010; Winters et al., 2002). As discussed in the previous section, in Malaysia, studies at macro levels (Malaysia, 1999 & 2013) and micro levels (Roslan et al., 2010; Nasir et al., 2010; Rahmah Ismail et al., 2011 & 2016) also adopted the unstructured method to construct the composite score of social capital. Nevertheless, as shown in Table 2.8 and Table 2.7, all these studies faced the same constraint as discussed above.

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The composite score of social capital is further improved by the use of principal component analysis (PCA). PCA is a procedure (which is based on a strong statistically basis) of data reduction used to select and reduce the data set into a smaller set of composite components or factors (Hooper, 2012). This composite score will represent the exact variables of interest in a particular study and the scores derived from this approach will be used as the new proxy of measurement (Field, 2013; Hair et al., 2010). The adoption of the PCA procedure in deriving the factor score of social capital by economists is promising. The mixed outcome from studies adopting this procedure indicates the potential impact of social capital on economic performance particularly at individual, household and firm income/welfare and profit level (Narayan & Cassidy, 2001; Hu & Jones, 2004; Bjornskov, 2006; Wolz et al., 2006; Woodhouse, 2006; Sabatini, 2008; Ajani & Tijani, 2009; Wolz et al., 2010; Johannes, 2011) [ibid Table 2.7]. Unlike the former approach, the weighted scores of each principal component in the latter approach are given by the vectors of the correlation matrix and this avoids arguments on justification given to assigning equal weights to all dimensions of social capital (Johannes, 2011).

Although weighted scores have managed to mitigate certain issues, some assumptions used in standard PCA might have resulted in this procedure being non applicable for certain data especially nominal and ordinal types. PCA assumptions of all variables are in numeric measurement levels and the relationships are often not true in social science (Manisera et al., 2010). For social science research, particularly for social capital, treating nominal and ordinal data as numeric and running them under the PCA would raise questions on the appropriateness of this practice. To avoid this limitation, categorical principal component analysis (CATPCA) or nonlinear principal component analysis (NLPCA) has been introduced as an alternative in dealing with nominal and ordinal data (Linting et al, 2007;

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Table 2.8: Reviews on methods used in constructing composite score of social capital

Method	Unstructured	Structured	
		PCA	CATPCA
	• multiplication of various social capital index. • Weightage is given to each indicator. • Social capital index is represented by single numeric index.	• A method to reduce a large number of variables-to a smaller number of composites (principal components) that represent the information in the data as closely as possible (Hooper, 2012; Linting et al., 2012). • Weightage is given by the eigenvectors of the correlation matrix to avoid assigning equal weights to all dimension/component (Johannes, 2011).	
Limitation/ advantages	• Justification on weightage given-based on strong theoretical basis or perception? • Single numerical index to represent social capital index is not sufficient because social capital is not a homogeneous entity (Wolz et al., 2010; Winters et al., 2002).	• Suitable for data/variables in numeric measurement level.	• Suitable for variables of mixed measurement levels (nominal, ordinal & numeric).
Studies:	Narayan & Pritchett, 1999; Grootaert, 1999; Maluccio et al., 2000; Grootaert & van Bastellar, 2002; Grootaert et al., 2004; Van Ha N., et al., 2004; Yusuf, 2008; Malaysia, 1999; Roslan et al., 2010; Rahmah et al., 2011 & 2016; Nasir et al., 2010; Malaysia, 2013).	Narayan & Cassidy, 2001; Hu & Jones, 2004; Bjornskov, 2006; Wolz et al., 2006; Woodhouse, 2006; Sabatini, 2008; Ajani & Tijani, 2009; Wolz et al., 2010; Johannes, 2011; Portela et al., 2013	Vella & Narajan, 2006; Sabatini et al., 2012; Comim & Amaral, 2013

Linting et al., 2012). Without any assumption made as to the measurement level of the variables and the nature of their relationship, CATPCA will analyze the data at a level specified by the researcher (numeric, nominal, or ordinal). CATPCA/NLPCA is still not widely used in economic studies but few have been found as having applied this method in data reduction and constructing the composite or component scores (Vella & Narajan, 2006; Sabatini et al., 2012; Comim & Amaral, 2013)[ibid Table 2.8]. According to Linting (2016, through email), what is called factor scores in PCA should be interpreted in the same way in

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CATPCA. The factor score generated by the CATPCA software can be used directly as a proxy of measurement of a particular variable being investigated.

Table A.1 (Appendix A) also lists methods used to analyze the impact of social capital on individuals', households' and firms' income, welfare, and profit level. Various methods have been applied with the most used method being multiple regressions of ordinary least square (OLS) type (see among others Narayan & Pritchett, 1999; Grootaert & van Bastellar, 2002; Maluccio. et al. 2003; Van Ha, N. et al., 2004; Wolz, et al., 2006; Wetterberg, 2006; Knight and Yueh, 2008; Li et al., 2009; Nasir et al., 2010; Ogunrinola, 2011). Within the OLS framework, measures of social capital have been complemented and tested together with conventional explanatory variables (mostly human capital, physical capital and demographic variables). Other popular methods adopted in past studies were two-stage least square tests, pooled or paneled data, probit and tobit models and various test of the models' robustness (see among others Grootaert & Narayan, 2004; Hadad & Maluccio, 2003; Tiepoh & Reimer, 2004; Bosma et al., 2004; Yusuf, 2008; Ajani & Tijani, 2009; Yokohama & Ali, 2009; Roslan et al., 2010; Hassan & Birungi, 2011).

Generally, all methods used in past studies adopted a one-size-fits-all approach where any association among variables is assumed to be the same for everyone in the sample (Lynch, 2012). There are no attempts taken to investigate the impact of social capital on variables that exist at different levels. In order to get the exact explanation on how social capital might impact households which in nature are embedded in different living areas (locations) and backgrounds of ethnics, this study will use a multilevel modeling (MLM) procedure. MLM is widely used in non-economic fields of study to analyze the impact of variables that exist at different levels of analysis (for details of MLM, see Chapter 3).

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2.3 Income Distribution

2.3.1 Definition of the concept of Income Distribution

A quotation from Ricardo in the *Principles of Political Economy* is a good starting point in defining the concept of income distribution. Ricardo had stated his view on the reallocation of production produced from scarce resources. According to Ricardo, the production of earth was derived from the application of labor, machinery and capital on the scare resources. The proportion of the whole production must be redistributed among the three classes of the community that contributed to the process. These groups are the owners of the land who are going to receive rent, owner of the capital which receives profit, and labor who will be paid in wages. Nevertheless, with the different stages and changes happening in society, the proportions that each group is going to receive will also differ (Bronfenbrenner, 1971; Atkinson, & Bourguignon, 2000). This is a driving force behind the income distributional issues between developed and developing countries and within individual countries. Contemporary economists also analyze distributional issues with emphasizes on the income distribution among individuals and households.

The concept of income distribution is used by economists as a measurement of the proportion of national income received by individual or households in a country. The estimation will provide information about the actual proportion of income received by households based on economic status, race, and demographics. This study will also show which group or groups control the proportion of national income and the exact situation of equality or inequality in income distribution. Size distribution of income and functional distribution of income are two common methods of measurements widely used by economists to estimate income distribution.

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Personal or size distribution of income measure the total size of income received by individual persons or households. This approach emphasizes only on total income earned by individuals or households irrespective of whether the income was derived solely from employment or from other sources such as interest, profits, rents, gifts, or inheritance and also the location and occupational sources of the income (Todaro & Smith, 2015). The estimation of income proportion received by individuals or households using this approach requires all individuals to be ranked by ascending personal incomes and the total population to be classified into distinct groups generally in quintiles (five in a group) or deciles (ten in a group). The determination of proportion of income received by each group using this approach will reflect the exact income distribution among individuals or households in a country. Two other common measures of income inequality are the Lorenz curve and the Gini coefficient and both are constructed using the size of the distribution of incomes.

The Lorenz curve developed by Max O. Lorenz (1905) illustrates the variance of the size distribution of income from a perfect equality line. This graphic illustration is constructed by plotting the numbers of income recipients (in cumulative percentages) on the horizontal axis and the share of total income received by each percentage of the population (also in cumulative percentages) on the vertical axis. The Lorenz curve is drawn in a square and a diagonal (perfect equality) line is drawn from the lower left corner (the origin point of the square) to the upper right corner (Todaro & Smith, 2015). Every point on the diagonal line illustrates the percentage of income received by households is exactly equal to the percentage of income of recipients. The Lorenz curve shows the actual quantitative relationship between the percentage of income recipients and the percentage of the total income that they receive during a given year.

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Gini concentration ratio or Gini coefficient was formulated by the Italian statistician Corrado Gini in 1912. The Gini coefficient is derived by calculating the ratio of the area between the diagonal and the Lorenz curve divided by the total area of the half-square in which the curve lies (Todaro & Smith, 2015). The value of the coefficient varies from 0 (perfect equality) to 1 (perfect inequality). Countries with Gini coefficients between 0.5 and 0.70 are considered highly unequal in income distributions while countries with coefficient range from 0.20 to 0.35 are more equal in distributions.

2.3.2 Theories of Functional and Personal Income Distribution

In discussing theories of income distribution, no comprehensive theories exist in the economic literature regarding this topic. Discussions in past studies only covered certain parts of what should actually be covered (i.e. the determination of wages in the labor market, factor shares, the accumulation of wealth etc.) by such a theory (Atkinson and Bourguignon, 2000). These theories can be categorized into two parts: theories on functional income distribution and theories on personal income distribution. Nevertheless, much of the theories of income distribution are concentrated on how the nation's income is shared among classes (functional income distribution). Economic interest to study the distribution of income among individuals began in the 1990's. Prior to that time, income inequality among individuals was subsumed under the topic of the functional distribution of national income. Pareto paved the way to a better understanding on how income is distributed among individuals (not classes). Later in the middle of the 1990's, Kuznet proposed the first real theory of what determines change in income distribution among individuals (Milanovic, 2011). The first parts of this section will discuss theories of functional income distribution. Then discussion will proceed with theories of personal income distribution.

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David Ricardo was the first classical economist to discuss in a proper and systematic way the theory of income distribution. In his book, *Principles of Political Economy*, first published in 1817, Ricardo stated that the main problem of the political economy is to explain the laws that govern the distribution of national incoe and output. (Peterson, 1978; Bigsten, 1983; Sundrum, 1990). His idea on income distribution centers on the allocation of the nation total income generated mainly by the agricultural sector. According to Ricardo, the relative share of the output is allocated among three factors of production which are labor, landowners, and capitalists. Labor receives subsistence wages, rent is the return for land (fixed in its supply and quality) while the capitalist receives profits (the profit will be saved and invested in the next production process).

Distribution issues prevail when the economy grows and expands. Capitalists who save a large part of their profit will invest their savings to increase future production and profits. With an inelastic supply of labor and constant subsistence wages, capitalists will face no restraints to hire more laborers. The main constraint to capitalists, according to Ricardo, is how to get extra fertile land to be used in the next production process. Land which is subjected to the law of diminishing returns and fixed in its supply (fertile land) together with the constant technology available in the agricultural sector is the main constraint influencing distribution of income to these factors of production. Ricardo's analysis reflects that the growth process happens in a disharmonious way, not benefiting all groups in the economy. Since agricultural technology remains constant, more labor is allocated on the fixed and limited fertile land, the density will put downward pressure on the total output and marginal product of labor. Hence, the rate of profit and the amount of profit received by the capitalist will also decline.

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Meanwhile the rent income received by the landowners which was assumed as unproductive will increase for any additional fixed fertile land rented to the capitalist. This trend will prevail whenever capitalists further expand their operations. In Ricardo's views, when this process continues, the relative share of rents received by the land owner will increase while the capitalist's profit reduces. The relative share of profit will further decline to zero once the marginal product of labor equals the subsistence wage level. When this situation occurs, the economy is said to reach its stationary state and all production processes will cease. Labor, on the other hand, will still receive a fixed subsistence wage but the hiring process will cease when the capitalist earns zero profit.

Another classical economist that contributed to the theory of income distribution was Karl Marx. Contrary to Ricardo's idea which has been worked out mostly for an agricultural economy, Marx's idea was established at the peak of the Industrial Revolution when the manufacturing industry was becoming a dominant sector of the economy (Sundrum, 1990). Basically, Marx's theory of income distribution was an adaptation of Ricardo's ideas and with certain modifications done, his analysis tried to deal with the distribution of income in the industrial sector. Marx's primary concern was with the distribution of output between labor and manufactures (capitalists) and not between labor, capitalists, and land. Marx also did not believe in the principle of diminishing returns adopted by Ricardo. In an economy which was driven by the industrial sector, capitalists were the single force and played a major role in determining economic growth. Labor, which was in abundance in its supply, only received a subsistence wage. The payment of wages at the subsistence level and not based on the productivity of labor was considered by Marx as the exploitation of labor by capitalists.

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Marx argues that the system of a capitalistic economic will only benefit owners of the capital (manufactures) compared to labor. He assumed that the relative share of wages in the total output would decline as productivity and the income level rose. The capital accumulation process would be accompanied by a falling rate of profit. This according to Marx was the result of the competition among capitalists to employ more capital-intensive technology in their production. The use of capital-intensive or labor-saving machines by capitalists reduces the demand for labor and leads to a formation of an abundant "reserve army" of unemployed labor. The excess supply of the industrial "reserve army" will drive down wages to the subsistence level and prevent the market wage from rising above that level. At the same time, the existing economies of scale in industrial production, according to Marx will withdraw small capitalists from competition with the large capitalists. The process of competition, capital accumulation and growth in the capitalistic economy leads inevitably to a severe economic crisis and finally will bring down the capitalist system to be replaced by the communist system (Rahmah Ismail, 2002; Peterson, 1978).

Nobel laureate W. Arthur Lewis also contributed to the understanding of income distribution. Although his dualistic model of development (which was based on the historical experiences of Western Europe) has been intensively studied as a model of economic growth. Lewis' model also has a significant implication to the distribution of income between wages and profit in the modern and traditional sectors. A traditional or agricultural sector, which is located in the rural area, is a subsistence sector and overpopulated. This was characterized by marginal labor productivity equal to zero and the surplus of labor can be easily withdrawn without any loss of output. Meanwhile a modern sector is an urban high-productivity sector run by capitalists and enjoys ample opportunities of economic growth and can easily absorb additional labor from traditional sectors with minimum cost. The dualistic model

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encapsulates that income distribution at the early stages of growth in an economy and tends to be more unequal because the growth process is concentrated in the modern sector. This also leads to the tendency of higher profits and wages received by capitalists and labor in a modern sector compared to their counterparts in a traditional sector.

Lewis' dualistic model considers rent as a combined factor of income for labor in the traditional sector and profits earned in the modern sector as the excess of output over wage cost. All profits earned by capitalists are also assumed to be saved and invested in the next period of production and thereby increase employment in the modern sector. The main feature of the dualistic model is that savings depend not so much on the total income, but rather on its distribution between profits and wages (Sundrum, 1990). This model also assumes that the growth rate of modern sectors is proportional to the rate of capital accumulation. The rate of labor absorption from traditional sectors and employment creation in the modern sector is also proportional to the rate of capital accumulation in the modern sector.

Capitalist are featured as having a high propensity to save and invest and to ensure they will get sufficient return on labor. The wage that they offer to labor is at least equal to the average product of labor in the traditional sector. When capitalists invest and expand their operation, employment absorption and expansion is assumed to continue until all surplus rural labor is absorbed to the modern sector. According to Lewis, once the labor surplus in the traditional sector is fully absorbed, the marginal product of labor in both sectors will be equal and wages in both sectors will rise. The center of economic growth also has been shifted to the modern sector but the traditional sector still plays an important role as a supplier of food and inputs for the production of goods in the modern sector. The completion of this

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process will help to reduce the unequal distribution of income in both sectors especially among the high income and lower income groups.

Alan M. Cartter in his *Theory of Wages and Employment*, published in 1955, has attempted to link the problem of distribution and the determination of the correct income level in an economy as a whole. His purpose is to show how changes in the functional distribution of income among two production factors (labor and capitalist) will affect the equilibrium income level (the basic condition for the equilibrium is saving equal to investment level). In the first place, an increase in the relative share of wages will reduce capitalist profits and cause a decline in investment expenditure thus causing a decline in the equilibrium income level. On the other hand, a decline in the relative share of wages in the total income will automatically increase the profit share and thereby cause investment expenditure to rise. The effect on the equilibrium income caused by the increase or decrease in the relative share of wages can be offset by an equal downward or upward shift in the saving function (depended upon the marginal and average propensities to save of the two income groups done on the saving function) and also through the possible effects of a change in the distribution of income on the share of profit income distributed to shareholders (Peterson, 1978).

Nicholas Kaldor (1955-56) demonstrated how changes in the ratio of investment to income will cause a change in the relative share of profit and wages in the total income. The essence of Kaldor's theory lies in his explanation that in order to restore a full-employment equilibrium level when there is a rise in the investment-output ratio, the saving-output ratio must also increase. To achieve this requirement, total income must be distributed between labor and capitalist in a certain proportion. Since, according to Kaldor, the propensity to of capitalists to save, on average is higher than labor, the increase in the investment expenditure

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by capitalist (in full-employment conditions) will lead to a rise in general prices. It was assumed also that there are no mechanisms that exists to ensure wages will increase proportionately with the increase in price level. The failure of wages to keep pace with the rise in general price levels will reduce the labor real income, while the increase in profit margin will increase the capitalist's real income. The inflation-induced shift in the distribution of real income will increase the overall share of profits and real savings in the national income. This process will continue until the equilibrium income level is restored back to the point where the saving-output ratio is equal to the investment-output ratio (Bigsten, 1983).

On Theories of Personal Income Distribution**,** Vilfredo Pareto (1906) through his famous idea of 'iron law of inter-personal inequality' demonstrates how income is distributed between people in a society. Using data from selected European countries and cities, Pareto argues that societies in any economy are characterized by the circulation of the elites who govern the country. The elites who govern and rule the country could be different in their leadership and the way to control a society but they would not make any changes in the distribution of income. Pareto's law firmly believes about the nature in any society that only certain groups of people are capable and gifted i.e. the elites. Whether under capitalist or socialist regimes and no matter what level of development the country has reached, the shape of income distribution between people will be the same. Pareto's empirical analysis found that 20 percent of the wealthiest people in Italy owned 80 percent of the total income. The same trend was extracted when he performed the analysis on data from other selected countries and cities. This has reached Pareto with a conclusion that in all countries and times, the distribution of income and wealth follows a regular pattern of iron-law. Today, Pareto's idea is popularly called the *"80/20 law"*, the term expressing the reality that in any country,

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that 20 percent of people dominate 80 percent of the total income while the reverse 80 percent of people only received 20 percent of the total income.

Contrary to Pareto's ideas, Simon Kuznet (1955) proposed the first real theory of what causes change in income distribution. Kuznet's ideas encapsulate that inequality among people is not the same regardless of the type of society but varies accordingly to the level of development of a particular country (Milanovic, 2011). Depicted under the famous hypothesis of an "inverted U curve", Kuznet details the relation between development level and income inequality. At the early stage of development, inequality tends to be very low because the vast majority of society receives subsistence income and is involved in the traditional sector (agriculture). Then, as an economy develops, the fast growing industrial sector will replace the agriculture sector as the main sector of economic growth. People returning to education will also increase because the modern and diversified industrial sectors need skills and educated workers. This, according to Kuznet, will create the gap not only between industrial workers and farmers but also among industrial workers themselves. This trend was depicted by the upward sloping of the inverted U curve. Through time, as a country becomes more developed, and education becomes more widespread, oversupply of educated workers resulting from this trend will mitigate inequality (depicted by the downward sloping of the inverted U curve).

The reliability of Pareto's law of income inequality in many cases had been rejected mainly due to the unreliable assumption of unchanging income distribution through time. Pareto's idea is considered valid only for the trend among top income brackets. In other cases, other groups of people's income will change as the country develops, and distribution of income will fluctuate. Meanwhile, Kuznet's idea receives a mixed response with some empirical studies showing that certain countries follow exactly the same trend of income

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distribution as they went through different levels of growth and development. Reversely, some empirical studies show a contradictory trend where inequality will become lower and not increase as the country develops (Todaro & Smith, 2015).

2.4 The impact of social capital on individual/household income

The household is the focus group of this study and for that purpose, summarization of literature review will only cover studies on household/firms done at both levels. Details of past studies on the impact of social capital on household income covered in this study are listed in Appendix A. Based on findings from past studies, the impact of social capital on household income is categorized into four categories i.e. better access and uses of facilities, facilitation of the flow of income-related knowledge and information between economic agents, reduction of monitoring and transactions cost, and facilitation of information in job searching process in the labor market (see Table 2.9).

Involvement in association especially in activity that represents the economic interests of a particular group (household) has been a main focus in analyzing the impact of social capital. Household involvement in association activity is found to benefit them directly or indirectly in terms of better access and uses of facilities such as public services, advanced agricultural practices, and credit for agricultural improvements. Accordingly, these privileges will help households to improve their economic life, earning, and welfare (Narayan & Pritchett, 1999; Grootaert & van Bastelear, 2002; Maluccio. et al., 2000; Hadad & Maluccio, 2003). Number of memberships and level of participation in decision making were found to have the strongest effect on household income and lower the risk of becoming poor particularly for those living in rural areas. The higher the degree of involvement and participation in the decision making process in associations, the higher the chances to secure

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more benefits provided by those involvements (Robinson & Siles, 1999 & 2011; Lechner et al., 2006; Sirven, 2006; Wolz, et al., 2006; Zhang & Fung, 2006; Growiec & Growiec. 2007; Yusuf, 2008; Ajani & Tiejani, 2009; Antoni, 2009; Brisson, 2009; Li & Sato, 2009; Lu & Zhao, 2009; Yokohama & Ali, 2009; Nasir et al., 2010; Roslan et al. 2010; Hassan & Birungi, 2011; Robinson & Siles, 2011; Weaver & Habibou, 2012) (ibid Table 2.9).

Interaction with other people whether through involvement in association or daily conversation with close family, relatives or friends will not only provided better access and uses of facilities but also provide better and more informative information (ibid Table 2.9). The more people interact with each other, the better the information they will have about each other. Social relation will facilitate flows of information regarding jobs, contracts deal, inputs or suppliers and prices, crop prices, locations for new potential markets and new technologies, sources of credit, contract deal, etc. (Fafchamps & Minten, 2002; Jenssen & Greve, 2002; De Clercq & Arenius, 2003; Dakhli & De Clercq, 2004; Zhang & Fung, 2006; Peters & Stringham, 2006; Chen & Tjosvold, 2007; Wetterberg, 2006; Valdez, 2008; Yusuf, 2008; Ajani & Tiejani, 2009; Antoni, 2009; Brisson, 2009; Yokoyama & Ali, 2009; Nasir et al., 2010; Wolz et al., 2010). In the globalized economy and in an era of rapid evolution of ICT, interaction not only exists in a conversational medium, but in digital sources as well. Social capital, in the form of markets, associational and communal relations using internet sources are found to foster the flow of income related knowledge and information between economic agents (Tiepoh & Reimer, 2004; Van Ha, N. et al., 2004). Furthermore, networks with friends from diversified genders, races, and age groups will provide society with more access to information regarding job or earning prospects than networks lacking these characteristics (Growiec & Growiec, 2007).

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In labor markets, social capital has a potential role especially in the job searching process. Workers who have a network and use it effectively in searching for a new job will have better chances to be employed (Mongomery, 1991; Sabatini, 2008). Networks among close family, relatives and friends are among indicators used in the past studies to analyze the impact of social capital in labor markets. Social relation is also found to have a significant impact in determining the period of time workers will stay in a particular company. Workers who are employed because of contacts that they have (personal networks-knowing somebody in the new company or have been recommended by the previous company) are less likely to quit their job and will stay longer (Peters & Stringham, 2006; Brisson, 2009). China is a good example to show the impact of social capital in labor markets. Social networks (*guanxi*) and memberships in the ruling party (communist party) contribute to individual earnings in urban labor markets. The influence of social networks (size or the number of social and economic contacts [relatives or friends that an individual can ask for help to get/changes his/her job]) is more visible for households who are looking for a job particularly in the private sector (Peters & Stringham, 2006; Knight & Yueh, 2008; Li et al., 2009; Lu & Zhao, 2009) (ibid Table 2.9).

At the firm level, social capital plays an important role in facilitating business or transaction deals (ibid Table 2.9). In Asian countries for example, social capital is a highly emphasized cultural practice in business dealings. Relational capital based on *guanxi* (China), *kankei* (Japan), and *inmak* (Korea), has an influential impact in securing business deals or other benefits (Hitt et al., 2002). Particularly, firms/traders who establish a good relation and gain trust from others whether from the same business line or from other areas will enjoy ample opportunities in terms of contract deals, payment methods, trade credit, business

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Table 2.9: Literature Review on the Impact of Social Capital on Individual/household Income

Impact of social capital:	Facilitates better access and uses of facilities:	Facilitates the flow of income/job related information	Reduce monitoring and transactions cost
	-access to public services, advanced agricultural practice, credit for agricultural improvement -lower the risk to being poor and improve household income/expenditure/welfare level in both rural and urban area.	-information in crop prices, new potential market, sources of credit, contract deal, job prospect, etc. -worker with better network and use it effectively will have better chances to be employed -networks and membership contributes to individual earnings in urban labor market -network based on ICT (internet, etc.) foster the flow of income related information between economic agents -networks from diversified gender, races, and age provides more access to information regarding earning prospects	-trust based relation provides ample opportunity – securing business/contract deal, flexible payment method, trade credit, business warranty, larger sales volume, etc.
Author:	Narayan & Pritchett, 1999; Maluccio, et al., 2000; Grootaert & van Bastelear, 2002; Robinson & Siles, 1999 & 2011; Fafchamps & Minten, 2002; Jensen & Greve, 2002; Hadad & Maluccio, 2003; Grootaert et al., 2004; Lechner et al., 2006; Sirven, 2006; Wolz, et al., 2006; Zhang & Fung, 2006; Growiec & Growiec. 2007; Wetterberg, 2006; Yusuf, 2008; Valdez, 2008; Ajani & Tiejani, 2009; Antoni, 2009; Brisson, 2009; Li & Sato, 2009; Lu & Zhao, 2009; Yokohama & Ali, 2009; Nasir et al., 2010; Roslan et al. 2010; Hassan & Birungi, 2011; Robinson & Siles, 2011; Weaver & Habibou, 2012)	Fafchamps & Minten, 2002; Jensen & Greve, 2002; Hadad & Maluccio, 2003; De Clercq, & Leuven, 2003; De Clercq & Leuven, 2003; Dakhli & De Clercq, 2004; Lou et al., 2004; Grootaert et al., 2004; Tiepoh & Reimer, 2004; Van Ha, N. et al., 2004; Bosma, et al., 2004; Westlund & Nilsson, 2005; Lechner et al., 2006; Wolz, et al., 2006; Zhang & Fung, 2006; Peters & Stringham, 2006; Chen & Tjosvold, 2007; Growiec & Growiec., 2007; Wetterberg, 2006; Knight & Yueh, 2008; Valdez, 2008; Yusuf, 2008; Ajani & Tiejani, 2009; Antoni, 2009; Brisson, 2009; Li & Sato, 2009; Lu & Zhao, 2009; Yokoyama & Ali, 2009; Nasir et al., 2010; Roslan et al. 2010; Wolz et al., 2010; Gravemeyer S. et al.,2011; Hassan & Birungi, 2011; Weaver & Habibou, 2012: Rahmah et al., 2016.	Kilkenny et al., 1999; Fafchamps & Minten, 2002; Jensen & Greve, 2002; Johnson et al., 2002; De Clercq & Leuven, 2003; Dakhli & De Clercq, 2004; Cooke & Clifton, 2004; Bosma, et al., 2004; Van Ha, N. et al., 2004; Wu & Leung, 2005; Zhang & Fung, 2006; Theingi et al., 2008; Valdez, 2008; Ogunrinola, 2011

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warranties, larger sales volumes, and value added than less connected firms/traders. Firms with high levels of trust among workers and management are found to be more open to discussion, develop more innovative and original solutions, solve their problems more effectively, be less inclined to engage in behavior which disrupts the work environment, and more focused on team members' needs and goals, and will function and perform better compare to firms with low social capital (Kilkenny et al., 1999; Fafchamps & Minten, 2002; Jenssen & Greve, 2002; Johnson et al., 2002; De Clercq & Leuven, 2003; Dakhli & De Clercq, 2004; Bosma, et al. 2004; Cooke & Clifton, 2004; Van Ha, N. et al., 2004; Wu & Leung, 2005; Zhang & Fung, 2006; Theingi et al. 2008; Valdez, 2008; Ogunrinola, 2011)

2.5 Conceptual Framework for Social Capital from Malaysia's Perspective

Based on theories and past studies on the impact of social capital synthesized and discussed earlier in the previous section (section 2.2.1 to 2.2.4), this study constructs the framework for social capital from Malaysia's perspective. Social capital in both structural and cognitive forms will be extracted in this study using the elements and indicators commonly used in past studies (as discussed in section 2.2.1 & 2.2.4). In order to contribute to better understanding on social capital in the Malaysian perspective, the inclusion of spirituality as a new element of cognitive social capital is unusual but predictable. As discussed earlier, people's willingness to help and to cooperate and their trustworthiness towards others in a multiracial and cultural society is influenced greatly by their religious and cultural background. The only matter is that spirituality and culture does not attract scholars although the importance and influence of this element on social relation, norms, and trust have been mentioned in past studies including those done in Malaysia (Grootaert & Bastelaer, 2002; Krisna & Uphoff, 2002; Kaasa & Parts, 2008; Lim, C. & Putnam 2010; Robison & Siles, 1999 & 2011; Huang,

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2015; Cnaan et al., 2003; Kaasa 2013; Ahmad Shukri Abdul Hamid et al., 2013; Adam Ng et al., 2014; Ahmad Shukri & Noor Azizah, 2015). For the purposes of this study, all indicators that represent the component of social capital (i.e. social relation, norm, trust and spirituality/culture influence) of this study have been designed to fit the nature of the multicultural society of Malaysia. This too was done following the suggestion that social capital should be looked upon as a concept which must be tailored to local situations in order to be useful (Krisna, 2002; Grootaert et al., 2004). Finally, all these elements then will be used as a proxy to be used in the construction and measurement of social capital in the Malaysian perspective (illustrated in Figure 2.4).

2.6 Theoretical Framework on the Impact of Social Capital on Individual Income

Figure 2.5 illustrates the theoretical framework of this study developed from a synthesized discussion on theories and empirical studies in the previous sections. In line with the consensus reached in past studies (see discussion in subsection 2.2.1), social relation is considered as the core/main element and source of social capital of this study. Since the nature of social capital resides in relation which can only be created and accessed when at least two individuals interact (e.g. individual A and B), this study firmly believes that an individual is actually the basic unit in the formation of social capital. An individual, as discussed in past studies, is the foundation for the formation of any relation or interaction and at least two individuals are needed for any interaction to take place and this is unique to social capital (Woolcock, 1998 & 2010: Knowles, 2005 & 2006; Yang, 2007; Hayami, 2009). Then, following Yang (2007), this study firmly believes that social relation consists of four features i.e. basic, structural, generalized, and specific. All of these features describe the social relation itself with the first two explaining the external part of social relation that can

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be observed and measured. The basic and structural features actually lay under the structural form of social capital. There are two patterns of social relation under structural social capital. The horizontal pattern describes relations based on an equal basis and can be categorized into two parts i.e. bonding and bridging. Meanwhile the vertical pattern describes relation based on an unequal basis.

The last two features explain the unobserved part of social capital (resides in people's mind related to e.g. willingness to help, trustworthiness towards others, degree of respect, etc.). Generalized and specific features are actually part of cognitive social capital. As discussed earlier, trust and norms of reciprocity are elements widely agreed and used in the past studies. Spirituality is the new element being included in this study and is paired together with trust and norms to construct the social capital from Malaysia's perspective. Whether social relation between at least two individuals can be formed and strengthened, it will be determined by four features that constitute the relation. Finally, the smooth process of social relation will facilitate the channeling and sharing of income and job related information, provide better access and uses of facilities, and reduce monitoring and transaction costs to all involved in the social relation process. This, ultimately, will contribute to the improvement of income levels of individuals, households, and firms, or nations as have been indicated by abundant past studies synthesized in section 2.4 and in Appendix A. The understanding obtained from this study (from the comprehensive review on the concepts and definitions, components/elements, and measurements of social capital and its impact on the level of income and welfare of individuals, households, and firms) was translated into the theoretical framework illustrated in Figure 2.5.

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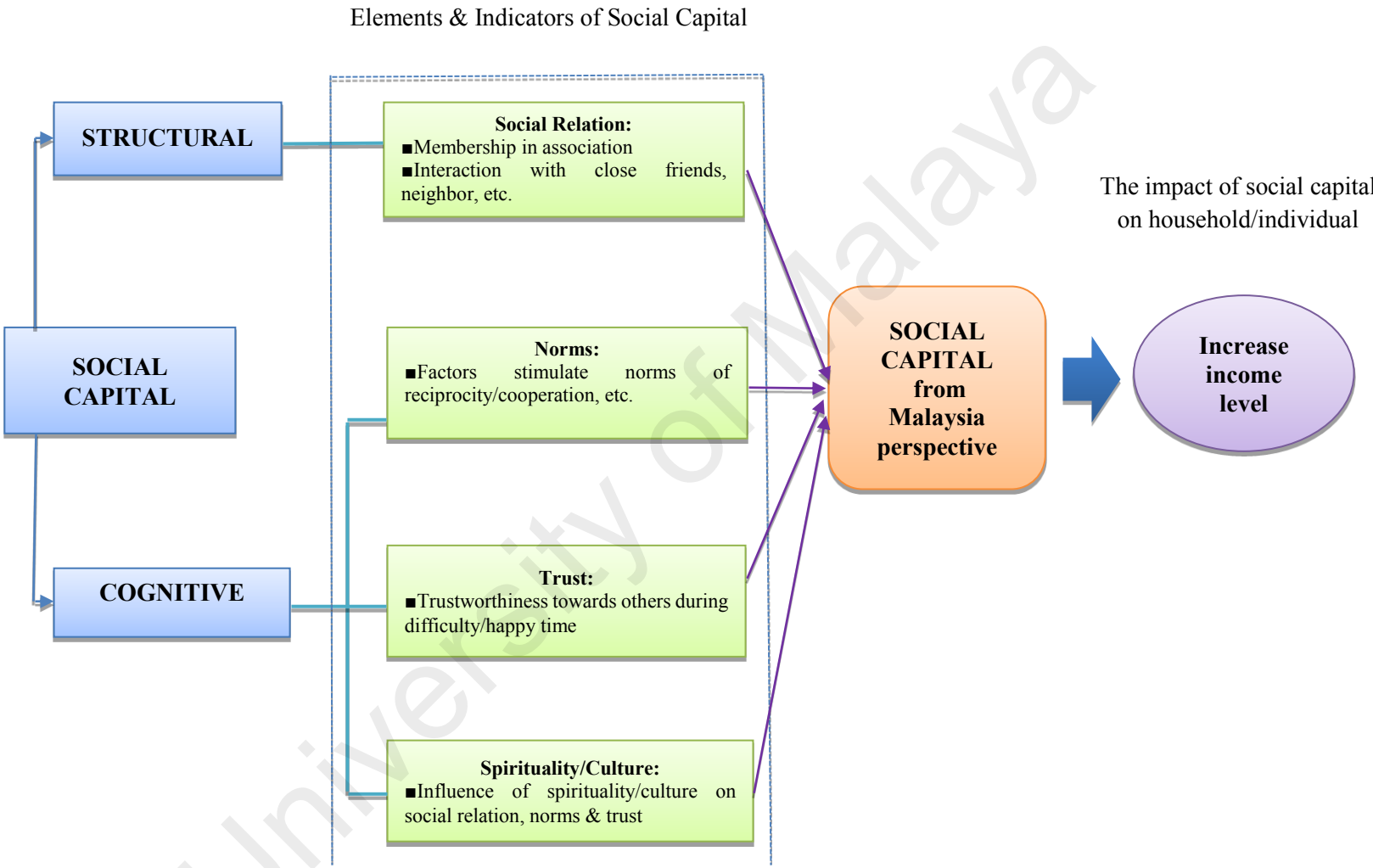

Figure 2.4: Conceptual framework on the formation of social capital in the Malaysia perspective

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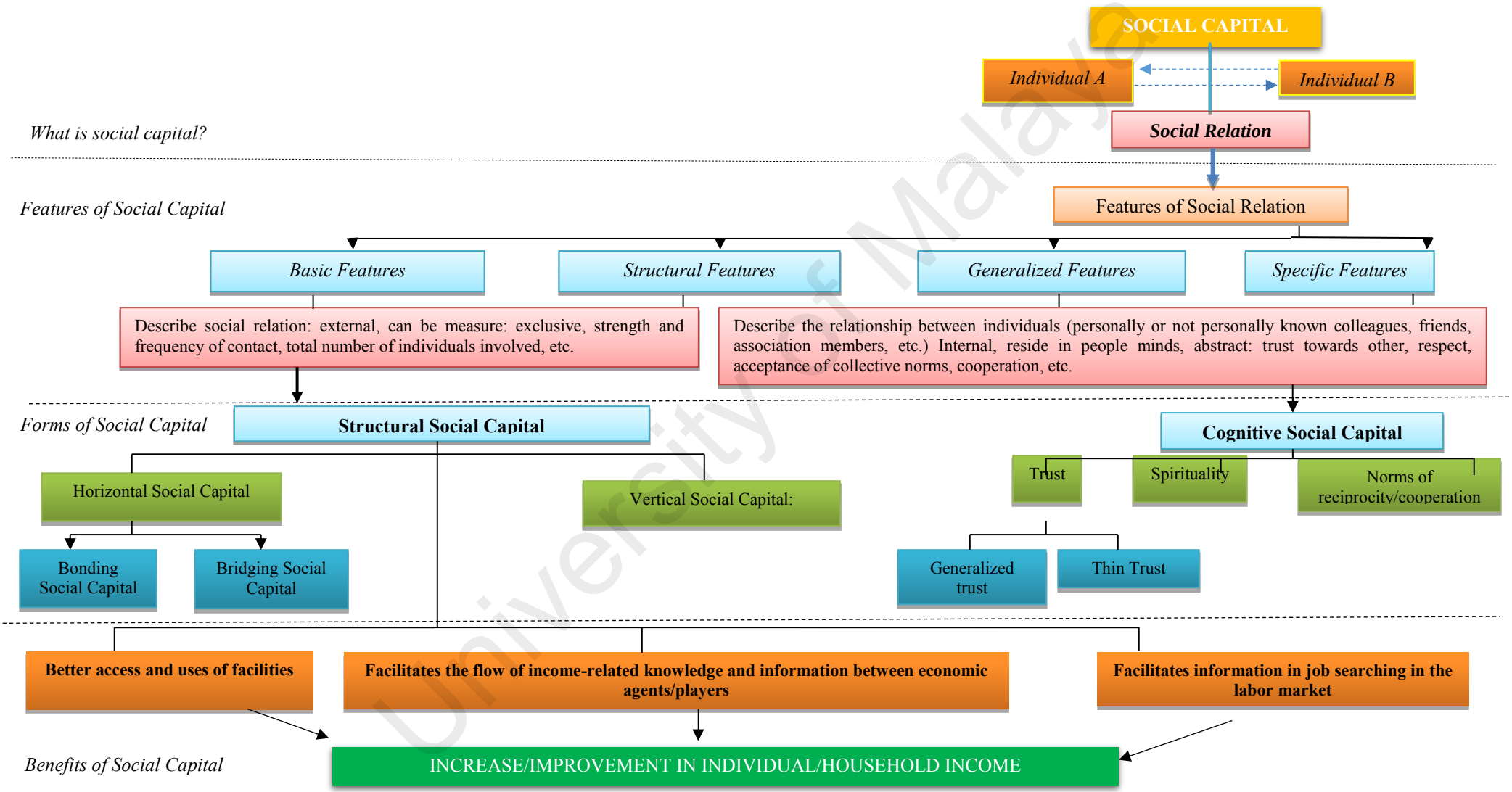

Figure 2.5: Theoretical framework on the impact of social capital on individual income level

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CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this chapter is to discuss the methodology used in this study. The focus of discussion is reduced to two parts, the method for data collection and the method for data analysis. The first part of this chapter will explain the method for data collection. Fieldwork study was used as the orientation for the purpose of obtaining information on individual social capital in this study. This part highlights on the procedures used for sample determination which exactly follows the standard procedures used by the Department of Statistic, Malaysia (D.O.S) and other national statistical offices (NSO) including the United Nations Statistical Division (UNSD). The second part elaborates on the method of data analysis which is different from other studies done previously. In this study, the multilevel modeling (MLM) technique will be used in the analysis to determine the impact of social capital on individual income level in Peninsular Malaysia. This chapter will also discuss the methods used in the selection, determination of dimensions and principal components, and the construction of the social capital component/factor scores. This study will employ categorical principle component analysis (CATPCA), i.e. a more suitable method for non-numerical data like social capital.

3.2 Selection Procedure

This study employed a multi-stage sampling. In the first stage, the country is divided into 4 regions as shown in Table 3.1. Only one state is selected within each region based on the development status. A detailed discussion can be found in section 3.2.1. In the second stage, the living quarters are selected at random. Please see the details in section 3.2.2.

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3.2.1 Selection of States

This study compares the impact of social capital on individual income in Peninsular Malaysia based on regions (developed and less developed), locations (urban and rural) and ethnic groups (Malay, Chinese, Indian and other). The selection of states as sample in this study was done based on development status and regions. The development status for states is categorized into two dimensions: developed and less developed. This status is defined accordingly as the Development Composite Index (DCI) computed by the Economic Planning Unit (Malaysia, 2006). If the DCI is less than the national average (100), the population being studied is classified as less developed while states with DCI of more than 100 are considered as developed (Table 3.1). The Development Composite Index (DCI) is an average score of the Economic Development Index (EDI) and the Social Development Index (SDI). These indices are derived from 15 selected socioeconomic indicators. The EDI refers to the percentage of standardized scores for variables such as per capita GDP, unemployment rate, urbanization rate, mean monthly income, number of registered cars and motorcycles per 1,000 population, and number of telephones per 1,000 population. The SDI refers to the percentage of a standardized score for poverty rate, provision of pipe water and electricity, number of doctors per 10,000 population, and infant mortality rate per 1,000 live births (Malaysia, 2006;pg:152).

The DCI is used in this study as a term of reference to determine the development status of each state in Peninsular Malaysia based on national standard. This is to ensure the selection of a particular state or federal territory as a sample clearly represents the development status according to regions in Peninsular Malaysia (see discussion in the following subsections). In standard international practice, geographic sub-areas (such as

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provinces, regions and zones) are to be treated as domains for estimation purposes for the national survey (United Nations Statistics Division [UNSD], 2005).

To ensure an accurate and comprehensive sample with equally valid findings, each region in Peninsular Malaysia will be covered in this study. Based on the DCI (as discussed above), Kedah and Terengganu are considered as "development status" (DCI less than 100) and will represent the northern and eastern regions. Meanwhile, states/territories with developed status (DCI over 100) i.e. Johor, Selangor and Kuala Lumpur will represent the Southern and Central regions of Peninsular Malaysia (ibid Table 3.1). The primary reason for selecting Kuala Lumpur and Selangor as the sample for the central region is based on its status as the capital of Malaysia and the center of economic growth. Also, Kuala Lumpur is located in and contributes significantly to the tremendous economic growth of Selangor.

Kedah and Terengganu show a higher score in SDI (100.2 and 100.8 respectively). The SDI scores for Selangor and Johor, on the other hand, are below the national average. Although Kuala Lumpur ranks first in the DCI score, its score on SDI is moderate (ibid Table 3.1). Meanwhile, the EDI scores for all selected states are in line with their DCI scores. A slightly higher SDI score by less developed states compared to a score by developed states is another consideration taken in the selection of states in this study.

As states achieved developed status, their SDI score (SDI indicators measure the well-being/wellness of people) should also increase in line with the EDI score and ultimately the DCI score. The slightly lower score of SDI for Selangor, W.P., Kuala Lumpur and Johor compared to their counter parts of Kedah and Terengganu is interesting and needs to be addressed. Although the selection of variables does not represent the exact

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Table 3.1: Development Composite Index by State, 2005

Region/State	Economic Development Index (EDI)	Social Development Index (SDI)	Development Composite Index (DCI)	Rank
Northern Region:				
Kedah	95.5	100.2	97.8	9
Perak	99.7	101.2	100.4	7
Perlis	95.0	104.9	99.9	8
Penang	109.0	102.4	105.7	2
Central Region:				
Melaka	106.4	102.1	104.2	3
Negeri Sembilan	101.8	102.9	102.3	5
Selangor	108.4	98.0	103.2	4
Kuala Lumpur (F.T)	114.4	104.8	109.6	1
Southern Region:				
Johor	102.9	98.1	100.5	6
Eastern Region:				
Kelantan	91.9	94.4	93.1	13
Pahang	96.3	99.0	97.6	10
Terengganu	91.5	100.8	96.2	12
Sabah	82.8	97.2	90.0	14
Sarawak	94.8	98.4	96.6	11
Malaysia	100.0	100.0	100.0	

Source: Ninth Malaysia Plan, 2006-2010

social capital, the SDI scores at the national level are an early indication that there is a possibility of differences in social capital for each state/federal territory in Peninsular Malaysia.

3.2.2 Selection of Households and Individuals

Discussion in this section is based on the technical note prepared by the Department of Statistic Malaysia (D.O.S) in 2012 as the authorized body who prepared the sample size required for this study. The sampling frame used for this study is made up of Enumeration Blocks (**EB**) with updated information on Living Quarters (**LQ**) from the 2010 Population

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and Housing Census (D.O.S., 2010). In this study, D.O.S has advised random sampling to be used in sampling methods. Random sampling is more practical due to the size of the population being very large and coupled with insufficient information on the exact possession of social capital among the population. In household surveys, the sample design must be *stratified* in such a way that the sample is spread over geographic sub-areas and population sub-groups properly (ibid UNSD, 2005). For that purpose, D.O.S. has prepared a two-stage stratified random sampling design to be used in this study and the level of stratification is as follows:

Primary stratum made up of 4 states and 1 federal territory in Peninsular Malaysia i.e. Kedah, Selangor, Federal Territory of Kuala Lumpur, Johor and Terengganu

Secondary stratum made up of selected towns, other towns, and rural stratum within the primary stratum

Sample for this study was drawn randomly within each level of the secondary stratum. The first stage of sample unit is the EB, while the sample unit in stage two is the LQ. EBs is selected using the probability proportionate to size (PPS) method. This means that EBs with a bigger LQ size have a higher probability of being selected. The second stage of the sample is the LQ in the selected EBs. The optimum number of LQs to be selected (following D.O.S. procedure) from every EB is eight. This number may be less or more, depending on the size of the EB after the latest listing has been completed. For every selected LQ, all households and members in the particular LQ will be covered.

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Sample Size

The sample size for this study was determined based on the proportion rate of 0.5. This is to ensure the optimum sample size to be gathered (the reason why p = 0.5 is chosen is discussed in page 103-104). Other factors taken into consideration were a confidence interval of 95% and the respond rate of 85% to ensure the reliability of at least 95% of the sample estimated and to consider unresponsive or unfounded cases (D.O.S., 2012). The 95% confidence level is almost universally taken as the standard and the sample size necessary to achieve it is calculated accordingly (ibid UNSD, 2005). Since the design used was a complex design, design effect is applied in the estimation using the default value of 2. The relative standard error (RSE) in every secondary stratum (urban and rural area) is monitored at the 10% level with the confidence interval of 90%.

Estimation procedures

Estimation of required basic sample size (n_0):

The estimation of basic sample size is done using the simple random sampling (SRS) formula. This procedure is used with an assumption of stratum as sub-population. Estimation of initial/basic sample size for sub population is calculated using the following formula:

$$n_{0j} = \frac{z^2 p_j (1 - p_j)}{d_j^{\,2}} \quad \text{.....eq.(3.1)}$$

Where,

n_0 = basic sample size obtained using SRS procedure for sub population j

j = number of sub population (in this study, stratum is considers as sub population), and

j = 1, 2, 3, ..., k

d = margin of error (in this study d is equal to 0.1)

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z = value of normal distribution for specified confidence level (in this study, the value of z which is consistant with the 95% confidence level) is 1.96

p = rate for variable of selection

based on equation (3.1), the required sample size for sub-population (n_{0j}) is

$$n_0 = \frac{(1.96)^2\,(0.5)\,(0.5)}{(0.1)^2} = 96$$

Estimation of required sample size (n_1) adjusted for finite population correction (FPC):

The total number of population (i.e. households) from the sample of states is 1,487,600 (see Table 3.2 column 4). This number actually represents the finite population from the total number of households in Malaysia which accounted for 6,396,174 (D.O.S., 2010). Since the sample to be drawn from the finite population accounts for more than 10% of the target/actual population, the required sample size of this study needs to be adjusted to account for finite population correction (FPC). The FPC needs to be applied to reduce the standard error and the sample size. SRS adjustents were based on the folowing equation:

$$n_{1j} = \frac{n_{0j}}{1 + \frac{n_{0j}}{N_j}} \quad \text{.....eq. (3.2)}$$

Where,

n_1 = required sample size from the finite population

n_0 = basic sample size obtained using SRS procedure for sub population (eq. 3.1)

j = sub population (or stratum in this study), j = 1, 2, 3, ..., k

N = the number of households in each stratum in the selected states

For example:

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Required sample size adjusted for FPC for urban statum of Johor (see column 5 in Table 3.2) is,

$$n_{1j} = \frac{96}{1+\frac{96}{596{,}000}}$$

$$= \frac{96}{1.00016}$$

$$= 96$$

The required sample size adjusted for FPC for other sample states (for both urban and rural stratum) in this study also follows the same procedure (for details, see Table 3.2).

Estimation of required sample size after considering design effect (n_2):

To fullfill asumptions under stratified sampling, design effect (D.E) factor is included where

$$\text{D.E} = \frac{\text{variance for complex design}}{\text{variance for SRS}}$$

For this study, the value of D.E equal to 2 (see column 6 in Table 3.2) is calculated by D.O.S. (2012). Sample value by taking into account D.E is given by:

$$n_{2j} = \text{n}_{1j} \times \text{D.E} \qquad \text{.....eq. (3.3)}$$

Where,

n_{2j} = sample size by taking into account D.E

n_{1j} = sample size adjusted for FPC

j = sub population (or stratum in this study), j = 1, 2, 3, ..., k

D.E = design effect

Example:

Sample size by taking into account D.E for urban stratum of Kedah (see column 7 in Table 3.2) is,

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n_{2j} = 92 x 2 = 192

The required sample size after taking into account D.E. for other sample states (for both urban and rural stratum) in this study also follows the same procedure (for details, see Table 3.2).

Estimation of overall sample size (n_3):

Then, by also taking into consideration respond rate (for this study the respond rate of 0.85 is determined by D.O.S., 2012), the estimation of overall sample size is as follows:

$$n_{3j} = n_{2j} \times \frac{1}{responrate} \quad \text{.....eq. (3.4)}$$

Where,

n_{3j} = overall sample size

n_{2j} = sample size by taking into account D.E

Example:

Overall sample size for urban stratum in Selangor is,

$$n_3 = 192 \times \frac{1}{0.85}$$

= 192 x 1.1764 = 226

The overall sample size for other sample states (for both urban and rural stratum) in this study also follows the same procedure (for details, see Table 3.2)

Finally, the total sample size (n) is given by:

$$n = \sum_{j=1}^{k} n_{3j} \quad \text{.....eq. (3.5)}$$

This gives the total EB that needs to be covered in this study which is 252 EB with

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the estimation of 2,016 LQ (with the assumption that the number of LQ that needs to be covered for each EB is 8). Because the same formula (eq. 3.1) was used to calculate sample size for both urban and rural stratum, and with z = 1.96, p = 0.5 and d =0.1, this resulted to the same total sample size obtained for both stratum. The estimation and the sample size of this study are shown in Table 3.2 and Table 3.3.

Justification for an equal sample size of urban and rural stratum

This study is interested in analyzing the impact of social capital on individual income level. The individual sample is obtained from the survey conducted among household in selected states and Federal Territory in Peninsular Malaysia. In any household survey at the national level, the factors and parameters that must be considered in determining the sample size are many but chiefly revolve around the measurement objectives of the survey (ibid UNSD, 2005). Calculation of the sample size must therefore take into consideration each of the target populations. As mentioned earlier, with the focus on individual social capital, and realizing that there is no available information on the exact sample size of the national population with social capital possession, D.O.S. has come out with an equal sample size allocation procedure to be used in the estimation of sample size for this study. This procedure is to calculate the sample size to estimate social capital characteristics held by individuals (head of households and working persons in a household) in Peninsular Malaysia. Although it looks strange, this unique standard sample size procedure is normal in sampling design especially for household surveys at the national level (ibid UNSD, 2005). The proportionate allocation is the most suitable for producing national estimates and subgroup estimates where the subgroups are evenly spread (in terms of the characteristics of the household) across the provinces (Kalton et al., 2005). Since this study does not have sufficient information on the characteristics of

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social capital among individuals, the equal sample size allocation is the most suitable for producing provincial estimates although this procedure might reduce the precision of national estimates (ibid Kalton et al., 2005).

The investigator must come up with an estimate for the proportion *p* of the population that will have the factor under investigation and the desired level of absolute precision *d*. If the investigator is unsure of the proportion (this will be the case when the information under consideration is insufficient), usually a value of 0.5 or 50% is a standard used by the national statistical offices (NSO) including the United Nations Statistical Division (UNSD) (ibid Kalton et al., 2005; UNSD, 2005; Turner, 2003). With this method, the proportion value used, p = 0.5, will lead to a maximum sample size selection with an assumption that the probability of the sample of being selected is 50% and the probability of not being not selected is also 50%. It means that each member of the population has an equal chance of being chosen for the study. Importantly this will guarantee the sample chosen is representative to the population and that the sample is selected in an unbiased way (ibid UNSD, 2005). Translated into the context of this study, with p = 0.5, the sample size had been chosen based on assumption that 50% of the respondents of this study will get involved in any activities regarding social capital (such as joining association, or having networking with close or regular friends that will generate positive externalities like improving income or welfare level of those involves).

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3.2.3 Concept and definitions

Enumeration Blocks (EBs)

EBs are geographical contiguous areas of land which identifiable boundaries created for survey operation purposes, which on average, contain about 80 to 120 living quarters. Generally, all EBs are formed within gazette boundaries i.e. within administrative districts, mukim or local authority areas.

Living Quarter (LQ)

Living quarters (LQ) is defined as any structurally separate and independent enclosure which is constructed as (or converted to) quarters intended for living purposes. The ultimate sampling unit in this survey is the living quarters and only private living quarters is sampled. The institutional households i.e. those living in hostels, hotels, hospitals, old folks homes, military and police barracks, prisons, welfare homes, and other institutions were excluded from the coverage of this study.

Household

A household is defined as a person or group of related or unrelated persons who usually live together and make common provision for food and other living essentials. For the purpose of this study, with the aim is to investigate the impact of social capital on individual income, head of household and a working person in a household will be treated as an individual.

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Ethnic group

Ethnic group is categorized as Malaysian citizens after separating those who are non-citizens. The classification is based on the 2010 Population and Housing Census where ethnic group in Peninsular Malaysia is categorized into Bumiputera, Chinese, Indians, and others (D.O.S, 2010). For the purpose of this study, the Malay/other Bumiputeras term is used instead of Bumiputeras after considering the facts that Malay is the most dominant ethnic group in Peninsular Malaysia and is predicted to account for more than fifty percent from the total respondent in the survey that will be conducted in this study.

Classification of areas by stratum

The classification of areas by stratum is used is as follows:

Stratum	Number of Population
Metropolitan	75,000 and over
Urban large	10,000 to 74,999
Urban small	1,000 to 9,999
Rural	All other areas

Sources: D.O.S., 2012

For the purpose of analysis, the urban/rural stratum area was reclassified as follows: first, urban consists of metropolitan and urban large stratum. Second, rural consists of urban small and rural stratum

3.2.4 Estimation of Sample Size

The sample size for this study was estimated based on the estimation procedures discussed in section 3.2.2 above. The estimation and the sample size of this study are shown in Table 3.2 and Table 3.3 below:

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Table 3.2: Estimation of Sample size

States:	Stratum	n_0	N	n_1	DE	n_2	Response Rate	n_3	EB
Kedah	Urban	96	198,600	96	2	192	0.85	226	28
	Rural	96	254,200	96	2	192	0.85	226	28
Selangor	Urban	96	1,296,100	96	2	192	0.85	226	28
	Rural	96	115,400	96	2	192	0.85	226	28
Kuala Lumpur (F.T)	Urban	96	413,400	96	2	192	0.85	226	28
Johor	Urban	96	596,000	96	2	192	0.85	226	28
	Rural	96	213,300	96	2	192	0.85	226	28
Terengganu	Urban	96	120,000	96	2	192	0.85	226	28
	Rural	96	105,500	96	2	192	0.85	226	28
Total		864	1,487,600	864					252

Source: Department of Statistic Malaysia (2012)

Table 3.3: Number of EB and LQ

States	Number of EB			Number of LQ	
	Urban	Rural	Total	Urban	Rural
Kedah	28	28	56	224	224
Selangor	28	28	56	224	224
Kuala Lumpur (F.T)	28	0	28	224	-
Johor	28	28	56	224	224
Terengganu	28	28	56	224	224
Total	140	112	252	1,120	896

Source: Department of Statistic Malaysia (2012)

3.2.5 Budget constraint

In any survey conducted, the cost in time and money of data collection, processing, and dissemination, are some of the main constraints (ibid UNSD, 2005). In this study, states in East Malaysia (Sabah and Sarawak) and others as well as states in Peninsular Malaysia (except Kedah, Terengganu, Johor, Selangor and W.P. Kuala Lumpur) are excluded due to budgetary constraints. This study is funded through the Fundamental Research Grant Scheme (phase 1) 2011/12 with a total amount of RM50 000. With this amount, it is only manageable

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and sufficient to conduct a study in the selected states in Peninsular Malaysia as discussed above.

3.3 Design of Questionnaire

The questionnaire for this study was designed based on the World Bank Social Capital Integrated Questionnaire (SC-IQ), 2004 (for details see Grootaert et al., 2004). The tool that covers various dimensions of social capital was developed with a focus given for the applications in developing countries. This study replicated the SC-IQ tools but with a modification done to be suited with the nature of study in Malaysia to tackle both the quantitative (structural) and qualitative (cognitive) part of social capital. Others references referred in the designing process were from Dudwick, 2006; Yang, 2007; Jones & Woolcock, 2010; Tiepoh, & Reimer, 2004; Van Ha, N. et al., 2004; Nasir et al. 2010, Roslan, et al., 2010 and Yokoyama & Ali, 2010). These studies mostly done at the micro level provide good references on the questions to tackle social capital from an individual or household perspective at both urban and rural areas and also in the Malaysian context.

The questionnaire consists of four parts. The first is on background of the individual (all members in the household). Among questions designed to tackle this part are name, relation with head of household, gender, age, marital status, and education achievement. The second part was specifically designed to tackle all those related information regarding human capital, social capital, working members of households income, and expenditures belonging to the head of household. The human capital part consists of four sections i.e. information on education, employment, training and health (details on questions of these sections are attached in Appendix C)

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The main part of this questionnaire is divided into four sections to tackle various information on structural and cognitive forms of household social capital. Information regarding social networks and memberships, level of trustworthiness, norms of reciprocity, and the influence of spirituality and culture on social relation, norms, and trust were the main focus of sections F, G, H and I (see Appendix C). Table 3.4 below give a brief description on questions designed for structural and cognitive social capital of this study. The last part of the questionnaire is on information of income/wages and expenditures of heads of households and working members of the households. Specific questions were design to tackle sources of income and how the income is spent on a monthly basis (ibid Appendix C).

Table 3.4: Example of questions for structural and cognitive social capital

Membership & Networks:	
Structural: • involvement and density of involvement in association. • number of close friend • number of regular friend	***Cognitive:*** • Benefit from joining and involvement in activities organized by association. • Benefit from interaction with close and regular friend.
Trust:	
Structural: • none	***Cognitive:*** • who can be trusted to help during financial difficulties or emergency
Norm of Reciprocity	
Structural: • none	***Cognitive:*** • benefit from assistance received from other • benefit from assistance given to others
Spirituality	
Structural: • none	***Cognitive:*** • factors determine a. relation with close and regular friend. b. sharing of information regarding income/job among close and regular friend. c. person that can be trusted (close or regular friends) during financial difficulties or emergency

Source: Survey 2012/2013

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3.4 Variables Selection for the Construction of Dimensions and Principal Components of Social Capital

This study has identified 42 potential variables to be used in the construction of the social capital dimensions and principal components based on literature research in Chapter 2 (see Table 3.5). The identification of these variables were done based on consensus reached from past studies on the components of social capital and also following suggestions from past studies on the appropriate proxy to represent both cognitive and structural parts of social capital (for details see subsection 2.3.3 in Chapter 2). These variables are categorized into five principal components i.e. involvement in associations, interactions with friends, trust, norms and influence of spirituality/culture. The first four components are in line with the consensus reached by scholars and advocates regarding the element or dimensions of social capital with the first two falling under the rubric of social networks/relation dimension. The fifth component (influence of spirituality/culture) is the new addition created by this study to tackle social capital from a perspective of a developing country such as Malaysia. Although it does not exactly belong to either one of the three main dimensions, the influence of spirituality/culture on norms, trust and ultimately on social networks/relations, have been discussed in literature and were indirectly covered as variables to represent the mains element of social capital (Coleman, 1998; Robison & Siles, 2011; 1999; Grootaert & Bastelaer, 2002; Krisna & Uphoff, 2002). It is a prerogative of this study to categorize spirituality and culture as the fourth dimension of social capital because in the heterogeneous society of Malaysia, this element is firmly believed to have an important influence not only in the formation of social capital but also on individual income (see discussion in section 2.1 of Chapter 2).

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Table 3.5: Potential variables for the Construction of Dimensions and Principal Component of Social Capital

Quest.	Var.	Dimensions and Principal Component	Type of Data
		Dimension 1: Social Interaction	
		Component 1: Benefit from involvement in association	
F(2a)	V_1	Involvement in associations (related or not related to economic activities) helps you to increase productivity - through better employment practices.	(binary, two categories, 1=no, 2=yes)
	V_2	Involvement in associations (related or not related to economic activities) helps you to get information on credit facilities to improve the living standard/ expand the business etc.	(binary, two categories, 1=no, 2=yes)
	V_3	Involvement in associations (related or not related to economic activities) helps you to improve your mental & spiritual.	(binary, two categories, 1=no, 2=yes)
	V_4	Involvement in associations (related or not related to economic activities) helps you to be more enthusiastic or productive in work or life.	(binary, two categories, 1=no, 2=yes)
		Component 2: Benefit from interaction	
F(11)	V_5	***Interaction with close friends enables you to get informative information regarding new jobs/promotion opportunities.***	(binary, two categories, 1=no, 2=yes)
	V_6	***Interaction with close friends enables you to get informative information regarding price/supply of agricultural inputs.***	(binary, two categories, 1=no, 2=yes)
	V_7	Interaction with close friends enables you to get informative information regarding business contract opportunities.	(binary, two categories, 1=no, 2=yes)
	V_8	Interaction with close friends enables you to get informative information regarding credit facilities	(binary, two categories, 1=no, 2=yes)
	V_9	Interaction with close friends enables you to get informative information regarding new technology to produce products/enhance productivity	(binary, two categories, 1=no, 2=yes)
F(12)	V_{10}	***Interaction with regular friends enables you to get informative information regarding new jobs/promotion opportunities.***	(binary, two categories, 1=no, 2=yes)
	V_{11}	Interaction with regular friends enables you to get informative information regarding price/supply of agricultural inputs	(binary, two categories, 1=no, 2=yes)
	V_{12}	Interaction with regular friends enables you to get informative information regarding business contract opportunities.	(binary, two categories, 1=no, 2=yes)
	V_{13}	Interaction with regular friends enables you to get informative information regarding credit facilities	(binary, two categories, 1=no, 2=yes)
	V_{14}	Interaction with regular friends enables you to get informative information regarding new technology to produce products/enhance productivity	(binary, two categories, 1=no, 2=yes)
		Dimension 2: Trust	
		Component 3: Trusted person during financial difficulties/emergency	
G(1)	V_{15}	***If you are facing financial difficulties, individuals who are believed to help are close family members/relatives.***	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{16}	If you are facing financial difficulties, individuals who are believed to help are close friend.	(Likert scale five categories, 1=totally disbelieve through 5=totally believe)
	V_{17}	If you are facing financial difficulties, individuals who are believed to help are regular friend.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{18}	If you are facing financial difficulties, individuals who are believed to help are association that you joined.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{19}	***If you are facing financial difficulties, individuals who are believed to help are your own effort - borrowing from banks/finance companies, etc.***	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
G(2)	V_{20}	***In the event of an emergency (illness, accident, etc.), an individual who can be trusted to help is close family members/relatives.***	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{21}	In the event of an emergency (illness, accident, etc.), an individual who can be trusted to help is close friend.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{22}	In the event of an emergency (illness, accident, etc.), an individual who can be trusted to help is regular friend.	Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{23}	In the event of an emergency (illness, accident, etc.), an individual who can be trusted to help is an association that you joined.	Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{24}	***In the event of an emergency (illness, accident, etc.), an individual who can be trusted to help is your own effort - contact the fire brigade/ambulance, etc.***	Likert scale, five categories, 1=totally disbelieve through 5=totally believe)

Source: Field Study, 2012/2013

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Table 3.5…continue: Potential variables for the Construction of Dimensions and Principal Component of Social Capital

Quest.	Var.	Name	Type of data
		Dimension 3: Norm	
		Component 4: Benefit from financial aid	
H(2)	V_{25}	Financial aid you received is from close family members/relatives.	(binary, two categories, 1=no, 2=yes)
	V_{26}	Financial aid you received is from close friend.	(binary, two categories, 1=no, 2=yes)
	V_{27}	***Financial aid you received is from regular friend.***	(binary, two categories, 1=no, 2=yes)
	V_{28}	***Financial aid you received is from an association that you joined.***	(binary, two categories, 1=no, 2=yes)
H(4)	V_{29}	Financial/non-financial aid received help you to alleviate the financial problems faced	(binary, two categories, 1=no, 2=yes)
	V_{30}	Financial/non-financial aid received help you to reduce emotional stress/other problem.	(binary, two categories, 1=no, 2=yes)
	V_{31}	Financial/non-financial aid received help you to strengthen ties with close friend.	(binary, two categories, 1=no, 2=yes)
	V_{32}	Financial/non-financial aid received help you to strengthen ties with regular friend.	(binary, two categories, 1=no, 2=yes)
		Dimension 4: Influence of Spirituality/Culture	
		Component 5:Spirituality/culture influence	
I(3)	V_{33}	You will share information on income/employment opportunities with a close friend on the basis of similarities in religious belief.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{34}	You will share information on income/employment opportunities with a close friend on the basis of similarities in ethnicity.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{35}	You will share information on income/employment opportunities with a close friend on the basis of similarities in culture.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{36}	You will share information on income/employment opportunities with a close friend on the basis of similarities in language.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{37}	You will share information on income/employment opportunities with a close friend on the basis of similarities in economic status.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
I(4)	V_{38}	You will share information on income/employment opportunities with a regular friend on the basis of similarities in religious belief.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{39}	You will share information on income/employment opportunities with a regular friend on the basis of similarities in ethnicity.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{40}	You will share information on income/employment opportunities with a regular friend on the basis of similarities in culture.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{41}	You will share information on income/employment opportunities with a regular friend on the basis of similarities in language.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)
	V_{42}	You will share information on income/employment opportunities with a regular friend on the basis of similarities in economic status.	(Likert scale, five categories, 1=totally disbelieve through 5=totally believe)

Source: Field Study, 2012/2013

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3.4.1 Creating and Calculating Social Capital Component/Factor Score using Categorical Principle Component Analysis (CATPCA)

Introduction

Composite score is widely used by economist as proxy of measurement of social capital in the actual analysis. Until recently, composite the score remained as one of the popular options among economists in analyzing the influence of social capital on economic performance. The procedure involved in constructing the index has also undergone evolution from the unstructured towards the more structured and with a strong statistical basis such as the use of the categorical principal component analysis (CATPCA) [for details see chapter two]. For social science research particularly for social capital, with the nature of data constituting quantitative and qualitative types, treating nominal and ordinal data as numeric and running them under the PCA would raise questions on the appropriateness of this practice.

To avoid this limitation, categorical principal component analysis (CATPCA) or nonlinear principal component analysis (NLPCA) has been introduced as an alternative in dealing with nominal and ordinal data (Linting et al, 2007a; Linting et al., 2012). Without any assumption made as to the measurement level of the variables and the nature of their relationship, CATPCA will analyze the data at a level specified by the researcher (numeric, nominal, or ordinal). CATPCA/NLPCA is still not widely used in economic studies but few have been found to apply this method in data reduction and constructing the component score (Vella & Narajan, 2006; Sabatini et al., 2012; Comim & Amaral, 2013). In this study, CATPCA was employed to identify the principal component of social capital from the Malaysian perspective by taking into account the non-numeric nature of the data. This procedure will enable this study to summarize the data contained large variables of social capital into five principal components (from the Malaysian perspective) to be used in

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analyzing the impact of this intangible capital on individual income level.

Categorical Principle Component Analysis (CATPCA)

To perform CATPCA, this study used the program also named CATPCA (Categorical Principal Components Analysis), the software which is part of the SPSS 23.0 Categories Module. Like standard principle component analysis (PCA), CATPCA share the same objective i.e. to reduce a data set consisting of many variables and complicated correlation patterns to a smaller number of uncorrelated summary variables (principal components) that represent the information in the data as closely as possible (Linting et al., 2012). In CATPCA, categories of such variables are assigned numeric values through a process called optimal quantification/optimal scaling/optimal scoring (Linting et al., 2007; Meulman et al., 2004)). This process will then transform categories of variables with nominal and ordinal analysis levels into numeric values. These numeric values are referred to as category quantifications and the method used for this quantification process is called optimal scaling.

Optimal quantification will replace the category labels with category quantifications in a way takes into account the variance in the quantified variables (Linting et al., 2007). As mentioned before, CATPCA is suited for variables of mixed measurement level (nominal, ordinal, or numeric) which may not be linearly related to each other (Manisera et al., 2010). For details explanation how to conduct CATPCA, interested readers are advised to refer to Linting et al., 2007 & 2012 and Meulman et al., 2004.

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3.5 Methodology for Data Analysis

This study will use multilevel modeling (MLM) techniques to analyze the impact of social capital on household income. MLM is an extension of simple regression analysis or ordinary least squares (OLS) regression but differs from other regression, MLM provides a method for analyzing data that exists at different levels (Robson & Pevalin, 2016; Meyer et. al., 2013; Hox, 2010; Tarling, 2009; Kahn, 2011; West et. al., 2011; Lynch, 2012). When individuals exist within natural groups such as children nested within classrooms or schools, individuals nested within households, households nested in specific locations (urban or rural areas) and employees nested within a business, the data have a multilevel or hierarchical or nested structure (Heck & Thomas, 2009; Peugh, 2010, Khan, 2011; Lynch, 2012; Snijders & Bosker, 2012). In these examples, two distinct levels of data exist, group (level 2) and individuals (level 1).

Nested or multilevel data enables study to be conducted with one single outcome or response variable measured at the lowest level and explanatory variables at all existing levels (Hox, 2010; Lynch, 2012). MLM techniques involve first estimating a level 1 model (individuals within a group) to analyze the relation between individual outcomes (dependence variables) and individual explanatory variables (independence variables) that determine the outcome. Second, using level 1 intercept and slopes as dependence variable, MLM will estimate level 2 explanatory variables that determine variability in the level 1 outcomes.

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In this study, the MLM analysis procedure is employed to assess three types of effects. The first step is to assess the direct effects of lower-level or level-1 predictors (Level-1 predictor) on a lower-level outcome variables. Specifically in this study, an interest in testing whether social capital variables predict individual income is focused on. Second, to access the intra-group interaction effects i.e. does the relation between two lower-level variables (e.g. level-1 predictor X and level-1 outcome Y) change as a function of other level-1 variables? Specifically, this study is interested in testing the hypothesis that the relationship between level-1 control variables (i.e. human capital and demographic) and individual income may vary as a function of (i.e. is moderated by) the degree of social capital. Finally, the study aims to assess the cross-level direct effects i.e. does a higher-level predictor W (i.e. level-2 predictor) have an effect on a level-1 outcome variable Y. Specifically, this study would like to assess whether level-2 variables (i.e. location and development status of district) predict level-1 outcomes on individual income.

The use of the MLM method to analyze the impact of social capital in household income is considered new. As mentioned in Chapter 2, until recently no studies were found to use this method. Most of the studies done in this area of research used OLS, regression-based decomposition, and Logit & Probit models to estimate the influences of social capital on household income (see for example Narayan & Pritchett,1999; Fafchamps & Minten, 2002; Tiepoh & Reimer, 2004; Sirven, 2006; S.Yusuf., 2008; Lu & Zhao, 2009; Yokoyama & Ali, 2009; Roslan et al., 2010; Ogunrinola, 2011). The following section will explain the application of MLM procedures used in this study.

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3.5.1 Multilevel Modeling (MLM) procedure

Level 1 Fixed-effects model:

Individual (head of household and working member of the household) is the level-1 (individual) model in this study. Social capital is the main set of explanatory variables (independent variables) where the main focus of this study is to investigate the influence of the later on individual income (outcome). In line with theory and past studies but with a little bit of modification, this study will include influence of culture and spirituality as the fourth dimension of social capital. The exact dimensions of social capital in this study will be discussed in Chapter Four. Although in the previous section, four dimensions have been considered representative of social capital, the actual dimension will be known after all 42 potential variables to be used in the construction of the social capital principal components and components score (see section 3.4) have been analyzed using CATPCA. Human capital (HC) and demographic variables (DE) will also be included in this study. In general, the MLM equation of level 1 (individual) modeling of this study can be written as:

$$\text{Level–1: } LogTotal\ Income_{ij} = \beta_{oj} + \beta_{1j}\,\text{SocialCapital}_{ij} + \beta_{2j}\,\text{HumanCapital}_{ij} + \beta_{3j}\,\text{Demographic}_{ij} + r_{ij} \quad (3.6)$$

$$\text{Level-2 : } \beta_{oj} = \gamma_{00} + u_{0j} \quad (3.7)$$

$$\text{Level-2 : } \beta_{1j} = \gamma_{10} + u_{1j} \quad (3.8)$$

$$\text{Level-2 : } \beta_{2j} = \gamma_{20} + u_{2j} \quad (3.9)$$

$$\text{Level-2 : } \beta_{3j} = \gamma_{30} + u_{3j} \quad (3.10)$$

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From Eq. (3.7), γ_{00} is the grand mean, and u_{0j} is a residual that allows the income mean to vary across districts. Eq. (3.8) – Eq. (3.10) illustrates the definition of a fixed effect with random effect (i.e. the impact of social capital, human capital and demographic variables on income varies across districts). The "u_{1j} - u_{3j}" residual term is often referred to as a random effect because it indicates that the impact of social capital and other control variables are allowed to vary randomly across districts. Substituting Eq. (3.7), and Eqs. (3.10) – (3.5) into Eq. (3.6) yields the combined regression model:

$$\text{Combined: } LogTotal\ Income_{ij} = \gamma_{00} + \gamma_{10}\,\text{SocialCapital}_{ij} + \gamma_{20}\,\text{HumanCapital}_{ij} + \gamma_{30}\,\text{Demographic}_{ij} + u_{0j} + u_{1j}\text{SocialCapital} + u_{2j}\text{HumanCapital} + u_{3j}\text{Demographic} + r_{ij} \quad (3.11)$$

From Eq. (3.11), the subscript "i" refers to the level 1 unit (head of household and working individual), and "j" refers to the level 2 unit (district). Just as with OLS regression, "$LogY_{ij}$" is the level 1 dependent variable (total log-income) for working individual (i) in district (j). In this study the total monthly gross income (the dependent variable or outcome) was semi-log because the distribution of this data was found to be abnormally distributed (positively skewed). "SC_{1ij}" represents social capital that belongs to individuals while "HC" and "DE" are human capital and demographic variables (control variable in this study) respectively.

The segment ($\gamma_{00} + \gamma_{10}\text{SocialCapital}_{ij} + \gamma_{20}\text{HumanCapital}_{ij} + \gamma_{30}\text{Demographic}_{ij}$) in Eq. (3.11) contains the fixed coefficients or the fixed (or deterministic) part of the model. The segment ($u_{0j} + u_{1j}$ SocialCapital + u_{2j}HumanCapital + u_{3j}Demographic + e_{ij}) in Eq. (3.11) contains the random error terms and is often called the random (or stochastic) part of the

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model (Hox, 2010; Snijders & Bosker, 2012). The segments [$u_{0j} + u_{1j} X_{1ij} + u_{2j} X_{2ij} + u_{3j} X_{3ij} + e_{ij}$] represent the collected error terms for this combined model which OLS regression cannot adequately estimate (Snijders & Bosker, 2012; Schreiber, 2004). Against the OLS regression which assumes that errors are normally and independently distributed with constant variance (Schreiber, 2004; Bickel, 2007), in MLM the error terms depend on the individual–level predictors thus violating the assumption of independence and constant variance in OLS (Meyers et. al, 2013; Lynch, 2012). The partitions of the error terms into segments in MLM allow significant tests to be conducted with the appropriate error terms and minimized bias in hypothesis (Khan, 2011). Realizing that incorporating too many variables in the analysis using the MLM technique might cause problems particularly on the interpretation of the finding, this study will use social capital factor or component score instead of the exact value of selected variables that has been discussed above. Details on the creation of social capital factor score were discussed in subsection 3.6 above.

Level 1 Within-group interaction effects model:

As mentioned earlier, this study is also interested in assessing the within-group interaction effect i.e. does the effect of level-1 control variable on individual income moderate the social capital variable? Generally, the MLM equation of within-group interaction effect model can be written as:

$$\text{Level-2} : \beta_{oj} = \gamma_{00} + u_{0j} \quad (3.12)$$

$$\text{Level-2} : \beta_{1j} = \gamma_{10} + u_{1j} \quad (3.13)$$

$$\text{Level-2} : \beta_{2j} = \gamma_{20} + u_{2j} \quad (3.14)$$

$$\text{Level-2} : \beta_{3j} = \gamma_{30} + u_{3j} \quad (3.15)$$

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Adjusting Eq. (3.11) after taking care of moderator effects of social capital variable on others, significant level-1 variables yields the following equation:

$$\text{Level–1: } LogTotal\ Income_{ij} = \beta_{oj} + \beta_{1j}\,\text{SocialCapital}_{ij} + \beta_{2j}\,\text{HumanCapital}_{ij} + \beta_{3j}\,\text{Demographic}_{ij} + \beta_{2j}(\,HumanCapital)(\text{SocialCapital}_{ij}) + \beta_{3j}\,(\text{Demographic}_{ij})(\text{SocialCapital}_{ij}) + r_{ij} \quad (3.16)$$

Then by substituting Eqs. (3.12) – (3.15) into Eq. (3.6) yields the combined MLM:

$$\text{Combined: } LogTotal\ Income_{ij} = \gamma_{00} + \gamma_{10}\,\text{SocialCapital}_{ij} + \gamma_{20}\,\text{HumanCapital}_{ij} + \gamma_{30}\,\text{Demographic}_{ij} + \gamma_{21}\,(\text{HumanCapital}_{ij})(\text{SocialCapital}_{ij}) + \gamma_{31}\,(\text{Demographic}_{ij})(\text{SocialCapital}_{ij}) + u_{0j} + u_{1j}\text{SocialCapital}_{ij} + u_{2j}\text{HumanCapital}_{ij} + u_{3j}\text{Demographic} + r_{ij} \quad (3.17)$$

The segment ($\gamma_{00} + \gamma_{10}\text{SocialCapital}_{ij} + \gamma_{20}\text{HumanCapital}_{ij} + \gamma_{21}(\text{HumanCapital}_{ij})(\text{SocialCapital}_{ij}) + \gamma_{30}\text{Demographic}_{ij} + \gamma_{31}(\text{Demographic}_{ij})(\text{SocialCapital}_{ij})$) in Eq. (3.17) contains the fixed coefficients or the fixed (or deterministic) part of the model. Meanwhile, the segment ($u_{0j} + u_{1j}\ \text{SocialCapital}_{ij} + u_{2j}\text{HumanCapital}_{ij} + u_{3j}\text{Demographic}_{3ij} + e_{ij}$) in Eq. (3.17) contains the random error terms and is often called the random (or stochastic) part of the model (Hox, 2010). γ_{11}, γ_{21}, and γ_{31}, in Eq. (3.17) are coefficients for the interaction between individual human capital, and demographic variables with individual social capital. γ_{11}, γ_{21}, and γ_{31} reflect a within-group *interaction effect*. The interaction effects will be conducted in this study to further investigate whether the direct effect of social capital on the outcome (individual income) was a result of other third variables (mediator effects). Until recently, only limited research is available to

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investigate the moderating or mediating influence of social capital on the outcome being studied. Nevertheless, this limited study shows inconclusive evidence for the mediating and moderating effects of social capital on the outcome (dependent variable) [see among other Vyncke et al., 2013; Veenstra, 2005; Dahls, 2010; and Lindstrom et al., 2001]

Level 2 Cross-level direct effect model:

In this study, district is the level-2 explanatory variable. Meanwhile, location and development status are contextual variables identified to measure the characteristics of districts and explain the variance of income (level-1 outcomes). Past studies reveal that the impact of social capital is significant among individuals or households in rural areas (for details see Appendix A). Typically, past studies analyze the impact of social capital of particular areas common in rural areas. This study will overcome the gap by investigating the impact of social capital on individual income between individuals in urban and rural areas. Development status of districts (developed or less developed) is also firmly believed to have a significant impact in influencing individual income and is included as the second contextual variable of district in this study.

The level 2 equations illustrate the relation between level 2 (district) variable and level-1 (individual) variable: Using level-1 intercepts and slope as outcomes;

$$\text{Level} - 2 : \beta_{oj} = \gamma_{00} + \gamma_{01}\text{Location}_j + \gamma_{02}\text{DevelopmentStatus}_j + u_{oj} \quad (3.18)$$

$$\text{Level} - 2 : \beta_{1j} = \gamma_{10} \quad (3.19)$$

$$\text{Level} - 2 : \beta_{2j} = \gamma_{20} \quad (3.20)$$

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Combined: $LogTotal\ Income_{ij} = \gamma_{00} + \gamma_{10}\ \text{Location}_{ij} + \gamma_{20}\ \text{DevelopmentStatus}_{ij} + u_{0j} + r_{ij}$ (3.21)

The segment ($\gamma_{00} + \gamma_{10}$ Location$_{ij}$ + γ_{20} DevelopmentStatus$_{ij}$) in Eq. (3.21) contains the fixed coefficients or the fixed (or deterministic) part of the model. Meanwhile, the segment ($u_{0j} + r_{ij}$) in Eq. (3.21) contains the random error terms and is often called the random (or stochastic) part of the model (Hox, 2010).

3.5.2 Intraclass Correlation (ICC):

The intraclass correlation (ICC) is the first step that needs to be conducted before a MLM analysis can be performed. The computation of ICC is an important step in the MLM analysis because it will indicate the percentage of variance in the dependent variable that could potentially be explained by a group–level independent variable (Peugh, 2010; Khan, 2011; Aguinis & Culpepper, 2013). The ICC values will range from 0 to 1, with values close to 0 indicating very little Level 2 (group level) variance and little advantage to conducting a MLM analysis (researchers often use 0.05 as a rough cutoff point) [for details, see Heck et al., 2010; Peugh, 2010]. Otherwise, if the value close to 1, the data indicate very little Level 1 variance or there exists substantial variability between the group level and it is therefore permissible to conduct a MLM analysis. The ICC for the null model of this study is calculated using the following equation:

$$\rho = \frac{\sigma_B^2}{\sigma_B^2 + \sigma_W^2} \qquad (3.22)$$

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where,

ρ = intra-class correlation

σ^2 = variance

B & W = between groups & within groups

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CHAPTER 4: FINDINGS

4.1 Introduction

This chapter discusses the findings of this study pertaining to the impact of social capital on individual income in Malaysia. As mentioned earlier in Chapter 3, data for this study were collected through field work (conducted in 2012-2013) in selected states in Peninsular Malaysia. The first part of this chapter will analyze profiles of respondents (see section 4.2). Then, discussion will continue with the analysis of income distribution to identify the latest pattern of income sharing among individuals from the perspective of the overall, urban-rural, ethnicity, and state (section 4.3). Categorical Principle Component Analysis (CATPCA), a method for data reduction, selection of variables and factor/component score derivation of social capital is the focus of the third subsection. The final part of this chapter will highlight the result of the MLM analysis on the impact of social capital (using the composite score as a proxy) on individual income in Peninsular Malaysia. The dependent/outcome of this study (i.e. total individual gross income) was in semi-log due to the nature of the individual income which was found to be not normally distributed (skewed to the right). The data of individual income was semi-log to correct the distributional problem, outliers, lack of linearity or unequal variances (Field, 2013; Meyers et al., 2013).

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4.2 Profile of Respondents

4.2.1 Distribution of individuals (head of household and working household members) by region, state, development status, location, ethnicity and gender

Table 4.1 presents the distribution of household members (in this study, household members consists of heads of household and working members of household). Initially, this study targeted 224 respondents for each sample of urban and rural area (with the total sample of 448 respondents for each state). Kuala Lumpur which was classified by D.O.S. as an urban area only targeted 224 respondents and this contributed to the slightly smaller sample for the capital of Malaysia (219 or 13.45%) compared to other states in this study. The number of household members obtained in this study is highly determined by the number of working members of a household who are staying together in the particular household and their willingness to be interviewed by enumerators during the fieldwork. A total of 2,443 employed households were successfully interviewed in this study with Johor topping the list with 626 (25.62%), followed by Terengganu 541 (22.14%), Selangor 527 (21.57%), Kedah 459 (18.79%) and finally, Kuala Lumpur 290 (11.87%).

In terms of development status, 1,443 respondents (59.07%) of the total household members are from developed states while 1,000 (40.93%) are from less-developed states. More than half (1,407 or 55.53%) of the household members live and work in urban areas compared to 1,036 (44.47%) who live and work in rural areas. Based on ethnicity and gender, respondents from the Malay ethnicity constituency are the largest portion of household members in this study. For both urban and rural areas, 1,755 (71.84%) of the respondents are Malay, 516 or 21.12% are Chinese, 141 or 5.77% are Indian, and 31 or 1.27% represent other ethnicity groups. Meanwhile male respondents account for 1,721 (70.45%) of the total household membership of this study as compared to female respondents which are only 722

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(29.55%) [ibid Table 4.1].

Table 4.1: Distribution of individual (head of household and working household member) by region, state, development status, location, ethnicity and gender

Region/Sate/ Development Status:	Ethnicity	Urban			Rural			Grand total (%)
		Male	Female	Total	Male	Female	Total	
Northern:	Malay	92	20	112	180	32	212	324
	Chinese	74	22	96	7	2	9	105
Kedah (*Less-developed state*)	Indian	9	-	9	7	2	9	18
	Others	-	-	-	6	6	12	12
	Total	175	42	217	200	42	242	459 (18.79)
Central:	Malay	94	47	141	136	57	193	334
Selangor (*Developed state*)	Chinese	65	33	98	17	7	24	122
	Indian	35	18	53	11	7	18	71
	Total	194	98	292	164	71	235	527 (21.57)
Kuala Lumpur (F.T.) (*Developed*)	Malay	108	37	145	-	-	-	145
	Chinese	89	36	125	-	-	-	125
	Indian	12	5	17	-	-	-	17
	Others	2	1	3	-	-	-	3
	Total	211	79	290	-	-	-	290 (11.87)
Southern:	Malay	103	66	169	172	89	261	430
Johor (*Developed state*)	Chinese	91	51	142	4	1	5	147
	Indian	23	10	33	-	-	-	33
	Others	13	3	16	-	-	-	16
	Total	230	130	360	176	90	266	626 (25.62)
Eastern:	Malay	162	68	230	199	93	292	522
Terengganu (*Less-developed state*)	Chinese	7	9	16	1	-	1	17
	Indian	2	-	2	-	-	-	2
	Total	171	77	248	200	93	293	541 (22.14)
	Grand total	981	426	1,407 (55.53)	740	296	1,036 (44.47)	2,443 (100.00)

Source: Field study, 2012/2013

The composition of the respondent of this study (based on strata, gender and ethnicitys) if observed, is parallel to the trend of the national labor market. Overall, and based

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on location and gender, the number of employed persons in Malaysia is dominated by men as compared to women. The male dominance was noticeable although slightly reduced, from 63.61% (2012) to 61.63% (2016). Although the percentage of females increased from 36.39% (2012) to 38.27% (2016), the percentage is still much lower as compared to the dominance of male employed persons who make up 60 percent of the sample (DOSM, 2013 & 2017]. In urban and rural areas, of the total employed persons, the percentage of males decreased slightly from 62.18% to 60.06% and from 66.97% to 66.81% in 2012 and 2016. Despite the increase shown by the females from 37.82% to 39.94% and from 33.03% 33.19%, respectively, in 2012 and 2016 in both urban and rural areas, males still represent the largest share of the total employed persons in Malaysia (ibid DOSM, 2012 & 2017). In line with the composition of the population, according to ethnicity groups, the Bumiputera remained dominant, representing the largest number in terms of the number of employed persons, increasing from 65.28% to 65.99% in 2012 and 2016 respectively. Two factors contribute to the small sample of female respondents as compare to males in this study:

i. The sampling frame and sample design

The sampling frame is made up of Enumeration Blocks (**EB**) with updated information on Living Quarters (**LQ**) from the 2010 Population and Housing Census (D.O.S., 2010). EBs is selected using the probability proportionate to size (PPS) method. This means that EBs with a bigger LQ size have a higher probability of being selected. The sample design used adopted a two-stage stratified random sampling procedure (with the primary stratum made up of 4 states and 1 federal territory in Peninsular Malaysia and the sample was drawn randomly within each level of the secondary stratum (for details see Chapter 3). The focus of this study is on the impact of social capital on individual's (i.e. working household member) income levels, then the sample size determination is solely based on households randomly selected

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according to EBs without taking into account other factors such as gender (see Chapter 3). Whether the selected respondent consists of a high number of males and a low number of females (or vice-versa) is an issue beyond the control of this study.

ii. National statistical trends of household and labour force

In term of labour force participation rate (LFPR), female LFPR rose 4.8 percentage points to 54.3% in 2016 from 49.5% in 2012. Although male LFPR declined 0.3 percentage points to 80.2% in 2016 compared to 80.5% in 2012, as a whole, male LFPR was still higher than female for all working age groups (DOS, 2013a & 2017a: KRI, 2016). The number of respondent by gender [1,721 (70.45%) male and 722 (29.55%) female)] in this study is in line with national statistical trends of labour force which indicates that females represented only 38.6% of total Malaysia labour force compared to 61.4% of male in 2016 (ibid DOSM, 2017a). Women's labour force participation rate in Malaysia is substantially lower compared to men's, across time, age group, and education level (ibid DOS 2017a & KRI, 2016). In fact, the Malaysian women's labour force participation rate is the third lowest in the ASEAN region (53.6%) as compared to other countries like Cambodia (77.4%), Vietnam (73.2%), Thailand (62.0%) and Singapore (58.6%) [ibid, KRI, 2016].

4.2.2 Distribution of individual by education level

Majority of the respondents of this study are those with secondary education (51.09%), followed by those with tertiary education (33.88%) and primary education (15.02%) [Table 4.2]. The number of respondents with secondary education, too, are relatively higher in both urban and rural areas in developed states as compared to less-developed states. The findings of this study are in line with national trends. In Malaysia, the percentage of the employed persons with secondary education still represents the largest share despite falling 0.5 of a

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percentage point to 55.2% (2016) from 55.7% (2012) [DOSM, 2013b & 2017b]. The education background of employed persons with tertiary education is improving, increased by 3.2 percentage points to 27.5% (2016) from 24.3% (2012). On the contrary, employed persons with primary education show a decline of 2.3 percentage points to 14.7% (2012) from 17.0% (2012). Overall, the education background of employed persons in Malaysia is improving and this indirectly illustrates the success of the government's efforts in ensuring better access to education for all Malaysians to improve their economic standards.

4.2.3 Distribution of individual by age group

Based on age, majority of the respondents of this study were in the prime age group of 25−54 years. Within this age group, if observed, it is dominated by the age group of 45-54 years (23.95%), followed by the age group of 25−29 years (13.75%) and the age group of 30-34 years and the age group of 35-39 years with 18.1% share respectively (Table 4.3). On the other hand, the lowest respondents were recorded for the age group of 15-24 (7.53%) and the age group of 65 and above (5.36%). The composition of respondents by age group found in this study is in line with the composition of the employed persons by the prime age group at the national level. Nevertheless at national level, the composition according to age group shows something different. The composition was the highest for the age group 25–34 years, although the share slightly reduced from 34.7% in 2012 to 34.2% in 2016 (ibid DOSM 2013b & 2017b).

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Table 4.2: Distribution of individual (head of household and working household member) by education level

Education level:	Developed						Less-developed					Grand total
	Selangor		Kuala Lumpur	Johor		Total	Kedah		Terengganu		Total	
	Urban	Rural	Urban	Urban	Rural		Urban	Rural	Urban	Rural		
Standard 6/UPSR	16	30	14	72	53	185	5	78	26	73	182	367 (15.02)
PMR	32	31	18	38	38	157	9	31	29	48	117	274 (11.22)
SPM/ STPM	104	111	68	161	117	561	72	90	131	120	413	974 (39.87)
Certificate	9	14	31	14	14	82	10	8	11	12	41	123 (5.03)
Diploma	52	29	40	43	27	191	68	20	33	21	142	333 (13.63)
Bachelor Degree	62	19	102	27	14	224	51	15	18	17	101	325 (13.30)
Master	15	1	17	4	3	40	2	-	-	2	4	44 (1.80)
PhD	2	-	-	1	-	3	-	-	-	-	-	3 (0.12)
Total	292	235	290	360	266	1,443 (59.07)	217	242	248	293	1,000 (40.93)	2,443 (100.00)

Source: Field study, 2012/2013

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Table 4.3: Distribution of individual (head of household and working household member) by age group

Age	Developed						Less-developed					Grand total (%)
	Selangor		Kuala Lumpur	Johor		Total	Kedah		Terengganu		Total	
	Urban	Rural	Urban	Urban	Rural		Urban	Rural	Urban	Rural		
15-24	16	13	9	46	41	125	8	15	17	19	59	184 (7.53)
25-29	46	32	66	50	25	219	27	22	28	40	117	336 (13.75)
30-34	39	36	60	38	30	203	24	28	25	33	110	313 (12.81)
35-39	48	27	55	43	19	192	34	28	33	26	121	313 (12.81)
40-44	44	26	47	47	20	184	38	27	34	26	125	309 (12.65)
45-54	69	61	44	70	67	311	73	62	56	83	274	585 (23.95)
55-64	24	25	8	30	42	129	13	45	41	44	143	272 (11.13)
65 >	6	15	1	36	22	80	-	15	14	22	51	131 (5.36)
Total	292	235	290	360	266	1,443 (59.07)	217	242	248	293	1,000 (40.93)	2,443 (100.00)

Source: Field study, 2012/2013

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4.2.4 Distribution of individual by income level

The findings of this study revealed that mean monthly individual income of this study was RM1,942. This value is actually below the national average value of RM5,000 recorded in 2012 (DOSM, 2013b). Based on income class, majority of respondents of this study were in the income class of RM1,999 and below (63.4%) followed by the income class of RM2,000-2,999 (16.13%) and the income class of RM3,000-3,999 (12.28%) [Table 4.4]. The findings also show that the percentage of respondents in other income classes is very low. If observed carefully, the results of this study follow the trend of distribution of household income at the national. In Malaysia, according to DOSM (2013b), most households are in the income class of RM1,999 and below (22.6%), followed by the income class of RM3,000-3,999 (16.7%), and the income class of RM2,000-2,999 (15.9%).

4.2.5 Distribution of individual by major occupation sector

The finding of this study reveals that the majority of the employed household members involved in the services sector (62.61%) followed by the manufacturing sector (16.60%). The number of household members involved in these two sectors are higher especially in developed states as compared to less developed states (Table 4.5). The composition of household members by major occupation sector found in this study is in line with the national trend of occupation where services and manufacturing are more dominant and offer more opportunities and incentives. More than 60% of employed persons in Malaysia were in the services sector, increased from 57.5% to 62.2% respectively in 2012 and 2016 (DOSM, 2013 & 2017). The manufacturing sector registered an increase of 0.6 percentage points to 17.5%

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Table 4.4: Distribution of individual (head of household and working household member) by income level

Gross monthly income class (RM)	Developed						Less-developed					Grand total
	Selangor		Kuala Lumpur	Johor		Total	Kedah		Terengganu		Total	
	Urban	Rural	Urban	Urban	Rural		Urban	Rural	Urban	Rural		
999 <	25	71	12	72	111	291	7	121	80	140	348	639 (26.15)
1,000-1,999	67	146	44	124	116	497	80	106	102	125	413	910 (37.25)
2,000-2,999	79	13	53	73	34	252	79	10	36	17	142	394 (16.13)
3,000-3,999	51	5	127	59	4	246	21	2	21	10	54	300 (12.28)
4,000-4,999	27	-	36	12	1	76	22	1	6	1	30	106 (4.34)
5,000-5,999	16	-	10	6	-	32	6	1	-	-	7	39 (1.60)
6,000-6,999	9	-	3	3	-	15	2	1	2	-	5	20 (0.82)
7,000-7,999	5	-	3	1	-	9	-	-	-	-	-	9 (0.37)
8,000-9,999	7	-	2	5	-	14	-	-	-	-	-	14 (0.57)
10,000 >	6	-	-	5	-	11	-	-	1	-	1	12 (0.49)
Total	292	235	290	360	266	1,443 (59.07)	217	242	248	293	1,000 (40.93)	2,443 (100.0)

Source: Field study, 2012/2013

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during the same period (ibid DOSM, 2013b & 2017b). This pattern is a clear reflection on the importance of these sectors as an engine of economic growth, emulated and implemented by the Malaysian government through various Malaysian Plans. On the other hand, the agriculture sector only attracts 14.95% of the total employed household members and the composition is relatively higher in less developed states. Agriculture continues to be synonymous with those living in the rural areas and this is explained by the higher number of agrarians among household members in both developed and less developed states.

At the national level, the employment in the agriculture sector continues to decline, dropping 1.2 percentage points to 11.4 per cent (2016) from 12.6% in 2012 (ibid DOSM, 2013b & 2017b). The failure of the agriculture sector to attract more involvement has also resulted in the slowness of efforts taken by the government to boost spending in this sector. Meanwhile, the construction and mining sector continues to attract the lowest involvement of employed household members in both developed and less developed states. This trend is parallel to the national trend. Despite an increase of 0.1 percentage points by the mining sector and a drop of 0.3 percentage points by the construction sector (from 9.1% and 0.6% to 8.8% and 0.7% respectively in 2012 and 2016), the contribution of these two sectors to the total employed persons is very small.

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Table 4.5: Distribution of employed individual by major occupation sector

Major occupation sector:	Developed						Less-developed					Grand total
	Selangor		Kuala Lumpur	Johor		Total	Kedah		Terengganu		Total	
	Urban	Rural	Urban	Urban	Rural		Urban	Rural	Urban	Rural		
Services	248	116	236	230	122	952	153	84	167	156	560	1,512 (62.61)
Manufacturing	28	30	22	99	51	230	48	43	34	46	171	401 (16.60)
Agriculture	2	77	2	20	83	184	9	95	12	61	177	361 (14.95)
Mining	-	1	1	2	3	7	0	3	2	2	7	14 (0.58)
Construction	12	10	29	9	7	67	7	9	26	18	60	127 (5.26)
Total	290	234	290	360	266	1,440 (59.63)	217	234	241	283	975 (40.37)	2,415 (100.00)

Source: Field study, 2012/2013

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4.2.6 Distribution of employed individuals by major occupation category

According to occupation by major category, most employed individual members in this study are involve in the elementary occupation sector (21.61%). This was followed by service and sales (19.46%), manager and professional (15.32%) and clerical support job (13.75%). Elementary occupation was found to be more dominant among households in the rural area in less-developed states (Table 4.6). This category of occupation that required a basic skill among others consisted of agricultural and fishery laborers, cleaners, and helpers, and street and related sales and services workers (MASCO, 2008). Meanwhile, the number of involvement in the service and sales, manager and professional, and clerical support job category are relatively higher in urban and rural areas in developed states. The trend observed in this study slightly differs from the national trend. In 2012, service and sales was ahead of other sectors and recorded 20.6% of total employed persons. This was followed by plant & machine operators, & assembles (12.2%) and elementary occupations (12.4%) [ibid DOSM, 2013b]. In conclusion, based on the trend of this study and also the national trends, one can clearly see that most employed persons in the country are involved in sectors that require semi and low skilled workers.

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Table 4.6: Distribution of employed individual by major occupation category

Major occupation category:	Developed						Less-developed					Grand Total (%)
	Selangor		Kuala Lumpur	Johor		Total	Kedah		Terengganu		Total	
	Urban	Rural	Urban	Urban	Rural		Urban	Rural	Urban	Rural		
Manager & professional	80	19	77	49	33	258	57	12	26	17	112	370 (15.32)
Technician & associate professional	25	7	32	39	16	119	30	7	8	10	55	174 (7.20)
Clerical support workers	40	46	48	57	26	217	31	30	26	28	115	332 (13.75)
Services & sales workers	75	45	48	89	38	295	48	26	53	48	175	470 (19.46)
Skilled agricultural, forestry & fishery workers	3	9	4	3	19	38	3	10	19	21	53	91 (3.77)
Craft & related trades workers	34	21	63	35	24	177	15	27	47	43	132	309 (12.80)
Plant & machine operators, & assembles	5	11	6	35	26	83	8	12	7	6	33	116 (4.80)
Elementary occupations	25	73	11	48	78	235	22	108	53	104	287	522 (21.61)
Armed forces occupation	3	3	1	5	6	18	3	2	2	6	13	31 (1.28)
Total	290	234	290	360	266	1,440 (59.63)	217	234	241	283	975 (40.37)	2,415 (100.00)

Source: Field study, 2012/2013

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4.3 Distribution of Individual Income

The persistence of "*80/20 law*" in any country including Malaysia is interesting and will be further investigated and confirmed by this study. What have been unveiled as to the reality of the trend of income distribution and on the domination of a particular group of population on the overall total national income in Malaysia (see Chapter 1) is a fact that cannot be denied. The prerogative of this section is to give the latest picture on the state of income distribution and this will be done by comparing the mean of individual income ratios and the Gini coefficient (the measurement of income inequality) calculated using the data of total gross income from 2,443 individuals (heads of household and working members of households) captured in this study.

4.3.1 Mean Monthly Individual Income Ratio

The general pattern of income distribution is reflected by the individual income ratio. Table 4.7 shows the income ratio according to regions and its development status, location, ethnicity groups and gender. Based on development status, the mean individual income for the less developed regions is found to be lower than the developed region by 0.7734. This clearly indicates that developed states not only provide a central attraction for investors to invest in but also provides more opportunities and chances for investment regarding jobs and income compared to their counterparts in less developed states. In terms of development status according to region, the Northern and Eastern regions are categorized as less developed while the Central and Southern regions are developed regions (see Chapter 3). This fact is clearly translated through the means of individual income where for the Eastern region, the ratio is relatively lower if compared to the Central, Northern as well as the Southern region by 73.28%, 64.82%, and 84.98%, respectively (ibid Table 4.7).

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Table 4.7: Mean individual income ratio by economic status, region, location, ethnicity and gender

Items:	Mean individual income ratio
Regional Economic Status: Less Developed - Developed	0.7734
Region: East - Central	0.5509
East - South	0.7328
East - North	0.6482
North - Central	0.8498
North - South	1.130
South - Central	0.7518
Location: Rural - Urban	0.6360
Ethnicity: Malay - Chinese	0.6111
Indian - Chinese	0.7646
Malays - Indian	0.7992
Indian - Others	1.2020
Gender: Female - Male	0.8083

Source: Field study, 2012/2013

Comparisons between Northern and other regions also indicate the same pattern except for comparison with Southern region. This study unveiled that the mean individual income for Northern region is slightly higher compared to the Southern ratio of 1.130. This finding was not in line with the national trend and needs to be studies in detail to find the real causes of such a trend.

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Comparison of individual mean income ratios based on location, ethnicity group and gender remains following the national trend. In general, income received by individuals living in rural are lower compared with individuals in urban areas is explained by the ratio of 0.6360. The fact is, rural areas are less attractive to investors and this makes for fewer jobs or income related opportunities for rural areas. What is certain and obvious is agricultural and elementary jobs (see section 4.2.3) remain the main sources of income and this contributes significantly to the lower mean income ratio achieved by rural areas.

Another interesting but yet sensitive finding is the fact that individuals from the Malay ethnicity group are always left behind in terms of income received when compared to the Chinese and Indian ethnicity groups. This fact is shown by the lower mean income of Malays which was lower by a ratio 0.6111 and 0.7992 compared to what was received by the Chinese and Indian ethnicity groups (ibid Table 4.7). Meanwhile income received by male individuals is also relatively higher compared to female individuals. Overall, the pattern of income distribution from this study is in line with the pattern of inequality unveiled by the Ninth and Tenth Malaysia Plans (Malaysia 2006; 2010) except for the contradicting finding between Northern and Southern regions and also between Malay and Indian ethnicity groups.

4.3.2 Income Share by Group of Individuals

The pattern of income distribution among individuals in this study can also been seen through the percentage of income based on groups of individuals. The top 20% of individuals still dominate the share of total income with the total accumulation of 42.40% (Table 4.8). The bottom 40% of individuals remain the less fortunate group, only securing 16.96% while the middle 40% of individuals enjoy a better proportion of 40.63%. These findings not only reflect inequality in income distribution within the studied sample but moreover it is proof of

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the existence of the "80/20 law" in Malaysia.

Table 4.8: Percentage of individual income by group

Group of individual	Percentage of income (%)
Top 20% of individual	42.40
Middle 40% of individual	40.68
Bottom 40% of individual	16.96

Source: Field study, 2012/2013

4.3.3 The Lorenz Curve

This study has also constructed the Lorenz curve to demonstrate the pattern of cumulative income received by individual groups for the overall studied sample. The cumulative proportion of population and total income required for the construction is shown in Table 4.9. The 2,443 respondents of this study are ranked in ascending order according to their total income and later grouped into quintiles (five groups). This makes the number of individuals for each group equal to (2,443/5 = 489) and the proportion of each group of individuals to the total population (total individual in this study) equal to (489/2,443 = 0.2 or 20%). The cumulative proportion of population and of income for each group of individuals was then acquired by summing the percentage of proportion of the latter two. Figure 4.1 clearly indicates the disparity of income among groups of individuals in this study. The curve was concave toward the horizontal axis and not approaching the line of equality (reflecting the total income is not equally distributed). For example, point A shows the portion of 16.96% received by the bottom 40% individuals (Figure 4.1).

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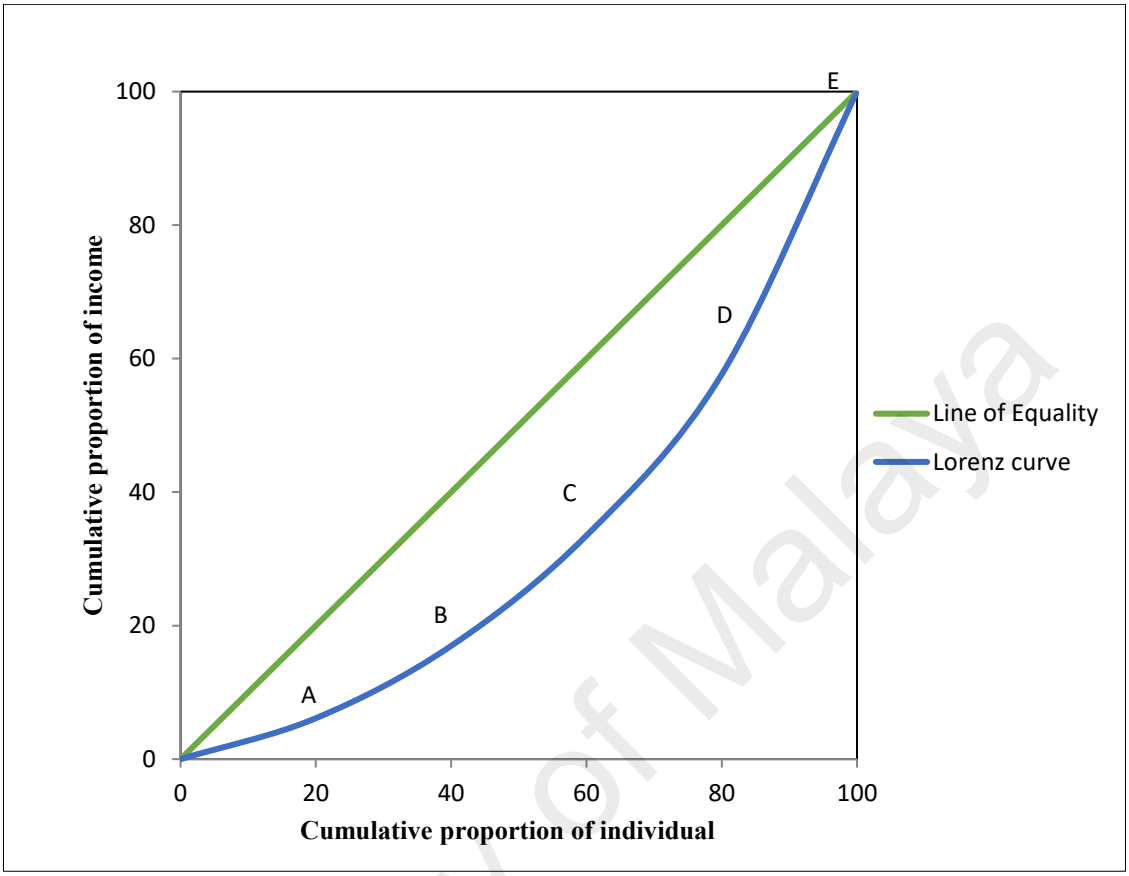
Figure 4.1: The Lorenz Curve



Source: Field study, 2012/2013

4.3.4 The Gini Coefficient

The Gini coefficient is derived using equation 4.1 (see Table 4.9 for details) and indicates the pattern of inequality among individuals in this study. The overall inequality at 34.7 Gini points is slightly lower compared to the national standard of 40.1 Gini points achieved in 2014. The lower Gini point is actually a signal of progress that has been achieved to create a more equal distribution of total income among the overall households although in reality, the total share of income is still dominated by certain groups of populations.

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Against the early finding of this study regarding the mean individual income ratio, the overall Gini coefficient for rural areas is 24.7 Gini points which reflects a much more equal distribution of income among individuals compared to individuals in urban areas (see Table 4.10). Although majorities of rural individuals work in the agricultural and elementary job sector, less competition in job markets has made them better off in terms of what they receive. Meanwhile, although urban areas provide more opportunities and chances for jobs and income, the higher competition particularly among skilled and unskilled workers has created a more unequal job distribution and made certain quarters of urban dwellers worse-off and left behind. The Gini points of 32.0 achieved by urban areas indirectly indicates the accelerating trend of inequality among individuals in urban area.

Table 4.9: Gini coefficient

Total individual (X)	Total Gross Income (Y)	(% X)	(% Y)	(σX) cumulative	(σY) Cumulative	(B) $\sigma X_{i-1} - \sigma X_i$	(A) $\sigma Y_{i-1} + \sigma Y_i$	A*B
A (1-489)	319995	0.2	0.0683	0.2	0.0683	0.2	0.0683	0.0137
B (490-978)	497419	0.2	0.1010	0.4	0.1741	0.2	0.2424	0.0485
C (979-1467)	719033	0.2	0.1532	0.6	0.3273	0.2	0.5014	0.1003
D (1468-1956)	1104925	0.2	0.2354	0.8	0.5627	0.2	0.8900	0.1780
E (1957-2443)	2052813	0.2	0.4373	1.0	1	0.2	1.5627	0.3125
Total: 2443	4,694,185.0	1.0	1					**0.653**

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Source: Field study, 2012/2013

$$G = 1 - \sum_{i-1}^{N} (\sigma Y_{i-1} + \sigma Y_i)(\sigma X_{i-1} - \sigma X_i) \qquad (4.1)$$

$$G = 1 - 0.653 = \mathbf{0.347}$$

Based on Table 4.9,

X = total population. In this study, total population is 2,443 individuals. These individuals are then ranked in ascending order based on their income level and further grouped into quintiles (5 group) and each group is comprised of 489 individuals (2,443/5). e.g. group A consists of individuals 1-489.

Y = total income received by each group of individuals (the summation of income received by every individual in each group).

%X = proportion of each group of individuals to the total individuals (e.g.; for group A, the proportion is (489/2,443 = 0.2 or 20%).

%Y = proportion of income of each group of individuals to the total income (e.g.; for group A, the proportion is 336 834.0/5494453.0 = 0.061 or 6.1%).

σX = cumulative proportion of individuals.

σY = cumulative proportion of income.

$\sigma X_{i-1} - \sigma X_i$ = value of the deduction of cumulative proportion of individuals of the current group (σX_{i-1}) with the previous group (σX_i).

$\sigma Y_{i-1} + \sigma Y_i$ = value of the summation of cumulative proportion of income of the current group (σY_{i-1}) with the previous group (σY_i).

Among the regions, one of the interesting findings is the inequality of the Southern region (another developed region) is the highest (at 34.6 Gini points) compared to the Central, North, and Eastern region (ibid Table 4.10). In both Northern and Eastern regions

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(categorized as less-developed regions), inequality indicates a moderate trend with 30.3 and 30.8 at Gini points respectively. The central region which is comprised of Kuala Lumpur (the capital of Malaysia), and Selangor (the most developed state in Malaysia), also indicates a moderate trend of inequality (32.1 at Gini point). Inequality also tends to be higher among females (at 35.3 Gini points) compared to males (at 34.5 Gini points).

Table 4.10: Gini coefficient by gender, ethnicityity, location, and region

	Total individual	Gini coefficient
Gender:		
Male	1721	0.345
Female	722	0.353
Ethnicity:		
Malay	1755	0.324
Chinese	516	0.238
Indian	141	0.327
Others	31	0.335
Location:		
Urban	1407	0.320
Rural	1036	0.247
Region:		
North	459	0.303
Central	817	0.321
South	626	0.346
East	541	0.308
Overall	2443	0.347

Source: Field survey, 2012/2013

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4.4 Components of Social Capital

4.4.1 Determining the Component of Social Capital by Categorical Principal Component Analysis (CATPCA)

In this study, the selection and classification of variables based on the 5 predetermined principal components and the derivation of the scores value for these five components have been made in accordance with the steps outlined by the CATPCA. The five steps are variable selection, determination of components, evaluation of analysis level, components loading and components score. Details for the five steps are described below.

Realizing the social capital data of this study consist of a large number of variables, variables with bad fit need to be excluded from the analysis. Variance Accounted For (VAF) is the most important indication of fit for both the principal components and the quantified variables and should thus be considered the main criterion in variable selection (Linting et al., 2007 & 2012). For variable selection, this study look at total VAF in the variables (communalities). Variables with total VAF of 0.25 or higher are selected for the final analysis (i.e. at least 25% of the variance in a quantified variable is explained across the principal components). Based on the 25% criterion, this study excluded 9 variables with VAF lower than 0.25 (these variables were shown in italics in Table 3.5 in Chapter 3) from further analysis. This study also need to take into consideration the Comrey (1973) rules of thumb for VAF in a variable per component: 10% is poor, 20% is fair, 30% is good, 40% is very good, and 50% is excellent (Linting et al., 2012, pg. 19). For the purposes of this study, the Comrey criterion of 25%, and based on both criterion, we excluded 9 variables with VAF lower than 0.25 (shown in italic in Table 3.5 in Chapter 3) are used.

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This study carried on with the analysis with 33 variables with VAF of 0.25 and higher. VAF by the principal components across variables is represented by the eigenvalues and proportion of VAF by a component is its eigenvalue divided by the number of analysis variables (33 variables in this study). The total VAF across the five components is 65.6% with VAF of Component 1 = 20.4%, Component 2 = 15.9%, Component 3 = 12.1%, Component 4 = 10.1% and Component 5 = 7.1% (Table 4.11). The five selected components in this study explain 66% of the variance in the 33 ordinal and nominally quantified variables which indicate reasonable fit.

Table 4.11: Percentage of variance accounted for (PVAF)

Dimension	Cronbach's Alpha	Variance Accounted For
		Total (Eigenvalue)
1	0.878	6.732
2	0.835	5.255
3	0.772	3.983
4	0.721	3.326
5	0.591	2.343
Total	0.984[a]	21.639

Note: [a]Total Cronbach's Alpha is based on the total Eigenvalue

Source: Field study 2013/2013

The next step is to determine the number of dimensions/components of social capital and this was done by looking at scree plots of the eigenvalues. For this study, we used the "eigenvalue greater than one" criterion at a scree plot in five-dimensional solutions. The scree plot shows how the VAF of components decreases and in Figure 4.2, the location where the decrease in size of the eigenvalues starts to level-off and is shown by an "elbow". For this study the elbow is located at the sixth component. Taking into account the eigenvalue greater than one criterion, the scree plot indicates that a five-dimensional solution is the most

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appropriate component of social capital in our study.

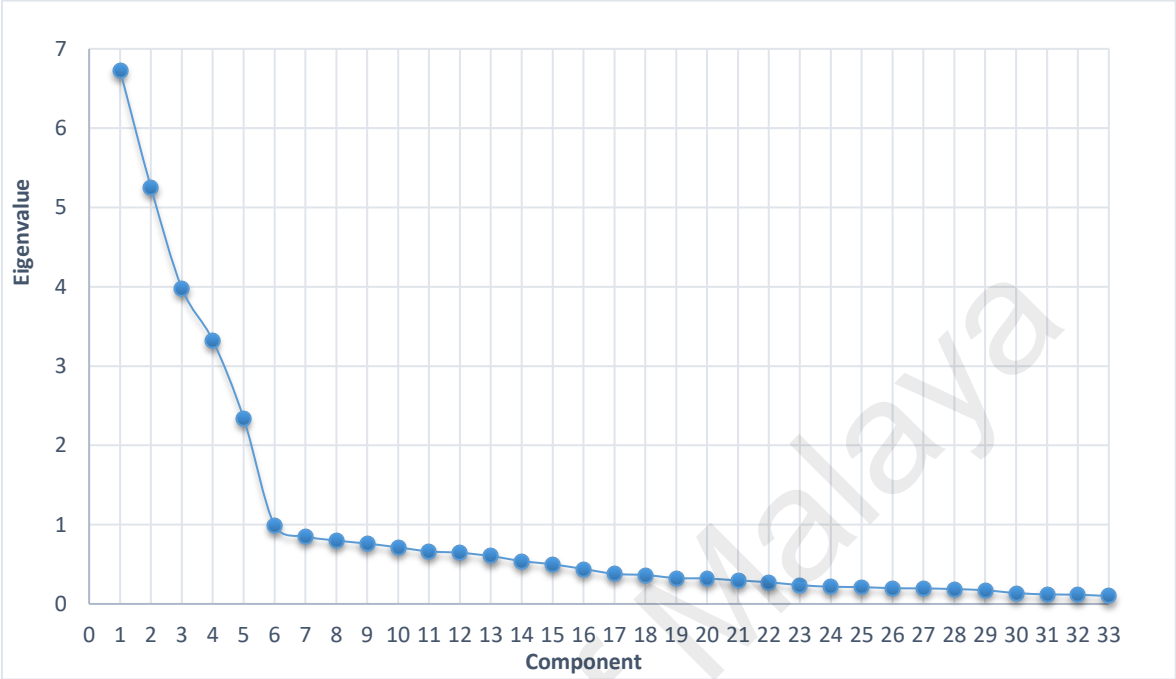

Figure 4.2: Scree Plot for five-dimensional CATPCA solution

Source: Field study 2013/2013

The choice of variables can be evaluated by examining the transformation plots and these plots give insight into the nature of relationships between variables. For variables in nominal measurement levels (i.e. binary with two categories 1=No, 2=Yes), the transformation plot with the straight line indicates that these variables are practically linearly related to the other variables in the data set (meaning that the categories of these variables are ordered and almost equally spaced (see Appendix A). These binary variables could just as well be analyzed numerically (Linting et al., 2012). Meanwhile variables in ordinal measurement levels (Likert scale with five categories, 1=totally disagree through 5=totally agree) shows two contrast patterns.

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Ordinal transformation for variables belongs to component trust indicates a clear difference between the scores of categories 1 (totally disbelieve) and 2 (disbelieve) on one side with categories 3 through 5 on the other side (ibid Appendix B). The difference between categories 1 and 2 is the largest (given that the category points are restricted to be on a straight line). Categories 3, 4, and 5 obtained almost the same quantification, also referred as "*ties*". One possible reason for this pattern is people being scored in the tied categories do not structurally differ from each other, after considering their scores on other variables and therefore, the categories cannot be distinguish from each other (Linting et al., 2007 & 2012). The transformation of other ordinal variables was more nonlinear. Variables on influence of culture and spirit on willingness to share information showed a transformation plot approximates a convex function, indicating that there were less differences between scores of categories at lowest levels of disagree and more contrast between categories of the highest level of totally agree.

The grouping/classification of variables based on components of social capital in this study is presented in Table 4.12. Components loading indicates Pearson correlations between the quantified variables and the principal components, and the values range from -1 and 1 (Linting et al., 2007 & 2012). This sign indicates the relation of variables to each particular component whether closely and positively or closely and negatively related. Variables in Table 4.12 form roughly five groups/components of social capital. The first group of variables (influence of spirituality/culture) has high positive loading on the first component. The second group of variables (benefits from interactions with friends) has high positive loading on the second component. The third group of variables (people believed to be helpful during financial difficulties) has high loading on component three. Meanwhile, the fourth group of variables (benefit gained from financial aid receive) and fifth group (benefit from

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involvement in association) has high positive loading on component four and five respectively. Components of social capital in this study based on component loading of the 33 variables are shown next in Figure 4.3.

Component scores derived from CATPCA analysis can be interpreted in the same way as factors scores in standard PCA (Linting, 2012). This factors scores which represents the information in the data is actually the aggregated summation of the 33 variables fitted for the purposed of data reduction and grouping of this study (component scores of each individual (2,443 respondents) will be automatically generated by CATPCA and due to limited spaces, it will not been shown in this thesis). This component scores suitable to be used as a proxy of measurement of social capital in the further analysis (Linting, 2014 via email).

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Table 4.12: Rotated component loadings from a 5-dimensional CATPCA on 33 social capital variables

Variable:	Principal component			
	1	2	3	4
BenefitAssociation1_Productivity	.023	.517	-.050	-.046
BenefitAssociation2_Credit	.064	.521	-.076	-.065
BenefitAssociation3_Mentalstrength	.021	.426	-.040	.037
BenefitAssociation4_Motivation	.062	.475	-.013	.031
Interaction_CloseFriend3_infocontract	-.070	**.551**	-.191	-.466
Interaction_CloseFriend4_infocredit	.042	**.591**	-.014	-.414
Interaction_CloseFriend5_infotech	-.002	**.561**	-.093	-.441
Interaction_RegularFriend2_infoprice	-.081	**.513**	-.293	-.370
Interaction_RegularFriend3_infocontract	-.075	**.556**	-.237	-.475
Interaction_RegularFriend4_infocredit	-.016	**.637**	-.114	-.416
Interaction_RegularFriend5_infoctech	-.018	**.602**	-.142	-.470
TrustOtherPerson_financial2_closefriend	.360	.254	**.679**	.012
TrustOtherPerson_financial3_regularfriend	.388	.140	**.796**	-.005
TrustOtherPerson_financial4_association	.370	.205	**.702**	-.023
TrustOtherPerson_emergency2_closefriend	.339	.309	**.633**	-.011
TrustOtherPerson_emergency3_regularfriend	.378	.202	**.771**	-.022
TrustOtherPerson_emergency4_association	.355	.243	**.705**	-.008
Norm_FinancialAidReceive1_family	-.167	-.517	.150	**-.570**
Norm_FinancialAidReceive2_closefriend	-.116	-.493	.140	**-.498**
Benefit_Norm_FinancialAidReceive1_reducefinancialprob	.161	.479	-.227	**.605**
Benefit_Norm_FinancialAidReceive2_releaseemotion	.169	.508	-.188	**.598**
Benefit_Norm_FinancialAidReceive3_tiesclosefriend	.159	.548	-.126	**.605**
Benefit_Norm_FinancialAidReceive4_tiesregularfriend	.118	.479	-.156	**.495**
Influence_religion_informationreceive1_closefriend	**.686**	-.124	-.320	-.029
Influence_race_informationreceive2_closefriend	**.805**	-.137	-.225	-.040
Influence_culture_informationreceive3_closefriend	**.822**	-.177	-.124	-.086
Influence_language_informationreceive4_closefriend	**.791**	-.140	-.234	-.067
Influence_economicstatus_informationreceive5_closefriend	**.723**	-.061	.006	-.101
Influence_religion_informationreceive1_regularfriend	**.678**	-.091	-.327	-.049
Influence_race_informationreceive2_regularfriend	**.789**	-.103	-.264	-.059
Influence_culture_informationreceive3_regularfriend	**.816**	-.168	-.157	-.107
Influence_language_informationreceive4_regularfriend	**.758**	-.101	-.281	-.101
Influence_economictatus_informationreceive5_regularfriend	**.709**	-.072	-.028	-.124

Note. Loadings higher than 0.40 are shown in bold

Source: Field study 2013/2013

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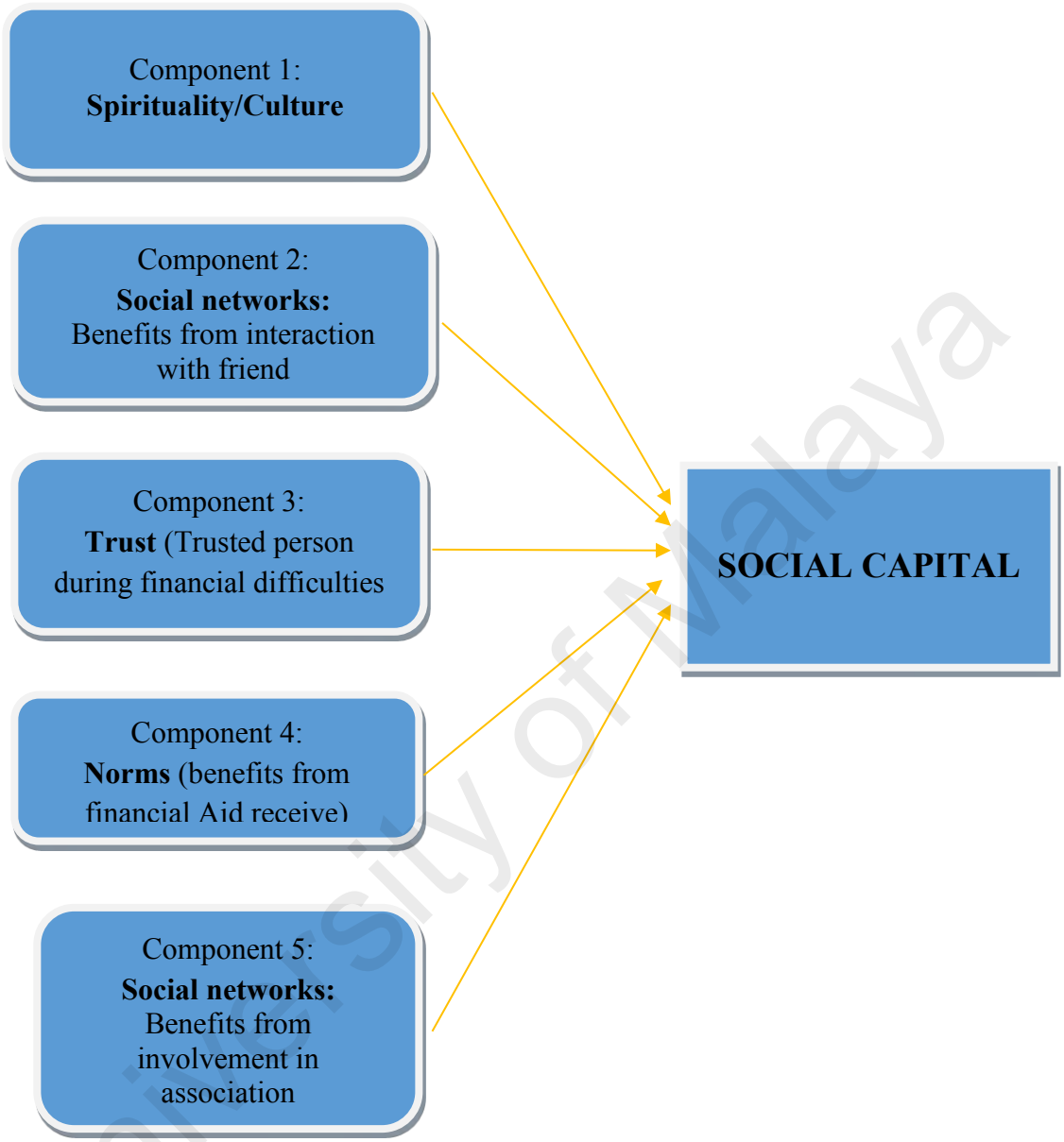

Figure 4.3: Principal Components of Social Capital in Malaysia Perspective

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4.4.2 Descriptive Analysis

Potential items to construct the dimensions of social capital are listed and described in Table 3.5 (Section 3.4.1). In this section simple descriptive analysis has been conducted to examine the characteristics for the components of social capital for this study which are based on region, ethnicity, location, and gender. For components 1 and 3, the variables are measured as a five points in each principal components are in likert-scale types, hence a one way analysis of variance (ANOVA) was conducted. Meanwhile for components 2, 4, and 5, where the data are in binary (yes, no) types, a chi-square test was an option. Analyses in this section are conducted using the sum of scores of each component.

Component 1: Influence of Spirituality/Culture

A one way ANOVA was conducted to compare effect of region and ethnicitys on component 1(influence of culture/spirituality). An analysis of variance result showed that there was a statistically significant difference between regions as determined by one-way ANOVA [F (4, 2438) = 125.576, p = 0.000] on component 1 (Table 4.13). A Tukey post hoc test results revealed that except for the northern region (Kedah) and central region (Selangor), there was a significant difference between; (i) northern region (Kedah) with central region (Kuala Lumpur), southern region (Johor) and eastern region (Terengganu) (ii) central region (Selangor) with central region (Kuala Lumpur), southern region (Johor) and eastern region (Terengganu) (iii) central region (Kuala Lumpur) with southern region (Johor) and eastern region (Terengganu) on influence of spirituality/culture (p = 0.000) [ibid Table 4.13]. In details, between these regions, individual willingness to share information on employment/income opportunities was influence by culture/spirituality (i.e. similarities in religious, ethnicity, cultural, linguistic and economic status). On the contrary between the

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Table 4.13: Descriptive and ANOVA analysis for Component 1 and 3

		Component 1: Spirituality/culture influence				**Component 3: Trusted person during financial difficulties/emergency**			
Descriptive Statistics		Mean value				Mean value			
		3.3704				2.5791			
		Anova Result				Anova Result			
		F-value		p-value		F-value		p-value	
Region		125.576		0.000		338.619		0.000	
Ethnicity		0.653		0.581		10.973		0.000	
Region:		Post Hoc Result				Post Hoc Result			
(I) State	(J) State	Mean difference (I-J)		p-value		Mean difference (I-J)		p-value	
Kedah	Selangor	0.07185		0.657		-0.04570		0.931	
	Kuala Lumpur	-0.20537		0.009*		-0.13964		0.232	
	Johor	0.87198		0.000*		1.52383		0.000*	
	Terengganu	0.29123		0.000*		0.80458		0.000*	
Selangor	Kuala Lumpur	-0.27722		0.000*		-0.09394		0.608	
	Johor	0.80013		0.000*		1.56954		0.000*	
	Terengganu	0.21938		0.000*		0.85029		0.000*	
Kuala Lumpur	Johor	1.07735		0.000*		1.66348		0.000*	
	Terengganu	0.49660		0.000*		0.94422		0.000*	
Johor	Terengganu	-0.58075		0.000*		-0.71925		0.000*	
Ethnicity:		Post Hoc Result				Post Hoc Result			
(I) Ethnicity	(J) ethnicity	Mean difference (I-J)		p-value		Mean difference (I-J)		p-value	
Malay	Chinese	-0.00352		1.000		-0.16837		0.014	
	Indian	-0.03607		0.969		-0.43030		0.000	
	Others	0.21547		0.560		0.48178		0.079	
Chinese	Indian	-0.03255		0.982		-0.26193		0.064	
	Others	0.21900		0.564		0.65014		0.009	
Indian	Others	0.25154		0.505		0.91207		0.000	
		T-test Result				T-test Result			
		Mean				Mean			
		Rural	Urban	t-test	p-value	Rural	Urban	t-test	
Location		3.3190	3.4082	-2.394	0.017*	2.5743	2.5826	-0.180	
		Mean				Mean			
Gender		Male	Female	t-test	p-value	Male	Female	t-test	
		3.3953	3.3111	2.085	0.037*	2.6219	2.4769	2.927	

Note: *The mean differences is significant at the 0.05 level
Source: Field survey, 2012/2013

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northern (Kedah) and central (Selangor) regions, post hoc results failed to shows any significant differences between these regions with the influence of spirituality/culture ($p = 0.657$). Meanwhile, an ANOVA result for the effect of component 1 on ethnicitys showed that there was a statistically non-significant difference as determined by one-way ANOVA [$F(3, 2439) = 0.653$, $p = 0.581$]. This clearly reflects that regardless of ethnicityity, individual willingness to share informative information on income/job was not influenced by similarities in religious, ethnicity, cultural, linguistic, or economic status. An independent-samples t-test was conducted to compare the influence of component 1 on location and gender. From Table 4.13, there was a statistically significant difference in the scores for rural ($M=3.3190$, $SD=0.93474$) and urban ($M=3.4082$, $SD=0.89239$); $t(2441) = -2.394$, $p = 0.017$. These results suggest that among rural and urban areas, individual willingness to share informative information on income/job was influenced by similarities in religious, ethnicity, cultural, linguistic, and economic status. The t test analysis for gender influence on component 1 also shows a significant influence on gender of component 1. The scores for male ($M=3.3953$, $SD=0.91169$) and female ($M=3.3111$, $SD=0.90882$); $t(2441) = 2.085$, $p = 0.037$ suggest that individual willingness to share informative information on income/job based on similarities in religious, ethnicity, cultural, linguistic, and economic status are higher among males compared to females (ibid Table 4.13).

Component 3: Trusted Person during Financial/Emergency

ANOVA result also revealed a statistically significant difference between regions [$F(4, 2438) = 338.619$, $p = 0.000$] and component 3 (trust) [ibid Table 4.13]. A Tukey post hoc test results shows that except for northern region (Kedah) and central region (Selangor and F.T Kuala Lumpur), there were a significant differences between; (i) northern region (Kedah) with southern region (Johor) and eastern region (Terengganu) (ii) central region (Selangor)

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with southern region (Johor) and eastern region (Terengganu) (iii) central region (Kuala Lumpur) with southern region (Johor) and eastern region (Terengganu) and (iv) southern region (Johor) with eastern region (Terengganu) on trust (p = 0.000) [ibid Table 4.13]. This results reflects that, between these regions, in the event of financial difficulties or emergency, only trusted persons are believed to lend their help. On the other hand, between the northern (Kedah) and central regions (Selangor and F.T. Kuala Lumpur), the post hoc results of this study failed to show any significant differences between these regions with trust (p = 0.657 and p=0.232 respectively). The effect of component 3 on ethnicitys also indicates a statistically significant difference as determined by one-way ANOVA [F (3, 2439) = 10.973, p = 0.000]. Tukey post hoc test results show that there is a significant influence of trust among ethnicitys and the influence tends to be higher particularly among Malays and Indians (p = 0.000). This reflects that when someone (regardless of ethnicityity) is having a financial difficulty or emergency, only trusted persons are believed to lend their hand.

From Table 4.13, the result of t-test to compares the influence of location on component 3 shows that there was a statistically non-significant difference in the scores for rural (M=2.5743, SD=1.10954) and urban (M=2.5826, SD=1.12655); t (2441) = -0.180, p = 0.857. These results suggest that there is no statistically significant association between location and trust. In other words, in facing with financial difficulties or emergency, the belief that only certain individuals who will lend their hand to help failed to be explained by the results of this study. The t test analysis for gender influence on component 3 shows a statistically significant result. The scores for male (M=2.6219, SD=1.10531) and female (M=2.4769, SD=1.14579); t (2441) = 2.927, p = 0.003 suggest that the believes that only certain person that can be trusted to lend a hand when facing financial difficulties or emergencies are higher among males compared to females (ibid Table 4.13).

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Component 2: Benefit from interaction with close and regular friends

The cross-tabulation analysis comparing component 2 (benefit from interaction with close and regular friends) with region, ethnicity, location, and gender is shown in Table 4.14a & Table 4.14c. The cross-tab results show that most of the respondents of this study answered no rather than yes for the seven questions on benefits gained from interactions with a close or regular friend. The chi-squared analysis investigates the relationship between component 2 and regions, ethnicityity, gender, and location is shown in Table 4.14b. The chi-square test observed a statistically significant relationship between regions and benefits from interactions with close and regular friends. The benefits that can be gained from interactions with close friends are found to be different between regions. This is evidenced by the chi-square value of $\chi^2(4) = 177.406$, $p = 0.000$; $\chi^2(4) = 217.488$, $p = 0.000$ and $\chi^2(4) = 114.749$, $p = 0.000$ respectively for benefits in terms of obtaining informative information on business contracts, credit facilities and new technologies to enhance productivity. Benefits of interaction with regular friends are also found to be different between regions. The chi-square value of $\chi^2(4) = 312.260$, $p = 0.000$; $\chi^2(4) = 347.931$, $p = 0.000$; $\chi^2(4) = 291.115$, $p = 0.000$ and $\chi^2(4) = 209.500$, $p = 0.000$ respectively for benefits in terms of obtaining informative information on price of agricultural input, business contracts, credit facilities and new technologies to enhance productivity (ibid Table 4.14b). The results show that in every region and state, there is a differences in terms of benefits that can be derived from interaction between close and regular friends.

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Table 4.14a: Frequency distribution results for component 2: Benefits from interaction with close and regular friends by region

Var.	Dimension 1b:		States					Total
			Kedah	Selangor	Kuala Lumpur	Johor	Terengganu	
7	Interaction with close friends enables you to get informative information regarding business contract opportunities.	Yes	205	125	93	313	100	836
		No	254	402	197	313	441	1607
		Total	459	527	290	626	541	2443
8	Interaction with close friends enables you to get informative information regarding credit facilities.	Yes	304	190	118	263	113	988
		No	155	337	172	363	428	1455
		Total	459	527	290	626	541	2443
9	Interaction with close friends enables you to get informative information regarding new technology to produce products/enhance productivity.	Yes	184	110	67	256	105	722
		No	275	417	223	370	436	1721
		Total	459	527	290	626	541	2443
11	Interaction with regular friends enables you to get informative information regarding price/supply of agricultural inputs.	Yes	167	89	94	367	92	809
		No	292	438	196	259	449	1634
		Total	459	527	290	626	541	2443
12	Interaction with regular friends enables you to get informative information regarding business contract opportunities.	Yes	201	106	100	372	70	849
		No	258	421	190	254	471	1594
		Total	459	527	290	626	541	2443
13	Interaction with regular friends enables you to get informative information regarding credit facilities.	Yes	274	146	131	344	90	985
		No	185	381	159	282	451	1458
		Total	459	527	290	626	541	2443
14	Interaction with regular friends enables you to get informative information regarding new technology to produce products/enhance productivity.	Yes	186	96	86	303	84	755
		No	273	431	204	323	457	1688
		Total	459	527	290	626	541	2443

Source: Field survey, 2012/2013

Table 4.14b: Chi-Square (χ^2) test result for component 2: Benefits from interaction with close and regular friends by region

Var.	Dimension 1b:	χ^2	p-value
7	Interaction with close friends enables you to get informative information regarding business contract opportunities.	177.406	0.000
8	Interaction with close friends enables you to get informative information regarding credit facilities.	217.488	0.000
9	Interaction with close friends enables you to get informative information regarding new technology to produce products/enhance productivity.	114.749	0.000
11	Interaction with regular friends enables you to get informative information regarding price/supply of agricultural inputs.	312.260	0.000
12	Interaction with regular friends enables you to get informative information regarding business contract opportunities.	347.931	0.000
13	Interaction with regular friends enables you to get informative information regarding credit facilities.	291.115	0.000
14	Interaction with regular friends enables you to get informative information regarding new technology to produce products/enhance productivity.	209.500	0.000

Source: Field survey, 2012/2013

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The chi-square test of this study also shows a mixed result in the relationship between ethnicity and location with component 2 (Table 4.14d). For interaction with close friends, the results of this study show a statistically significant relationship between ethnicity for the benefit of information on business contracts ($\chi^2(3) = 25.059$, $p = 0.000$) and credit facility ($\chi^2(3) = 24.894$, $p = 0.000$). Meanwhile for the benefit of the use of new technology, this study failed to show any statistically significant relationship ($\chi^2(3) = 5.632$, $p = 0.131$). Interactions between regular friends are also found to have a significant relationship with ethnicity groups. The chi-square test results show a difference in benefits of business contracts ($\chi^2(3) = 36.135$, $p = 0.000$), credit facilities ($\chi^2(3) = 29.926$, $p = 0.000$), and the use of new technologies ($\chi^2(3) = 9.995$, $p = 0.019$) that can be gained from interaction with regular friends from difference ethnicity backgrounds (ibid Table 4.14d). However, results of this study failed to show any statistically significant relationship for benefit of the price of agricultural input ($\chi^2(3) = 5.712$, $p = 0.127$) from interactions with regular friends among ethnicity groups.

A Mixed results are also shown for the relationship between locations with component 2 (ibid Table 4.14d). In urban and rural areas, interaction with close friends are found to have a statistically significant relationship for the benefit of information on business contracts ($\chi^2(1) = 4.850$, $p = 0.028$). Meanwhile, the result of this study failed to show any statistically significant relationship from interaction with close friends for both urban and rural areas in terms of benefits of information on credit facilities ($\chi^2(1) = 0.339$, $p = 0.560$) and the use of new technology ($\chi^2(1) = 0.081$, $p = 0.776$). For interaction with regular friends, the chi-square test results also found a significant relationship for benefit on information of business contracts ($\chi^2(1) = 0.013$, $p = 0.013$). Nevertheless, the results of this study failed to show any significant relationship from interactions with regular friends for benefit on

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information of credit facilities ($\chi^2(1) = 1.309$, $p = 0.253$) and the use of new technology ($\chi^2(1) = 0.980$, $p = 0.322$) at urban and rural areas (ibid Table 4.14d). Interaction with close and regular friends also indicates a mixed result in terms of its relation with gender. The chi-square results show a statistically significant relationship exists for interactions with close friends especially among males for benefits of obtaining informative information on business contracts ($\chi^2(1) = 6.882$, $p = 0.009$), credit facilities ($\chi^2(1) = 9.432$, $p = 0.002$) and new technologies to enhance productivity ($\chi^2(1) = 4.316$, $p = 0.038$) (ibid Table 4.14d). Interaction with regular friends, especially among males, was also found to have a significant relationship for benefits of information on price of agricultural input ($\chi^2(1) = 7.512$, $p = 0.006$), business contracts ($\chi^2(1) = 6.280$, $p = 0.012$), and credit facilities ($\chi^2(1) = 5.568$, $p = 0.018$). However, the results of the chi-square test of this study failed to show any significant relationship between interaction with regular friends in regards to gender for the benefit of information on new technology ($\chi^2(1) = 2.702$, $p = 0.100$). As a whole, it can be concluded that there is a significant relationship that exists between components 2 and with regions and states in this study. The benefits that can be gained from interactions with friends (close or regular) tend to be different in each region and state.

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Table 4.14c: Frequency distribution results for component 2 (Benefits from interaction with close and regular friends) by ethnicity, location and gender

Var.	Dimension 1b:		Ethnicity				Total	Location		Total	Gender		Total
			Malay	Chinese	Indian	Others		Rural	Urban		Male	Female	
7	Interaction with close friends enables you to get informative information regarding business contract opportunities.	Yes	553	216	50	17	836	329	507	836	617	219	836
		No	1202	300	91	14	1607	707	900	1607	1104	503	1607
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
8	Interaction with close friends enables you to get informative information regarding credit facilities.	Yes	657	248	65	18	988	412	576	988	730	258	988
		No	1098	268	76	13	1455	624	831	1455	991	464	1455
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
9	Interaction with close friends enables you to get informative information regarding new technology to produce products/enhance productivity.	Yes	500	171	39	12	722	303	419	722	530	192	722
		No	1255	345	102	19	1721	733	988	1721	1191	530	1721
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
11	Interaction with regular friends enables you to get informative information regarding price/supply of agricultural inputs.	Yes	576	175	42	16	809	385	424	809	599	210	809
		No	1179	341	99	15	1634	651	983	1634	1122	512	1634
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
12	Interaction with regular friends enables you to get informative information regarding business contract opportunities.	Yes	554	226	50	19	849	331	518	849	625	224	849
		No	1201	290	91	12	1594	705	889	1594	1096	498	1594
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
13	Interaction with regular friends enables you to get informative information regarding credit facilities.	Yes	651	252	63	19	985	404	581	985	720	265	985
		No	1104	264	78	12	1458	632	826	1458	1001	457	1458
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
14	Interaction with regular friends enables you to get informative information regarding new technology to produce products/enhance productivity.	Yes	514	187	42	12	755	309	446	755	549	206	755
		No	1241	329	99	19	1688	727	961	1688	1172	516	1688
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443

Source: Field survey, 2012/2013

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Table 4.14d: Chi-square (χ^2) test result for component 2 (Benefits from interaction with close and regular friends) by ethnicity, location and gender

Var.	Dimension 1b:	Ethnicity		Location		Gender	
		χ^2	p-value	χ^2	p-value	χ^2	p-value
7	Interaction with close friends enables you to get informative information regarding business contract opportunities.	25.059	0.000	4.850	0.028	6.882	0.009
8	Interaction with close friends enables you to get informative information regarding credit facilities.	24.894	0.000	0.339	0.560	9.432	0.002
9	Interaction with close friends enables you to get informative information regarding new technology to produce products/enhance productivity.	5.632	0.131	0.081	0.776	4.316	0.038
11	Interaction with regular friends enables you to get informative information regarding price/supply of agricultural inputs.	5.712	0.127	13.302	0.000	7.512	0.006
12	Interaction with regular friends enables you to get informative information regarding business contract opportunities.	36.135	0.00	6.231	0.013	6.280	0.012
13	Interaction with regular friends enables you to get informative information regarding credit facilities.	29.926	0.000	1.309	0.253	5.568	0.018
14	Interaction with regular friends enables you to get informative information regarding new technology to produce products/enhance productivity.	9.995	0.019	0.980	0.322	2.702	0.100

Source: Field survey, 2012/2013

Component 4: Norms

Cross-tabulation analysis results show that majorities of respondents in this study received financial assistance from close family members and friends (Table 4.15a & 4.15c). However, the majority of respondents stated that financial aid received did not help in terms of reducing financial problems and emotional stresses as well as strengthening relationships with close or regular friends. Chi-square test results in Table 4.15b show that a significant relationship exists between regions/states and component 4. Nevertheless, the relation between component 4 with ethnicity, location, and gender was found to produce a mixed result. The results indicate a statistically significant relationship of close family members ($\chi^2(4) = 46.702$, $p = 0.000$) and close friends ($\chi^2(4) = 28.217$, $p = 0.000$) as sources of financial aid with regions/states. During financial difficulties and emergencies, the sources of financial aid

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tend to be different among regions or states. Benefits from financial aid received are also found to be different between regions. The chi-square test shows a statistically significant relationship for the benefit of reducing financial problems ($\chi^2(4) = 46.$, $p = 0.000$) and emotional stresses ($\chi^2(4) = 27.441$, $p = 0.000$). Besides that, the results of this study also show a statistically significant relationship for the benefits of strengthening the relationships with close friends ($\chi^2(4) = 38.136$, $p = 0.000$) or regular friends ($\chi^2(4) = 57.867$, $p = 0.000$) between regions or states (ibid Table 4.15b).

Table 4.15a: Frequency distribution results for component 4 (Norms -benefits from financial aid received) by region.

Var.	Dimension 3:		States					Total
			Kedah	Selangor	Kuala Lumpur	Johor	Terengganu	
25	Financial aid received is from close family members/relatives.	Yes	285	415	217	437	422	1776
		No	174	112	73	189	119	667
		Total	459	527	290	626	541	2443
26	Financial aid received is from close friend.	Yes	100	63	58	108	65	394
		No	359	464	232	518	476	2049
		Total	459	527	290	626	541	2443
29	Financial/non-financial aid received help you to alleviate the financial problems faced.	Yes	199	134	79	215	211	838
		No	260	393	211	411	330	1605
		Total	459	527	290	626	541	2443
30	Financial/non-financial aid received help you to reduce emotional stress/other problem.	Yes	198	150	102	214	165	829
		No	261	377	188	412	376	1614
		Total	459	527	290	626	541	2443
31	Financial/non-financial aid received help you to strengthen ties with close friend.	Yes	173	127	90	187	117	694
		No	286	400	200	439	424	1749
		Total	459	527	290	926	541	2443
32	Financial/non-financial aid received help you to strengthen ties with regular friend.	Yes	108	50	78	120	76	432
		No	351	477	212	506	465	2011
		Total	459	527	290	626	541	2443

Source: Field survey, 2012/2013

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Table 4.15b: Chi-square (χ^2) test result for component 4 (Norms-benefits from financial aid received) by region

Var.	Dimension 3:	χ^2	p-value
25	Financial aid received is from close family members/relatives.	46.702	0.000
26	Financial aid received is from close friend.	28.217	0.000
29	Financial/non-financial aid received help you to alleviate the financial problems faced	46.831	0.000
30	Financial/non-financial aid received help you to reduce emotional stress/other problem.	27.441	0.000
31	Financial/non-financial aid received help you to strengthen ties with close friend.	38.136	0.000
32	Financial/non-financial aid received help you to strengthen ties with regular friend.	57.867	0.000

Source: Field survey, 2012/2013

The relationship between ethnicity, location and gender with component 4 in this study also shows mixed results (Table 4.15d). In terms of sources of financial aid during financial difficulties, a statistically significant relationship exists for close family members and close friends with ethnicity and gender. This was shown by the chi-square test results of ($\chi^2(3) = 12.505$, $p = 0.006$), ($\chi^2(3) = 12.505$, $p = 0.006$), and ($\chi^2(1) = 12.926$, $p = 0.000$); ($\chi^2(1) = 15.298$, $p = 0.000$), respectively, for close family members and close friends (ibid Table 4.15d). This shows that among ethnicity and gender, sources of financial aid (either from close family members or close friends) were different. Nevertheless, the findings of this study failed to explain the relationship between sources of financial aid and location. In this study too, the chi-square test results also show a mixed results for the relationship between benefits from financial aid received with ethnicity, location, and gender. Only benefits of reducing financial problems was found to have a relationship with ethnicity ($\chi^2(3) = 37.918$, $p = 0.000$). The result of chi-square test of this study failed to show any statistically significant relationship for norms (benefit of reducing emotional stresses ($\chi^2(3) = 4.264$, $p = 0.234$), benefit of strengthening the relationships with close friends ($\chi^2(3) = 2.580$, $p = 0.461$), and regular friends ($\chi^2(3) = 1.782$, $p = 0.619$) from interaction with close friends) with ethnicity

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Table 4.15c: Frequency distribution results for component 4 (Norms-benefits from financial aid received) by ethnicity, location and gender

Var.	Dimension 3:		Ethnicity				Total	Location		Total	Gender		Total
			Malay	Chinese	Indian	Others		Rural	Urban		Male	Female	
25	Financial aid received is from close family members/relatives.	Yes	1245	406	104	21	1776	742	1034	1776	1215	561	1776
		No	510	110	37	10	667	294	373	667	506	161	667
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
26	Financial aid received is from close friend.	Yes	1457	455	113	24	2049	867	1182	2049	1411	638	2049
		No	298	61	28	7	394	169	225	394	310	84	394
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
29	Financial/non-financial aid received help you to alleviate the financial problems faced.	Yes	663	121	42	12	838	378	460	838	641	197	838
		No	1092	395	99	19	1605	658	947	1605	1080	525	1605
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
30	Financial/non-financial aid received help you to reduce emotional stress/other problem.	Yes	610	156	52	11	829	328	501	829	614	215	829
		No	1145	360	89	20	1614	708	906	1614	1107	507	1614
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
31	Financial/non-financial aid received help you to strengthen ties with close friend.	Yes	514	133	38	9	694	283	411	694	507	187	694
		No	1241	383	103	22	1749	753	996	1749	1214	535	1749
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
32	Financial/non-financial aid received help you to strengthen ties with regular friend.	Yes	307	91	30	4	432	158	274	432	313	119	432
		No	1448	425	111	27	2011	878	1133	2011	1408	603	2011
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443

Source: Field survey, 2012/2013

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(ibid Table 4.15d). Norms (benefits from financial aid received) were found to have a relationship with location. A statistically significant result of reducing financial problems ($\chi^2(1) = 2.580$, $p = 0.051$) and emotional stress ($\chi^2(1) = 4.147$, $p = 0.042$) and strengthening the relationships with close friends ($\chi^2(1) = 7.310$, $p = 0.007$) indicates that the benefits of norms are differ among location (ibid Table 4.15d). However, the results of this study failed to prove any significant relationship that exists between norms of strengthening the relationships with regular friends and location. For the relationship between norms and gender, the chi-square test results of this study indicate a statistically significant result for benefits of reducing financial problems ($\chi^2(1) = 22.391$, $p = 0.000$) and emotional stress ($\chi^2(1) = 7.894$, $p = 0.005$). Meanwhile a statistically non-significant result of benefits of strengthening ties with close friends ($\chi^2(1) = 3.168$, $p = 0.075$) and with regular friends ($\chi^2(1) = 1.016$, $p = 0.313$) of this study, once again proving that the relationship between norms and gender cannot be explained by this study (ibid Table 4.15d).

Table 4.15d: Chi-square (χ^2) test result for component 4 (Norms-benefits from financial aid received) by ethnicity, location and gender

Var.	Dimension 1b:	Ethnicity		Location		Gender	
		χ^2	p-value	χ^2	p-value	χ^2	p-value
25	Financial aid received is from close family members/relatives.	12.505	0.006	1.049	0.306	12.926	0.000
26	Financial aid received is from close friend.	10.421	0.015	0.046	0.831	15.298	0.000
29	Financial/non-financial aid received help you to alleviate the financial problems faced.	37.918	0.000	3.809	0.051	22.391	0.000
30	Financial/non-financial aid received help you to reduce emotional stress/other problem.	4.264	0.234	4.147	0.042	7.894	0.005
31	Financial/non-financial aid received help you to strengthen ties with close friend.	2.580	0.461	1.053	0.305	3.168	0.075
32	Financial/non-financial aid received help you to strengthen ties with regular friend.	1.782	0.619	7.310	0.007	1.016	0.313

Source: Field survey, 2012/2013

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Component 5: Benefit from involvement in association

Table 4.16a & 4.16c show the cross-tabulation analysis of this study, comparing component 5 (benefits from involvement in association) with region, ethnicity, location, and gender. Majorities of respondents were found to answer that involvement in associations don't benefit them in terms of productivity improvement, credit facilities, mental, spiritual, or motivational aspects. The chi-square test was then conducted to investigate whether the data from the four variables tackling benefits from involvement in associations are correlated with region, ethnicity, location and gender. Chi-square test results in Table 4.16b confirmed that there is a significant relationship between regions/state and involvement in association. Involvement in association is found to benefit (i) productivity improvement, $\chi^2(4) = 61.180$, $p = 0.000$ (ii) information on credit facilities, $\chi^2(4) = 80.692$, $p = 0.000$ (iii) mental and spiritual improvement, $\chi^2(4) = 46.219$, $p = 0.000$ and (iv) motivation to be more productive $\chi^2(4) = 24.232$, $p = 0.000$ (ibid Table 4.16b). The results clearly indicate that benefits from involvement in associations vary by region and state.

The cross-tabulation analysis result comparing benefit from involvement in association with ethnicity, location and gender, too, indicates majorities of the respondent answering No compared to Yes for benefits from joining an association (Table 4.16c). The Chi-square test in Table 4.16d confirmed that there is a statistically significant association between ethnicity, location, gender, and benefit from involvement in association. For relationship between ethnicity and component 5, the chi-square result indicates a significant relation of ethnicity with benefit of (i) productivity improvement, $\chi^2(3) = 19.160$, $p = 0.000$ (ii) information on credit facilities, $\chi^2(3) = 13.683$, $p = 0.003$ (iii) mental and spiritual

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Table 4.16a: Frequency distribution results for Component 5 (Benefits from involvement in association), by region

Var.	Dimension 1a:		States					Total
			Kedah	Selangor	Kuala Lumpur	Johor	Terengganu	
1	Involvement in associations (related or not related to economic activities) helps you to increase productivity - through better employment practices.	Yes	157	142	45	238	135	717
		No	302	385	245	388	406	1726
		Total	459	527	290	626	541	2443
2	Involvement in associations (related or not related to economic activities) helps you to get information on credit facilities to improve the living standard/ expand the business etc.	Yes	131	95	15	175	104	520
		No	328	432	275	451	437	1923
		Total	459	527	290	626	541	2443
3	Involvement in associations (related or not related to economic activities) helps you to improve mental & spiritual.	Yes	120	157	55	245	151	728
		No	339	370	235	381	390	1715
		Total	459	527	290	626	541	2443
4	Involvement in associations (related or not related to economic activities) helps you to be more enthusiastic or productive in work or life.	Yes	171	188	69	242	68	838
		No	288	339	221	384	373	1605
		Total	459	527	290	626	541	2443

Source: Field survey, 2012/2013

Table 4.16b: Chi-square (χ^2) test result for component 5: Benefits from involvement in association

Var.		χ^2	p-value
1	Involvement in associations (related or not related to economic activities) helps you to increase productivity - through better employment practices.	61.180	0.000
2	Involvement in associations (related or not related to economic activities) helps you to get information on credit facilities to improve the living standard/ expand the business etc.	80.692	0.000
3	Involvement in associations (related or not related to economic activities) helps you to improve your mental & spiritual.	46.219	0.000
4	Involvement in associations (related or not related to economic activities) helps you to be more enthusiastic or productive in work or life.	24.232	0.000

Source: Field survey, 2012/2013

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improvement, $\chi^2(3) = 66.431$, $p = 0.000$ and (iv) motivation to be more productive $\chi^2(3) = 35.774$, $p = 0.000$ (ibid Table 4.16d). A statistically significant relationship is also shown between locations with component 2. The chi-square result indicates a significant relation of location with benefit of (i) productivity improvement, $\chi^2(1) = 18.578$, $p = 0.000$ (ii) information on credit facilities, $\chi^2(1) = 28.614$, $p = 0.000$ (iii) mental and spiritual improvement, $\chi^2(1) = 24.481$, $p = 0.000$ and (iv) motivation to be more productive $\chi^2(1) = 18.319$, $p = 0.000$. The Chi-square test also indicates a statistically significant relationship between gender and component 5. The chi-square result indicates a significant relation of gender with benefit of (i) productivity improvement, $\chi^2(1) = 5.417$, $p = 0.020$ (ii) information on credit facilities, $\chi^2(1) = 5.018$, $p = 0.025$ (iii) mental and spiritual improvement, $\chi^2(1) = 12.283$, $p = 0.000$ and (iv) motivation to be more productive $\chi^2(1) = 19.818$, $p = 0.000$ (ibid Table 4.16d). Based on the Chi-square test results discussed above, it can be summarized that the benefits from involvement in association are different accordingly to ethnicity, location, and gender.

In conclusion, the results of descriptive test, ANOVA, t-test and the chi-square shows that a relationship or influence exists for certain components of social capital of this study with region, ethnicity, location and gender. The result of ANOVA for component 1 (influence of spirituality/culture) and component 3 (trust) revealed a significant relationship between all regions and states with both components except for relations of northern region (Kedah) with central region (Selangor and F.T. Kuala Lumpur). The ANOVA result of components 1 and 3 with ethnicity also show a significant influence of ethnicity on both components especially among Malays and Indians. The t-test result for components 1 and 3 with location and gender, too, indicates a difference of influence of both components except for relationships between

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Table 4.16c: Frequency distribution results for component 5 (Benefits from involvement in association) by ethnicity, location and gender

Var.	Dimension 1a:		Ethnicity				Total	Location		Total	Gender		Total
			Malay	Chinese	Indian	Others		Rural	Urban		Male	Female	
1	Involvement in associations (related or not related to economic activities) helps you to increase productivity - through better employment practices.	Yes	559	120	30	8	717	352	365	717	529	188	717
		No	1196	396	111	23	1726	684	1042	1726	1192	534	1726
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
2	Involvement in associations (related or not related to economic activities) helps you to get information on credit facilities to improve the living standard/ expand the business etc.	Yes	404	89	19	8	520	274	246	520	387	133	520
		No	1351	427	122	23	1923	762	1161	1923	1334	589	1923
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
3	Involvement in associations (related or not related to economic activities) helps you to improve your mental & spiritual.	Yes	589	80	52	7	728	364	364	728	549	179	728
		No	1166	436	89	24	1715	672	1043	1715	1172	543	1715
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443
4	Involvement in associations (related or not related to economic activities) helps you to be more enthusiastic or productive in work or life.	Yes	1100	396	88	21	1605	405	433	838	638	200	838
		No	655	120	53	10	838	631	974	1605	1083	522	1605
		Total	1755	516	141	31	2443	1036	1407	2443	1721	722	2443

Source: Field survey, 2012/2013

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component 2 and location which cannot be explained by the result of this study. The chi-square test for component 2 (benefits from interaction with close/regular friends), component 4 (norms) and component 5 (benefits from involvement in association) also revealed a significant influence of certain components with regions/states, ethnicity, location, and gender. Regions/states and gender influence on component 2 is found to be different across the region for all the benefits covered. In contrast, a mixed result was produced for the relation of component 2 with ethnicity, location, and gender. The influence of component 4 revealed a significant relationship with regions/states, ethnicity, location, and gender. Significant relationships are also found between regions with component 5 of this study for all the benefits covered although the influence of ethnicity, location and gender on the previous produce a mixed result.

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4.5 The Multilevel Modeling Analysis on the Impact of Social Capital on Individual Income Level in Malaysia

4.5.1 The Null/Unconditional Model

The final part of this chapter will analyze the impact of social capital on individual income using the multilevel modeling (MLM) method. MLM enables the influence of factors on particular economic issues to be analyzed accordingly to the individual and the group level (i.e. working individuals and districts in the states sample respectively in this study). As discussed in section 4.4, this study has identified social networks/relations (membership in association and interaction with friends), trust, norms, and influence of spirituality/culture as the five principal components of social capital in the Malaysian perspective. These components are actually factor or component scores (aggregated summarizations of various variables of social capital) derived through the CATPCA procedure (see section 4.4). Human capital scores (i.e. level of education and healthy lifestyle) are also derived using CATPCA together with demographic variables (i.e. location, employment sector, and ethnicity) are incorporated as control variables in this study.

The first basic MLM analysis performed in this study was the null model (without any level-1 predictor variables). The null or based-line model of MLM which was similar to a random-effect ANOVA model, partitions variance of individual income into within-group (i.e. level 1 r_{ij}) and between-group (i.e. level 2, u_{oj}) components. MLM actually estimates the variances of the level-1 and level-2 residuals (i.e. variance of level-1 r_{ij} is denoted by σ^2 and variance for level-2 u_{oj} is denoted by $\tau_{00.}$) This is the first and important step that needs to be performed in order to identify whether the MLM technique is required for this study. The null model can be shown by the following equations:

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$$\text{Level-1} : Y_{ij} = \beta_{0j} + r_{ij} \qquad (4.1)$$

$$\text{Level-1} : \beta_{0j} = \gamma_{00} + u_{0j} \qquad (4.2)$$

In Eq. (4.1), the income score of individual i in district j (Y_{ij}) can be modeled as a function of the mean income score for district j (β_{0j}) plus a residual term that reflects individual differences around the mean of district j (r_{ij}). In Eq. (4.2), the income mean for district j (β_{0j}) is modeled as a function of a grand-mean of individual income score (γ_{00}) plus district-specific deviation from the grand mean (u_{0j}). Substituting Eq. (4.2) into Eq. (4.1) yields the combined unconditional MLM equation below.

$$\text{Combined} : Y_{ij} = \gamma_{00} + u_{0j} + r_{ij} \qquad (4.3)$$

The combined null model in Eq. 4.3 (often referred to as a "random effects ANOVA" MLM) because its partitions income variability into within-group (i.e., level-1, r_{ij}) and between-group (i.e., level-2, u_{0j}) components. MLM estimates the variance of the level-1 and level-2 residuals, not the actual residuals themselves (Peugh, 2010; Aguinis et al., 2013; Carson & Beeson, 2013). The variance of r_{ij} is denoted by σ^2, and the variance of is denoted by τ_{00}. The variation in individual income scores at level-1 (i.e., σ^2) is the average variance of individual score within districts. The variation in income scores at level-2 (i.e., τ_{00}) quantifies the variation in mean income scores across districts.

The MLM model shown in Eq. (4.3) was estimated and results are shown in the second column of Table 4.17. The MLM shown in Eq. (4.3) produce three noteworthy results. First, a significant non-zero grand-mean income score was observed, $\gamma_{00} = 7.367$, $\rho < 0.001$. Second, the level-1 variance estimate showed significant income score variation across

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individuals within a district, $\sigma^2 = 0.2806$, $\rho < 0.001$. More importantly, the question is whether MLM is needed in this study. The unconditional model results also showed significant variance in the income means across districts, $\tau_{00} = 0.2365$, $\rho < 0.001$. This variance provides basic information for the calculation of the intra-class correlation coefficient (ICC). ICC which is similar to the R^2 effects size in OLS, quantifies the proportion of the total variation in individual income accounted for by the district differences.

Total variance is equal to the sum of the variances of district (τ_{00}) and residual (σ^2) or [0.2365 + 0.2806 = 0.5171]. The ICC is computed as the ratio of district variance to total variance. Substituting these variance estimates into the following ICC equation:

$$ICC = \tau_{00} / (\tau_{00} + \sigma^2) \qquad (4.4)$$

Showed that 45.74% (ICC = 0.2365 / [0.2365 + 0.2806] = 0.4574) of the total variance of incomes occurred across districts. The value of ICC estimated by this study was sufficiently large and exceeding the value of ICC reported in MLM studies which was around the range of 0.5 to 0.30 (see among others Aguinis et al., 2013; Peugh, 2010) and entitled for this study to proceed with multilevel modeling analysis (ibid Table 4.17).

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Table 4.17: Influence of Level-2 Variables on Individual Income Level

	Model 1: Null Model	Model 2a: Influence of Level 2 (RIFS)	Model 2b: Influence of Level 2 (RIFS)
Level 1: Individual variables (*fixed effects*)			
Intercept (γ_{00})	7.3674(0.079)***	7.6339(0.055)***	7.7559(.057)***
Influence_Spirit-Culture			
Benefit_Interaction			
Trust_Financial			
Benefit_Norms-Financial			
Benefit_Association			
Healthy_Lifestyle			
Education-Period			
Employment_Sector = 0 (Services)			
Employment_Sector = 0 (Others)			
Ethnicity = 0 (Malay)			
Ethnicity = 1 (Others)			
Level 2: Contextual variables			
Location = 0 (Rural)		-0.5408(.036)***	-0.5423(.036)***
Location = 1 (Urban)		0	0
Development_Status = 0 (Less developed)			-0.3570(.095)**
Development_Status = 1 (Developed)			0
Variance components (*random effects*)			
Within-district (L1) variance (σ^2)-residual	0.2806(.008)***	0.2617(.007)***	0.2617(.008)***
Variance of intercept - district variance (τ_{00})	0.2365(.056)***	0.0994(.025)***	0.0706(.018)***
Model Summary:			
ICC	0.4574	0.2752	0.2125
-2 log likelihood (FIML)	3970.830	3770.743	3758.510
Number of estimated parameters	3	4	5

Note: RIFS - Random Intercept Fixed Slope RIRS - Random Intercept Random Slope
Parameter estimate standard errors listed in parentheses *p<.05 **p<.01 ***p<.001

Sources: Field Study, 2012-2013

Apart from the ICC, the calculation of design effect is also another requirement in order to estimate the total variance accounted by level-2 (districts) in this study. The design effect quantifies the effect of independence violations on standard error estimates and is an estimate of the multiplier that needs to be applied to standard errors to correct for the negative bias that results from nested data. The design effect is calculated by:

$$Design\ effect = 1 + (n_c - 1)ICC \qquad (4.5)$$

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Eq. (4.5) shows that the design effect is influenced by the ICC and the number of working individuals per district (i.e., n_c). With n_c = average number of individuals per district (n_c = 2,443/39 = 62.64) and ICC = 0.4574, then, design effect of this study is equal to 1 + (62.64 – 1) 0.4574 = 29.2. According to some researchers, design effect estimates greater than 2.0 indicate a need for MLM to be performed (see Peugh, 2010).

4.5.2 Determines the influence of level 2 variable on individual income: Cross-level direct effects analysis

Since there is a substantial clustering effect based on the district variable (the ICC value in Model 1 indicated that district accounted for about 45.74% of the variance), Model 2a & 2b in Table 4.17 will evaluate the influence of level 2 district variable (i.e. location of district, 0 = rural area, 1 = urban area and district development status, 0 = less developed, 1 = developed) to explain this variation. The ultimate aim of this cross-level direct effects procedure is to assess whether level-2 contextual variables (location & development status) can effectively explain any of the 45.74% variance in the level-1 outcome (i.e. individual income) with which district is associated. The equation for the MLM cross-level direct effects analysis is written as bellow:

$$\text{Level} - 2 : \beta_{oj} = \gamma_{00} + \gamma_{01}\text{Location}_j + \gamma_{02}\text{DevelopmentStatus}_j + u_{oj} \quad (4.6)$$

$$\text{Level} - 2 : \beta_{1j} = \gamma_{10} \quad (4.7)$$

$$\text{Level} - 2 : \beta_{2j} = \gamma_{20} \quad (4.8)$$

Substituting Eqs. (4.7) and (4.8) into Eq. (4.3) yields the combined MLM:

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$$\text{Combined: } LogTotal\ Income_{ij} = \gamma_{00} + \gamma_{10}\ \text{Location}_{ij} + \gamma_{20}\ \text{DevelopmentStatus}_{ij} + u_{0j} + r_{ij} \quad (4.9)$$

Eq. (4.9) shows that total individual income is influenced by the location and development status of the district. Results from the estimation of Eq. (4.9) show that with the inclusion of the first district variable (i.e. location), Model 2a (with the -2 restricted log likelihood [here after is refers as -2LL] value = 3770.743) offered a significantly better fit to the data than did the unconditional model 1 (-2LL = 3970.830). A smaller value of -2LL indicates a better fit to the data set (Carson & Beeson, 2013). To evaluate whether this gain in fit is statistically significant, a Chi-square (χ^2) difference test is performed. Number of estimated parameters has increased from 3 in the unconditional model 1 to 4 in model 2a. This yields a degree of freedom equal to 1 and in IBM SPSS, the difference in the total number of parameters in each model is referred to as degree of freedom (Carson & Beeson, 2013; Meyer, 2013). In Model 2a, the difference in -2LL was 200.087 (-2LL has a Chi-square distribution and in such a distribution, a value of 200.087 for 1 degree of freedom is consider large). The difference of χ^2 (1) = 200.087, $\rho < 0.001$ (not shown here), indicating that model 2 fits the data set significantly better than Model 1. The χ^2 difference test will be conducted in each model of MLM analysis in this study to identify the best fit of each model.

Estimation of fixed effect in Model 2a (column 3 in Table 4.17) shows the statistical significance of intercept or grand-mean of log individual income score (γ_{00} = 7.6339, $\rho <$ 0.01). After controlling for location (0 = rural, 1 = urban), the slope was statistically significant (γ_{80} = -0.5408, $\rho < 0.01$). The result indicates that location has an impact in influencing individual income where those living and working in rural areas tend to score lower as compared to their counterparts in urban areas by 0.541. Estimation of co-variance parameter (random effect) indicates that the variance of district after controlling for location

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was statistically significant (τ_{00} = 0.0994, ρ < 0.01). Level-1 residual variance or across working individuals also shows a statistically significant result (σ^2 = 0.2617, ρ < 0.01).

In Model 2b, development status, (0 = less developed, 1 = developed), was added as the second predictor variable for district and this has also increased the number of estimated parameters from 4 in Model 2a to 5 in present model. The statistic of model fit for Model 2b estimated by a Chi-square difference test (χ^2 (2) = 200.087, df = 1) indicate a statistically significant sign of ρ < 0.001 (ibid Table 4.17). The inclusion of the second district variable has significantly improved the fit of Model 2b better than Model 2a.

The expected mean of log income score for individual continue to shows a statistically significance result (γ_{00} = 7.7559, ρ < 0.01). After controlling for both location and development status, (0 = rural, 1 = urban ; 0 = less developed, 1 = developed), the slope was statistically significant (γ_{80} = -0.5423, ρ < 0.01; γ_{90} = -0.3570, ρ < 0.1 respectively for both predictors, indicating that income of individuals who reside and work in urban areas and developed districts tend to be higher than their rural area counterparts by 0.542 (*SE* = 0.036) and by 0.357 (*SE* = 0.095) respectively. The variance of district controlling for location and development status continues to shows as statistically significant (τ_{00} = 0.0706, ρ < 0.01). Level-1 residual variance or across working individuals also shows a statistically significant result (σ^2 = 0.2617, ρ < 0.01).

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4.5.3 Determines the influence of level-1 variable on individual income: Lower-level direct effects analysis

The result of the unconditional model (Model 1) of this study has shown a substantial level-2 clustering effect on individual income based on the district variable. The second model has also indicated that much of the variance of income was attributable to district variance (driven by the level-2 variable i.e. district location and development status). This study now wishes to shift the focus to level-1 to identify whether the remaining 54.26% of the total variance that is not accounted for by district variance is attributable to differences among the individual 2,443 individuals (heads of household and working household members) within the districts.

With focus given to identify the impact of social capital on individual income, 5 factor scores of social capital derived from categorical principle components analysis (CATPCA) were added into Model 3a (Table 4.18). These entire factor scores together with human capital factor scores (i.e. healthy lifestyle and education-period) are continuous variables derived from CATPCA analysis. Dummy variable of employment sector and ethnicity (0 = services, 1 = others sector; 0 = Malay, 1 = other races) were also added control variables. All these level-1 indicators were analyzed to determine their influence on individual income. The slope of social capital and human capital indicators in this model is assumed to be identical/fixed (i.e. the relationship between individual income score and social capital and human capital predictors are assumed to be identical across individuals within districts). The equation for the MLM lower-level direct effects is written bellow:

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$$\text{Level–1: } LogTotal\ Income_{ij} = \beta_{oj} + \beta_{1j}\,\text{CultureSpirit}_{ij} + \beta_{2j}\,\text{BenefitInteract}_{ij} + \beta_{3j}\,\text{TrustFinancial}_{ij} + \beta_{4j}\,\text{BenefitNormFinancial}_{ij} + \beta_{5j}\,\text{BenefitAssociation}_{ij} + \beta_{6j}\,\text{HealthyLifestyle}_{ij} + \beta_{7j}\,\text{EducationPeriod}_{ij} + \beta_{8j}\,\text{EmploymentSector}_{ij} + \beta_{9j}\,\text{Ethnicity}_{ij} + r_{ij} \quad (4.10)$$

$$\text{Level-2 : } \beta_{oj} = \gamma_{00} + u_{0j} \quad (4.11)$$

$$\text{Level-2 : } \beta_{1j} = \gamma_{10} \quad (4.12)$$

$$\text{Level-2 : } \beta_{2j} = \gamma_{20} \quad (4.13)$$

$$\text{Level-2 : } \beta_{3j} = \gamma_{30} \quad (4.14)$$

$$\text{Level-2 : } \beta_{4j} = \gamma_{40} \quad (4.15)$$

$$\text{Level-2 : } \beta_{5j} = \gamma_{50} \quad (4.16)$$

$$\text{Level-2 : } \beta_{6j} = \gamma_{60} \quad (4.17)$$

$$\text{Level-2 : } \beta_{7j} = \gamma_{70} \quad (4.18)$$

$$\text{Level-2 : } \beta_{8j} = \gamma_{80} \quad (4.19)$$

$$\text{Level-2 : } \beta_{9j} = \gamma_{90} \quad (4.20)$$

Eq. (4.11) is identical to Eq. (4.2) above in its interpretation (e.g., γ_{00} is the grand mean, and u_{0j} is a residual that allows the income means to vary across districts). Eq. (4.12) – Eq. (4.20) illustrates the definition of a fixed effect: the impact of Culture_spirit ; BenefitInteraction ; TrustFinacial ; BenefitNormFiancial ; BenefitAssociation ; HealthyLifestyle ; EducationPeriod ; EmploymentSector ; and Ethnicity are captured by a single estimate (i.e., a fixed effect) that express the average effect of these variables on

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income across all districts (i.e., γ_{10}, γ_{20}, γ_{30}, γ_{40}, γ_{50}, γ_{60}, γ_{70}, γ_{80}, γ_{90}). Substituting Eq. (4.11), and Eqs. (4.12) – (4.20) into Eq. (4.10) yields the combined regression model:

$$\text{Combined: } LogTotal\ Income_{ij} = \gamma_{00} + \gamma_{10}\,\text{CultureSpirit}_{ij} + \gamma_{20}\,\text{BenefitInteract}_{ij} + \gamma_{30}\,\text{TrustFinancial}_{ij} + \gamma_{40}\,\text{BenefitNormFinancial}_{ij} + \gamma_{50}\,\text{BenefitAssociation}_{ij} + \gamma_{60}\,\text{HealthyLifestyle}_{ij} + \gamma_{70}\,\text{EducationPeriod}_{ij} + \gamma_{80}\,\text{EmploymentSector}_{ij} + \gamma_{90}\,\text{Ethnicity}_{ij} + u_{0j} + r_{ij} \quad (4.21)$$

The MLM shown in Eq. (4.21) was estimated and results are shown in the third column of Table 4.18. In the present model, the number of parameters estimated has increased to 12 and this has resulted in df = 9 after the subtraction of total parameter in Model 2a from that of Model 1. A smaller value of -2LL in Model 3a (3016.207) compares to Model 1 (-2LL = 3970.830) indicates a better fit to the data set. The Chi-square test result with the difference of χ^2 (3) = 954.623, $\rho < 0.001$ (not shown here) confirmed that there has been an improvement in the fit of the present model over model 1.

The expected mean (grand-mean) of log income scores for individuals remains statistically significance (γ_{00} = 7.4583, $\rho < 0.001$). Two elements of social capital in this study manage to show a significant influence on income. Benefit-interaction (γ_{20} = 0.0430, $\rho < 0.001$) and benefit-association (γ_{50} = 0.0230, $\rho < 0.10$) clearly proves to significantly influence individual income in this study. Meanwhile, three other elements of social capital failed to show any significant influence on individual income. Influence-culture/spirit (γ_{10} = -0.0158, $\rho < 0.142$), trust-financial (γ_{30} = -0.0037, $\rho < 0.744$) and benefit norms-financial (γ_{40} = -0.0043, $\rho = 0.699$) shows statistically non-significant results in influencing individual income.

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Human capital and demographic variables proven to have a significant impact on income. Healthy lifestyle ($\gamma_{60} = 0.1451$, $\rho < 0.001$) and education-period ($\gamma_{70} = 0.2314$, $\rho < 0.001$) indicates the statistical significance of human capital in influencing individual income. Employment sector (0 = services, 1= other sectors) was also found to have an important role on income. The slope was statistically significant ($\gamma_{80} = 0.1641$, $\rho < 0.001$) indicating that income is found to be higher among individuals who work in the service sector compared to their counterpart in others sectors. For ethnicity (0=Malay, 1= others), the statistically significant result ($\gamma_{90} = -0.2444$, $\rho < 0.001$) indicates that individuals from the Malay ethnicity continue to receive a much lower income compared to their counterparts from other ethnicities.

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Table 4.18: Influence of Level-1 Variables on Individual Income Level

	Model 1: Null Model	Model 3a: Influence of Level 1 (RIFS)	Model 3b: Influence of Level 1 (RIRS)
Level 1: Individual variables (*fixed effects*)			
Intercept (γ_{00})	7.3674(0.079)***	7.4583(0.050)***	7.4431(0.048)***
Influence_Spirit-Culture		-0.0158(0.011)	
Benefit_Interaction		0.0430(0.010)***	0.0431(0.013)**
Trust_Financial		-0.0037(0.011)	
Benefit_Norms-Financial		-0.0043(0.011)	
Benefit_Association		0.0229(0.009)*	0.0226(0.014)
Healthy_Lifestyle		0.1451(0.011)***	0.1444(0.011)***
Education-Period		0.2314(0.010)***	0.2331(0.014)***
Employment_Sector = 0 (Services)		0.1641(0.020)***	0.1684(0.020)***
Employment_Sector = 0 (Others)		0	0
Ethnicity = 0 (Malay)		-0.2444(0.023)***	-0.2438(0.023)***
Ethnicity = 1 (Others)		0	0
Variance components (*random effects*)			
Within-district (L1) variance (σ^2)-residual	0.2806(.008)***	0.1921(0.005)***	0.1860(0.005)***
Variance of intercept - district variance ($\boldsymbol{\tau_{00}}$)[1,1]	0.2365(.056)***	0.0737(0.019)***	0.0688(0.018)***
Variance of Benefit_Interaction slope ($\boldsymbol{\tau_{11}}$) [2,2]			0.0019(0.002)
Covariance of intercept-Benefit_Interaction slope ($\boldsymbol{\tau_{01}}$)[2,1]			-0.005(0.004)
Variance of intercept & Benefit_Association slope [3,1]			0.0031(0.004)
Variance of Benefit_Association slope ($\boldsymbol{\tau_{22}}$) [3,3]			0.0028(0.001)*
Covariance of intercept-Benefit_Association slope [3,2]			-0.0008(0.001)
Variance of intercept & Education_Period slope [4,1]			0.0088(0.004)*
Variance of Education_Period slope ($\boldsymbol{\tau_{33}}$) [4,4]			0.0028(0.001)*
Covariance of intercept-Education_Period slope & Benefit_Interaction slope [4,2]			-0.0011(0.305)
Covariance of intercept-Education_Period slope & Benefit_Association slope [4,3]			-0.0010(0.001)
Model Summary:			
ICC	0.4574	0.2772	0.2700
-2 log likelihood (FIML)	3970.830	3016.207	2978.514
Number of estimated parameters	3	12	18

Note: RIFS-Random Intercept Fixed Slope RIRS-Random Intercept Random Slope
Parameter estimate standard errors listed in parentheses *p<.05 **p<.01 ***p<.001

Sources: Field Study 2012-2013

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Table 4.18…(continued): Influence of Level-1 Variables on Individual Income Level

	Model 1: Null Model	Model 3c: Within-group Interaction Effects (RIRS)	Model 3d: Within-group Interaction Effects (RIRS)
Level 1: Individual variables (*fixed effects*)			
Intercept (γ_{00})	7.3674(0.079)***	7.4376(0.049)***	7.4383(0.049)***
Influence_Spirit-Culture			
Benefit_Interaction		0.0215(0.026)	0.0109(0.018)
Trust_Financial			
Benefit_Norms-Financial			
Benefit_Association		-0.0048(0.025)	-0.018(0.022)
Healthy_Lifestyle		0.1531(0.011)***	0.1539(0.011)***
Education-Period		0.2274(0.015)***	0.2298(0.015)***
Employment_Sector = 0 (Services)		0.1647(0.020)***	0.1677(0.020)***
Employment_Sector = 0 (Others)		0	0
Ethnicity = 0 (Malay)		-0.2388(0.023)***	-0.2408(0.023)***
Ethnicity = 1 (Others)		0	0
Within-group interaction effect:			
Employment_Sector = 0(Services)*Benefit_Interaction		0.043(0.020)*	0.0433(0.019)*
Employment_Sector = 1(Others)*Benefit_Interaction		0	0
Ethnicity A1 = 0 (Malay)* Benefit_Interaction		-0.0183(0.022)	
Ethnicity A1 = 1 (Others)* Benefit_Interaction		0	
Healthy_Lifestyle* Benefit_Interaction		0.0140(0.010)	
Education_Period* Benefit_Interaction		-0.0053(0.010)	
Employment_Sector = 0(Services)* Benefit_Association		-0.0138(0.020)	
Employment_Sector = 1(Others)* Benefit_Association		0	
Ethnicity A1 = 0 (Malay)* Benefit_Association		0.0522(0.022)*	0.0539(0.022)*
Ethnicity A1 = 1 (Others)* Benefit_Association		0	0
Healthy_Lifestyle* Benefit_Association		0.0004(0.009)	
Education_Period* Benefit_Association		0.0131(0.009)	
Education_Period*Healthy_Lifestyle		0.0250(0.010)*	0.0254(0.010)*
Variance components (*random effects*)			
Within-district (L1) variance (σ^2) - residual	0.2806(.008)***	0.1830(0.005)***	0.1837(0.005)***
Variance of intercept - district variance (τ_{00})[1,1]	0.2365(.056)***	0.0685(0.018)***	0.0689(0.018)***
Variance of Benefit_Interaction slope (τ_{11}) [2,2]		0.0040(0.002)*	0.0030(0.002)
Covariance of intercept-Benefit_Interaction slope (τ_{01}) [2,1]		-0.0102(0.005)*	-0.0086(0.005)*
Variance of intercept & Benefit_Association slope (τ_{20}) [3,1]		0.0044(0.005)	0.0050(0.005)
Variance of Benefit_Association slope (τ_{22}) [3,3]		0.0029(0.002)*	0.0029(0.002)*
Covariance of intercept-Benefit_Association slope (τ_{22})() [3,2]		-0.0014(0.001)	-0.0012(0.001)
Variance of intercept & Education_Period slope (τ_{00}) [4,1]		0.0084(0.005)*	0.0085(0.005)*
Variance of Education_Period slope (τ_{23}) [4,4]		0.0042(0.002)*	0.0041(0.002)*
Covariance of intercept-Education_Period slope & Benefit_Interaction slope (τ_{23}) [4,2]		-0.0004(0.001)	-0.0008(0.001)
Covariance of intercept-Education_Period slope & Benefit_Association slope (τ_{13}) [4,3]		-0.0008(0.001)	-0.0007(0.001)
Model Summary:			
ICC	0.4574	0.079	0.2728
-2 log likelihood (FIML)	3970.830	2955.800	2961.071
Number of estimated parameters	3	27	21

Note: **RIFS**-Random Intercept Fixed Slope **RIRS**-Random Intercept Random Slope
Parameter estimate standard errors listed in parentheses *p<.05 **p<.01 ***p<.001

Sources: Field Study 2012-2013

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4.5.4 Determines the influence of level-1 variable on individual income: Lower-level direct effects analysis: random-intercept, Random-slope (RIRS) Model

The above estimation (Model 3a) on the influence of level-1 variables on individual income assumed that the effects as fixed (i.e. the impacts of individual social capital, human capital and demographic variable on their income does not vary across districts) or better known as random-intercept, fixed-slopes model. However the most realistic situation is to assume that both intercepts and slopes vary around the overall model (see among others Peugh, 2010; Meyers et al., 2013; Robson & Pevalin, 2016). In other words, due to the nested nature of the data, it is possible that not only the individual income (intercept) will be difference according to different districts but the influence of the slope (i.e. individual social capital, human capital and demographic variables) on their total income will also be different from one district to the other.

Model 3b (column 3) in Table 4.18 relaxed the assumption of RIFS model and the impact of social capital, human capital and demographic variables on individual income are allowed to vary randomly across districts. Three variables have been identified to have a random effect i.e. two for social capital (benefit-interaction and benefit-association) and one for human capital (i.e. education period). In line with theory and past studies, income scores is expected to vary across individuals (head of household and working household members) within a district due to individual differences in the possession of social capital and human capital. Only variables with a statistically significant influence on individual income were included in Model 3b while variables that show statistically non-significant influence on individual income were excluded. Although it seems appealing to estimate MLMs with random effects for each level-1 variables, by doing so it often leads to decreased statistical power and parameter estimation errors (Heck et al., 2013; Peugh, 2010; Raudenbush & Bryk,

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2002). To minimize the two problems mentioned above, and to maintain a more parsimonious model, the non-significant variable should be remove from the next analysis under the RIRS model procedure of MLM (Heck et al., 2013; Meyers et al., 2013).

Since the impact of social capital and human capital variables on individual income are assumed to vary significantly across districts, a variance component (i.e., random effect) of particular variables with random slope would need to be added to the level-2 slope equation to model this variation. With the variance component added for variables with random effects, the level-2 slope equations for Model 3b is written as bellow:

$$\text{Level-2} : \beta_{oj} = \gamma_{00} + u_{0j} \quad (4.22)$$

$$\text{Level-2} : \beta_{2j} = \gamma_{20} + u_{2j} \quad (4.23)$$

$$\text{Level-2} : \beta_{5j} = \gamma_{50} + u_{5j} \quad (4.24)$$

$$\text{Level-2} : \beta_{6j} = \gamma_{60} \quad (4.25)$$

$$\text{Level-2} : \beta_{7j} = \gamma_{70} + u_{7j} \quad (4.26)$$

$$\text{Level-2} : \beta_{8j} = \gamma_{80} \quad (4.27)$$

$$\text{Level-2} : \beta_{9j} = \gamma_{90} \quad (4.28)$$

The u_{2j}, u_{5j}, and u_{7j} residual term is often referred to as a random effect because it indicates that the impact of benefit-interaction, benefit-association, and education-period on income are allowed to vary randomly across districts. Consistent with the previous models, the MLM does not estimate the u_{2j}, u_{5j}, and u_{7j} residuals, but the variance of these residuals, τ_{11}, τ_{22} and τ_{33}. Substituting Eqs. (4.22) and (4.23), (4.24) and (4.26) into Eq. (4.10) yields the combined MLM:

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$$\text{Combined: } LogTotal\ Income_{ij} = \gamma_{00} + \gamma_{20}\,\text{BenefitInteract}_{ij} + \gamma_{50}\,\text{BenefitAssociation}_{ij} + \gamma_{60}\,\text{HealthyLifestyle}_{ij} + \gamma_{70}\,\text{EducationPeriod}_{ij} + \gamma_{80}\,\text{EmploymentSector}_{ij} + \gamma_{90}\,\text{Ethnicity}_{ij} + u_{0j} + u_{2j}\text{BenefitInteract}_{ij} + u_{5j}\text{BenefitAssociation}_{ij} + u_{7j}\text{EducationPeriod} + r_{ij} \quad (4.28)$$

The MLM shown in Eq. (4.28) was estimated next: results in the fourth column of Table 4.18 showed a smaller value of -2LL of Model 3b (-2LL = 2978.514) as compared to Model 3a (-2LL = 3016.207). This indicates a better fit of the latter model to the data set and the Chi-square differences test result confirmed the fit of the model with the difference of χ^2 (4) = 37.693, and df = 6, and a significant sign, $\rho < 0.001$ (not shown here), confirmed that there has been an improvement in the fit of the present model over Model 3a.

Results of estimation of fixed-effects from column 4 show that the expected mean of log income score for individual remain significant ($\gamma_{00} = 7.4431$, $\rho < 0.001$). In the present model, for social capital, only benefit-interaction continues to show a significant impact ($\gamma_{20} = 0.0431$, $\rho < 0.10$) while benefit-association ($\gamma_{50} = 0.0226$, $\rho < 0.110$) yields a non-significant impact on individual income when the assumption of RIFS was relaxed. Human capital and demographic variables continue to show a significant impact on income. Both healthy lifestyle ($\gamma_{60} = 0.1444$, $\rho < 0.001$) and education-period ($\gamma_{70} = 0.2331$, $\rho < 0.001$) clearly demonstrate that the significant influence of human capital on individual income in this study.

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Demographic variable also maintains the significant impact on individual income. Employment sector (0 = services, 1 = other sectors) and ethnicity (0 = Malay, 1 = others) shows a statistically significant result ($\gamma_{80} = 0.1684$, $\rho < 0.001$) and ($\gamma_{90} = -0.2438$, $\rho < 0.001$) respectively. Working in the service sector tends to contribute to a higher income than in others sectors and to be a Malay means that their income will be much lower compared to others ethnicities.

Model 3b also shows estimation results for the variance of the slopes of benefit-interaction, benefit-association, and education-period. The random part of the slope now indicates a different value. The effect of benefit-interaction on individual income did not vary significantly across districts ($\tau_{11} = 0.0019$, $\rho < 0.265$). Benefit-association ($\tau_{22} = 0.0028$, $\rho < 0.265$) and education-period ($\tau_{33} = 0.0028$, $\rho < 0.059$) showed a significant varying effect on individual income across districts in this study. This study too aim to test whether there is a co-variance or relationship between social capital and human capital in influencing individual income. Unfortunately, results from column 4 (Table 4.18) failed to show any significant evidence for the co-variance of the slope/relation between benefit-interaction, benefit-association, and education-period with the intercept (grand-mean of log individual income). In other words, this study failed to prove the association of social capital (involvement in association and interaction/networking among individuals) with human capital (educational period) in influencing individual income level.

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4.5.5 Within-individual/district interaction effect: Random-intercept, Random slope (RIRS) Model

From Model 3b, this study has determined that the level-1 of variables of benefit-interaction, benefit-association, healthy lifestyle, education-period, employment sector, and ethnicity of 2,443 individual respondents are predictive of their income level controlling for district. This study now proceeds to Model 3c, the final step in MLM analysis, the within-district interaction of all level-1 variables (with focus given to social capital variables). The ultimate aim of the within-group interaction-effects analysis is to determine individual-level variables that mediate (i.e. enhance or diminish) the size of within-district individual income scores.

Resembling Model 3b, the present model only analyzes variables with a statistically significance influence, excluding the non-significant variables. The present model now is focusing on mediating effects of significant social capital variable (i.e. benefit interaction and benefit association) on other level-1 significant variables (i.e. healthy lifestyle, education period, employment sector, and ethnicity) in determining individual income. The level-2 slope equation for Model 3c remains the same as Model 3b where variance component (i.e. random effect) was added to those variables where their impacts are assumed to vary significantly across districts.

$$\text{Level-2} : \beta_{oj} = \gamma_{00} + u_{0j} \quad (4.29)$$

$$\text{Level-2} : \beta_{2j} = \gamma_{20} + u_{2j} \quad (4.30)$$

$$\text{Level-2} : \beta_{5j} = \gamma_{50} + u_{5j} \quad (4.31)$$

$$\text{Level-2} : \beta_{6j} = \gamma_{60} \quad (4.32)$$

$$\text{Level-2} : \beta_{7j} = \gamma_{70} + u_{7j} \quad (4.33)$$

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Level-2 : $\beta_{8j} = \gamma_{80}$ (4.34)

Level-2 : $\beta_{9j} = \gamma_{90}$ (4.35)

Adjusting Eq. (4.28) after taking care on moderator effects of social capital variable on others significant level-1 variables yields the following equation:

$$\begin{aligned}\text{Level–1: } LogTotal\ Income_{ij} = {} & \beta_{oj} + \beta_{2j}\,\text{BenefitInteract}_{ij} + \beta_{5j}\,\text{BenefitAssociation}_{ij} + \\ & \beta_{6j}\,\text{HealthyLifestyle}_{ij} + \beta_{7j}\,\text{EducationPeriod}_{ij} + \\ & \beta_{8j}\,\text{EmploymentSector}_{ij} + \beta_{9j}\,\text{Ethnicity}_{ij} + \\ & \beta_{6j}(\,\text{HealthyLifestyle}_{ij})(\text{BenefitInteract}_{ij}) + \\ & \beta_{7j}\,(\text{EducationPeriod}_{ij})(\text{BenefitInteract}_{ij}) + \\ & \beta_{8j}\,(\text{EmploymentSector}_{ij})(\text{BenefitInteract}_{ij}) + \\ & \beta_{9j}\,(\text{Ethnicity}_{ij})(\text{BenefitInteract}_{ij}) + \\ & \beta_{6j}(\,\text{HealthyLifestyle}_{ij})(\text{BenefitAssociation}_{ij}) + \\ & \beta_{7j}\,(\text{EducationPeriod}_{ij})(\text{BenefitAssociation}_{ij}) + \\ & \beta_{8j}\,(\text{EmploymentSector}_{ij})(\text{BenefitAssociation}_{ij}) + \\ & \beta_{9j}\,(\text{Ethnicity}_{ij})(\text{BenefitAssociation}_{ij}) + \\ & r_{ij} \end{aligned} \quad (4.36)$$

Then by substituting Eqs. (4.29) – (4.35) into Eq. (4.36) yields the combined MLM:

$$\begin{aligned}\text{Combined: } LogTotal\ Income_{ij} = {} & \gamma_{00} + \gamma_{20}\,\text{BenefitInteract}_{ij} + \gamma_{50}\,\text{BenefitAssociation}_{ij} + \\ & \gamma_{60}\,\text{HealthyLifestyle}_{ij} + \gamma_{70}\,\text{EducationPeriod}_{ij} + \\ & \gamma_{80}\,\text{EmploymentSector}_{ij} + \gamma_{90}\,\text{Ethnicity}_{ij} + \\ & \gamma_{61}\,(\text{HealthyLifestyle}_{ij})(\text{BenefitInteract}_{ij}) + \\ & \gamma_{71}\,(\text{EducationPeriod}_{ij})(\text{BenefitInteract}_{ij}) + \\ & \gamma_{81}\,(\text{EmploymentSector}_{ij)})(\text{BenefitInteract}_{ij}) + \\ & \gamma_{91}\,(\text{Ethnicity}_{ij})\,(\text{BenefitInteract}_{ij}) + \\ & \gamma_{61}\,(\text{HealthyLifestyle}_{ij})(\text{BenefitAssociation}_{ij}) + \\ & \gamma_{71}\,(\text{EducationPeriod}_{ij})(\text{BenefitAssociation}_{ij}) + \end{aligned}$$

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$$\gamma_{81}\,(\text{EmploymentSector}_{ij)})(\text{BenefitAssociation}_{ij}) + \gamma_{91}\,(\text{Ethnicity}_{ij})\,(\text{BenefitAssociation}_{ij}) + \gamma_{71}\,(\text{EducationPeriod}_{ij})(\text{HealthyLifestyle}_{ij}) + u_{0j} + u_{2j}\text{BenefitInteract}_{ij} + u_{5j}\text{BenefitAssociation}_{ij} + u_{7j}\text{EducationPeriod} + r_{ij} \quad (4.37)$$

The MLM shown in Eq. (4.37) was estimated next and the results were shown in Table 4.18. The -2LL value of Model 3c was 2992.667 and the -2LL value of Model 3b was 3007.884. With a difference of 15.217 units and 6 parameters (degrees of freedom), this result suggests that model 3c fits the data set significantly better than model 3b. In the present model, a smaller value of -2LL (-2LL = 2955.800) compares to Model 3b (-2LL = 2978.514) indicates a better fit of the latter model to the data set. The Chi-square test result with the difference of χ^2 (5) = 22.714, and df = 9, indicates a significant sign, $\rho < 0.01$ (not shown here), confirmed that there has been an improvement in the fit of the present model over model 3b.

Estimation of fixed-effects from column 3 (Table 4.18) shows that the expected mean of log income score for individuals remains significant (γ_{00} = 7.4376, $\rho < 0.001$). Social capital indicators i.e. benefit-interaction (γ_{20} = 0.0215, $\rho < 0.404$) and benefit-association (γ_{50} = -0.0048, $\rho < 0.850$) now no longer yield a statistically significant result. On the other hand, both human capital variables i.e. healthy lifestyle (γ_{60} = 0.1531, $\rho < 0.001$) and education-period (γ_{70} = 0.227, $\rho < 0.001$) continue to show a statistically significant result. Employment sector (γ_{80} = 0.1647, $\rho < 0.001$) and ethnicity (γ_{90} = -0.2388, $\rho < 0.001$) also indicates a significant influence of demographic variables on individual income level.

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Within-district interaction effect results show three significance estimations; first, the influence of employment sector on individual income was mediated by benefit-association ($\gamma = 0.0425$, $\rho < 0.05$), second, the influence of ethnicity on individual income was mediated by benefit association ($\gamma = 0.0522$, $\rho < 0.05$), finally, education influence on individual income was mediated by healthy lifestyle of individual ($\gamma = 0.0250$, $\rho < 0.05$). The variance estimates of individual income across working individuals in level-1 continues to show a statistically significant result ($\sigma^2 = 0.1830$, $\rho < 0.001$). Variance of the intercepts after controlling for the slope of benefit-interaction, benefit-association, and education period shows a mixed result of ($\tau_{00} = 0.0685$, $\rho < 0.001$); ($\tau_{01} = 0.0044$, $\rho < 0.360$) and ($\tau_{02} = 0.0084$, $\rho < 0.05$) respectively.

Similar to Model 3b, results from Model 3c failed to show any significant evidence for the covariance of the slope/relation between benefit-interaction, benefit-association, or education-period with the intercept (grand-mean of log individual income). Although there is no need to proceed with the within-individual interaction effect, realizing that the potential influence of social capital, human capital, and demographic variables on individual income/welfare has been the subject of discussion in theory and past studies, according to Aguinis et al. (2013), this study must proceed with this procedure.

Model 3d is a re-estimation of Model 3c but in the later model, all interaction terms that are not statistically significant have been removed to maintain a more parsimonious model (Heck, et.al., 2010). Estimation of fixed-effects shows a statistically significant result of the expected mean of log income score for individual ($\gamma_{00} = 7.4383$, $\rho < 0.001$). Benefit-association and benefit-interaction yielded a statistically non-significant slope of ($\gamma_{20} = 0.0109$, $\rho < 0.552$) and ($\gamma_{50} = -0.0180$, $\rho < 0.410$). Healthy lifestyle ($\gamma_{60} = 0.1539$, $\rho < 0.001$)

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and education-period (γ_{70} = 0.2298, ρ < 0.001) show a significant result in influencing individual income. Demographic variables i.e. employment sector (γ_{80} = 0.1677, ρ < 0.001) and ethnicity (γ_{90} = -0.2408, ρ < 0.001) also remain significant in influencing income.

The re-estimation of significant interaction terms from Model 3d now produce a better result. The interaction effect of the present model (Table 4.18) shows firstly, that influence of the employment sector on individual income was mediated by benefit-association (γ = 0.0433, ρ < 0.05), secondly, the influence of ethnicity on individual income was mediated by education-association (γ = 0.0539, ρ < 0.05), and finally, education period influence on individual income was mediated by healthy lifestyle practiced by individuals (γ = 0.0254, ρ < 0.05).

Model 3d also shows estimation result for the variance of the slopes of benefit-interaction, benefit-association and education-period. The random part of the slope now indicates a much stronger value. The effect of benefit-interaction on individual income remains not significantly vary across districts (τ_{11} = 0.0030, ρ < 0.129). Benefit-association (τ_{22} = 0.0029, ρ < 0.059) and education-period (τ_{33} = 0.0041, ρ < 0.032) continue to show a significant varying effect on individual income across districts in this study. Unfortunately, results from column 4 (Table 4.18) failed to show any significant evidence for the covariance of the slope/relation between benefit-interaction, benefit-association, and education-period with the intercept (grand-mean of log individual income). The estimation results clearly indicate that social capital and human capital variables (i.e. benefit-interaction, benefit-association and education-period) are not a mediating but actually are a moderator or direct effect to the outcome of this study (i.e. individual income level). In other words, the influence of social capital variables on individual incomes was not directly influenced by the third

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variable (i.e. human capital variable) or otherwise. This means that social capital affects Y directly rather than being driven by its influence on human capital variables first.

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CHAPTER 5: CONCLUSION

5.1 Introduction

More than two decades after it was formally theorized in the late 1980's, social capital has fast gained attraction from different fields of study including economics. Controversy and argument surrounding the concept do not prevent this intangible capital to rise to the star dome in social science and pure scientific research. The number of research studies done and the citations of this concept have been doubling (see Woolcock, 2010) and economists, particularly from the school of new economic thinking, are not spared from using social capital. The rejection by the main stream economists due to non-quantifiable values of this concept is not purely solid and has been counter attacked with strong justification by advocates of social capital. Apart from the issue of economic capital possessed by social capital, the exact components and variables that are considered as social capital have also been the subject of contention. Until recently, there has been no consensus that has been achieved by advocates of social capital as to the exact components and variables belonging to this perceived non-qualifiable capital. Nevertheless, advocates have agreed that social relation is the essential part of and trust and norms are two components that complement social relation to constitute the formation of social capital.

This study was conducted with the spirit to investigate the potential influence of social capital on individual income in Malaysia. According to some, limited studies have been done to analyse the potential impact of social capital in the field of income distribution in Malaysia. This has been the primary motivation for this study. Additionally, the controversy of this concept and the method of measurement have also been strong determiners. The main concern of this study as discussed from the early chapter is on social capital, on how this

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intangible capital might influence individual income. The failure of the existing conventional theories at giving an exact and comprehensive explanation as to the causes of unprecedented outcomes from economic growth such as inequality is a prime signal that we cannot overly depend on the existing idea of conventional economic capital. Beginning in the early 1990's, incorporation of the new potential social relational aspect of humans (i.e.) social capital as what has been done by new economic thinking in finding the exact and comprehensive explanation on causes of inequality is a wise act. Studies on social relational aspects of humans have been successful in proving the potential of social capital's impact. A volume of literary reviews particularly from an economics point of view that demonstrate a mixed result on the influence of social capital on individual incomes or welfare (see Appendix A, page 221-231) is a testimony that has inspired this study.

In the Malaysian perspective, greater focus needs to be given on social capital due to its promising impact on individual income particularly in the context of a multiracial society. The thrust of this study is to retain the three main components of social capital and extend it by incorporating spirituality and culture influence as the new fourth component from the Malaysian perspective. The importance of spirituality and culture has been highlighted in theories and past studies including in Malaysia (see Chapter 2 for a detailed discussion). Nevertheless, the potential of the former in influencing individual income has never been explored in past studies. As discussed in detail within Chapter 2, social capital is a promising concept that can shed light on what actually determines individual income. From an economics perspective too, capabilities of individuals to build a relation (social capital) with other economic players in the market will indirectly determine terms of trade and income possession. Realizing that social capital requires an interaction between at least two individuals and that our daily economic activities involve interactions and networking, are

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the key points as to why social capital is important and is given a prime focus in this study. Proposing a proper definition from the Malaysian perspective and to come out with a more accurate measurement from the economic perspective is hoped to minimize arguments and controversies especially those made by critics and proponents of mainstream economics.

In this study the attempts to propose a proper definition were done accord to theories based on a thorough synthesization of past studies (including those done in Malaysia). But more importantly, the definition proposed follows the guidelines given by experts and advocates of social capital. The measurement and components of social capital from the context of this study too were formed based on the guideline proposed by the World Bank. The Social Capital-Integrated Questionnaire (SC-IQ) was referred to by this study because of its huge potentiality to be used as a bench-mark for the design of questionnaires used in the study of social capital in developing countries. The SC-IQ was developed specifically for reference by researchers in the field of development economics who are interested in studying the potential of social capital on the economic performance of the nation as well as on the level of income of individuals or households, especially in developing countries. For the purpose of measurement and categorization of social capital components, this study adopted the more accurate methods of data reduction and categorization suitable for a non-numeric data such as social capital i.e. using the CATPCA procedure. Systematically and in accordance with the stated procedures, CATPCA managed to categorize all of the social capital components of this study according to a score of component loading. More than that, for each component selected, CATPCA has generated component score values to be used in the analysis in this study. With the ultimate aim to analyze the impact of social capital on individual income, the final analysis of this study then incorporates all the five components of social capital together with other human capital and demographic variables under the

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MLM procedure. Adopting the MLM procedure will enable this study to provide a more accurate explanation on the influence of social capital from the individual level and from the group level.

This chapter will summarize the main finding of this study beginning with the new proposed definition of social capital from the Malaysian perspective. Then summarization will then proceed with the identification of components relating to the measurement of a component score of social capital derived using the CATPCA procedure. The influence of social capital component scores on individual income will be highlighted next and policy recommendations will conclude this chapter.

5.2 Summarization of Finding

5.2.1 The proper definition of social capital from the Malaysian perspective

Based on synthesization of past studies (see Chapter 2), this study believes that social relation is the foundation of social capital - a channel through which an individual or group will share any relevant or potential information regarding job or income prospects, etc. Features of social capital will facilitate and smooth the process of channelling and sharing relevant information and other benefits generated from social relation and these features are what are supposed to be referred to as social capital. Apart from social relation, this study firmly believes that shared norms, trust and spirituality are vital elements that constitute the formation of social capital in plural societies. Norms and trust will foster and facilitate interaction, cooperation and trustworthiness between and among individuals or for the purposes of channelling and sharing pertinent information.

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In line with the new wave of economic thinking groups (among others see Robinson & Siles, Westlund & Adam, 2010; Bhandari & Yasunobu, 2009, Hayami, 2009), this study firmly believes that any pertinent information which is useful & contributes to improvement in individual income/welfare level channelled through social relation will be treated as relational assets (i.e. a new type of economic capital). Synthesized of well-known past studies regarding economic capital done by this study (see chapter 2) found that like other conventional economic capital which was a result of investment in productive resources, social capital which was also created through investment in social relations, also deserved to be considered as the new type of economic capital. By knowing and forming a good relation or connection with others, it will ultimately contribute directly or indirectly towards a sharing of useful knowledge that will enhance individual income and/or welfare level.

The new, proper definition of social capital viewed from the lens of the pluralistic society is the first contribution to this study. The proper definition of social capital from the Malaysian perspective synthesized from a thorough past study, (see Chapter 2) is a collective relational asset/resources understanding from features of social relation (i.e. norms, trust, and influence of spirituality) that provides benefits (in terms of informative knowledge or information) for individuals to improve their income/welfare level.

5.2.2 The Elements and Measurement of Malaysian Social Capital

Although spirituality and culture have never been treated as an element or component of social capital in past studies, the importance of the religious institution in the formation of social capital and the potential influence of homogeneity and heterogeneity in individual culture has been widely discussed in theory and empirical studies (Bourdie, 1986; Coleman,

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1988; 1990; Robinson & Siles, 1999: 2011; Grootaert & Bastelaer, 2002; Krisna & Uphoff, 2002; Huang, 2015; Cnaan et al., 2003; Adam Ng et al., 2014). In line with consensus reached from past studies including those done in Malaysia regarding the importance of spirituality or culture elements to be consider as one of the main elements or components of social capital (see among others Ahmad Shukri & Noor Azizah, 2015; Ahmad Shukri Abdul Hamid et al., 2013; Knowles, 2005 & 2006), this study contributes to a new refinement of elements of social capital by inserting the influence of religion and culture as the fourth dimension or element together with social relation, trust, and norms. In a pluralistic society like Malaysia, with different cultural and religious beliefs, the clear influence of spirituality or culture is predicted to have a significant role on the formation of social capital and influence individual income levels. Spirituality and culture will complement the process of social capital formation, by fostering and facilitating interaction, co-operation, and trustworthiness between and among individuals or groups (Ahmad Shukri & Noor Azizah, 2015; Ahmad Shukri Abdul Hamid et al., 2013).

The grouping procedure of CATPCA which categorized components of a particular variable in descending order according to their component loading score (i.e. component with the highest score will be grouped as the first element), has grouped influence of spirituality and culture as the first principal component followed by influence of interaction, trust (during financial difficulty), norms (benefit from financial aid received), and benefit from involvement in associations as the five components of Malaysian social capital. This study also contributes to the measurement of social capital i.e. using component or factor scores derived from CATPCA procedures. CATPCA transformed potential social capital variables of this study which are generally in non-numeric order (i.e. in nominal and Likert-scale types) into numeric order using optimal scaling procedures (see Chapter 3). Five component scores

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of social capital derived using the CATPCA procedure, were actually a score of each respondent (2443 working individual) of this study. This component scores have been used as a proxy of measurement to determine the influence of social capital on individual income.

5.2.3 Influence of Social Capital on Individual Income

In this study, social relation (i.e. interactions with friends and involvement in associations) was found to have a significant impact in influencing individual incomes. Interaction with close or regular friends and involvement in associations will enable networking to be built and all this will ease the channelling process of any information or knowledge that might contribute to improvement in individual income. A result of the direct impact of social capital on individual income shows in this study is in line with the findings of past studies especially in Asia countries. Benefit from interaction (especially built from social relation with close/regular friends or from involvement in associations) shows a promising influence on individual income in other Asian countries for example in China (Knight & Yueh, 2008) and in Thailand (Theingi et. al, 2008). Past studies revealed the same outcome, the benefit of getting involved in associations was found to contribute significantly to individuals', households' and farmers' income/welfare level in Malaysia (Yokohama & Ali, 2009; Nasir et al., 2010: Rahmah et al., 2016), Vietnam (Van Ha, N. et al., 2004), Indonesia (Wetterberg, 2006), and China (Li, Yuheng et al., 2015; Gravemeyer et al.,2011).

Other variables of social capital covered in this study which have been left out due to non-significant influences (to be in compliance with the MLM procedure) were found to have a significant influence on individual or household income level in past studies. Trust and norms (reciprocity) contribute significantly (far greater than those of human capital) in influencing household incomes in rural areas in Vietnam (Van Ha, N. et al., 2004) and also

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on firms' profits in Thailand (Theingi et. al, 2008). Meanwhile, the influence of other control variables in this study (human capital and demographic) continues to show a significant influence on individual or household income, resembled with findings from other past studies (for details, see Appendix A, page 231-231). Although social relation impact was smaller compared to other control variables, this finding was parallel to most findings in past studies and this is a signal for the promising influence of the later on economic performance (at the macro and micro level).

In terms of within-group (level-1) interaction effect, this study revealed the non-significant result of covariance analysis of the slope/relation between benefit from interaction with close and regular friends, and benefit from involvement in association with the outcome (i.e. individual income) of this study. This result clearly indicates these two component scores of social capital are not mediators but are actually a moderator or has direct effect to individual income. The interaction effects conducted in this study to further investigate whether the direct effect of social capital on the outcome (individual income) was a result of other third variables (mediator effects). The interaction effect is one of the objectives under MLM procedure. Derived from past studies, the application of MLM procedure is something new and not yet being used in the field of economics insofar as the study of income determination. In other fields of study, limited research is available to investigate the moderating or mediating influence of social capital on the outcome being studied. Nevertheless, this limited study shows inconclusive evidence for the mediating and moderating effects of social capital on the outcome (dependent variable). Vyncke et al., (2013), Veenstra, (2005), Dahls, (2010), and Lindstrom et al., (2001) found that social capital mediates the association between socio economic status (SES) and adolescent life satisfaction (health). Other studies have demonstrated a moderating effect of social capital both at the

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group (Buijs et al., 2016; De Clercq, B et al., 2012; Caughy et al., 2008; Odgers et al., 2009) and individual level (Eikemo, 2008).

5.2.4 The impact of location and development status (cross-level effect) on individual income

This study also found a substantial clustering effect based on the district variable (the ICC value indicated that district accounted for about 45.74% of the variance in total individual income). The results showed a promising influence of both level-2 variables. Location and development status appear to have a statistically significant influence on individual income particularly for individuals who resided and work in less-developed states and rural areas as compared to their counterparts in developed states and urban areas in Malaysia. The negative statistically significant value of both location and development status indicating that income of individuals who reside and work in urban areas and districts with developed statuses tend to be higher than their counterpart in rural areas and less developed states. This finding is in line with theory and empirical study particularly at the Malaysian level which found that urban areas located in districts with developed status will tend to provide more employment opportunities with competitive wages compared to districts in rural areas with less-developed statuses (see among others Ragayah, 2011& 2012; Rahmah, 2011; Jomo K.S & Wee Chong Hui, 2014).

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5.2.5 Malays remains a vulnerable ethnic in terms of income receives

In this study, ethnicity indicates a significant influence on individual income where income is found to be lower among the Malays as compared to their counterpart from other ethnic backgrounds. The outcome of this study, if observed carefully, is in line with the trend of income received by ethnics at the national level for the last 4 decades. Significant improvement has been achieved in the last four decades to alleviate the inter-ethnic income disparities, especially during the 1970s and 1980s (see discussion under subsection 1.3.4 in Chapter 1). However, until 2009, intra-ethnic inequality remained highest among the Bumiputeras compared to other ethnicities. This trend reflects the unequal distribution of benefits of New Economic Policy programs (Ragayah, 2012; KRI, 2014 & 2016). Post 2009 indicates a contrast of changing patterns of intra-ethnic inequality, whereby based on the most recent years for which data are available, inequality is more apparent among Chinese and Indian groups. The ethnic group with the highest Gini coefficient in 2014 was the Chinese, followed by the Indians, and then the Bumiputeras. This is in contrast to 2012, when the Indians had the highest Gini coefficient. The finding of this study needs to be studied in more detail in future research to find out the exact explanation as to this result which is counter to the national finding. More interestingly, cultural and religious influences are the four dimensions of social capital introduced by this study need to be examined in more detail in terms of its impact on the formation of social capital and importantly on its influence on individual income in a multiracial society in Peninsular Malaysia. This was supported by the importance of the later as an incubator for institutionalized norms and values of reciprocity, formal and informal social relationships, and networks with other people in society (Huang, 2015; Cnaan et al., 2003; Ahmad Shukri & Noor Azizah, 2015; Ahmad Shukri Abdul Hamid et al., 2013).

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5.3 Policy Recommendation

The finding of this study is a novel contribution on the area of income inequality in the Malaysian perspective. Apart from the new proposed definition of social capital based on synthesization from past studies, this study also employs a new method (i.e. CATPCA) for the purpose of measurement (i.e. data reduction and construction of component or factor scores) of social capital. More than that, the impact of social capital on individual income in Malaysia revealed in this study is promising in order to elevate inequality of income. Based on the above summarization of the main finding, this study will propose policy recommendations to be considered by the Government and the authorized agency to strengthen efforts in tackling inequality in Malaysia.

5.3.1 Spurring the culture of social capital

Based on the impact of benefit of interaction and association revealed from this study, governments need to spur the culture of strong social relations and networking among multi ethnics in Malaysia. This is in line with the government development philosophy of growth with equity and the vision to transform Malaysian economic status from a middle income to a high income nation by the year 2020. In the Tenth Plan (2011-2015), 'a fair and socially just society with national unity' has been outlined as an ultimate objective under the spirit of 1Malaysia to ensure all Malaysians regardless of ethnic group experiences inclusiveness and equitable access to economic opportunities to improve and enhance their well-being. Social relations as the foundation for the formation of social capital need to be among the main priority in major development plans in the future. Although social interaction is a daily activity for every human being, the trust and norms that can be built from the later will

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actually generate social capital as defined by this study. How an individual can get informative knowledge regarding job or income is highly determined by his or her effort in creating social relations with friends. The closer the interaction become the more potential benefit can be nurtured by those involved.

In a plural society like Malaysia where, in recent years, the widening gap of polarization and inequality among ethnic groups has become apparent, the outcome of this study clearly signals the importance of social relations to be nurtured and spurred among Malaysians. Investment in social relations is vital and will complement other economic capital (especially human capital) in enhancing individual income (as shown by the result of this study). As revealed by theories and past studies, spirituality (especially through religious participation/involvement) has been considered as a primary source of social capital formation. Understanding the different religious and cultural believes and practices especially in a pluralistic society like Malaysia not only will mitigate the polarization trend but more importantly, will facilitate and foster social relation, trust, and norms between individuals, households, and/or societies. This will ultimately increase chances to get and use informative information channelling from the interaction or relation (Huang, 2015; Cnaan et al., 2003; Ahmad Shukri & Noor Azizah, 2015; Ahmad Shukri Abdul Hamid et al., 2013; Adam Ng et al., 2015; Najib Ahmad Marzuki et al, 2014).

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5.3.2 Intensify thorough analysis on the issue of intra (within) and inter (between) group inequality in Malaysia

In line with the finding of the Malaysian Human Development Report 2013 (UNDP, 2014) which prevailed that inequality in Malaysia is now not only an issue of inter but has been spread to intra strata ethnic groups although further analysis needs to be conducted to intensify the potential of social capital in explaining the widening gap at both intra and inter levels. The focus of this study was on the influence of social capital at the individual level (i.e. level-1 direct effect and within-group interaction effects) on total income. The results managed to reveal the direct effects of social capital at individual level but failed to explain the covariance analysis which means that the interaction effects of the MLM analysis failed to be explained by this study. Social capital in this study was a moderating or direct effect and not a mediating effect of other variables on individual income. Further study needs to be conducted to get a clearer and more accurate result as to the potential of social capital whether as a moderator or mediating factor that influences income at both urban and rural areas in Peninsular Malaysia.

5.4 Conclusion and Recommendation

In line with findings from a huge volume of past studies done in this new area of social science research, this study has revealed the potential influence of social capital on individual income in the Malaysian perspective. While human capital continue to follow the trend found in theory and past studies (i.e. significantly influenced individual income/welfare), this study manages to show a significant contribution of social capital using MLM. Two social capital component scores (i.e. benefit of interaction and benefit association) contribute significantly in influencing individual income. Meanwhile, influence of spirituality and culture as the new

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elements of social capital in the Malaysian perspective proposed in this study together with trust financial difficulty and benefit norms financial indicates a non-significant result and their contribution on individual income failed to be explained by this study. It is highly recommended that a thorough study to be conducted in the near future to explore in depth the exact influence of these elements especially on spirituality and cultural influence on individual's income in Malaysia. Although its influence failed to be revealed in this study, this study has provided a guideline on the importance of this element in a plural society like Malaysia and how to construct this element based on the World Bank SC-IQ and other relevant, past studies. The influence of spirituality and culture in a multiracial society like Malaysia is important enough to be given a focus in governmental policy. Mutual understanding and respect between all races is important not only to the formation of social capital and the sharing of informative information on income/employment prospects but also to the harmonization of a multi-racial society. Hence, fostering understanding and tolerance between religion and cultures is important enough to be given the main priority in a multiethnic country like Malaysia.

Despite significant impact of social capital revealed from this study, the non-significant result of covariance estimation indicates that these variables are not the mediators but are a moderator or has direct effect to the income of individuals. Interaction effects analysis used in MLM is a better way to identify not only the moderator/direct effect factors that determines individual income but more interestingly it also manages to reveal the mediator factors that determine individual income. Supported by inconclusive findings from limited past studies, that demonstrate the mediating and moderating effects of social capital, a comprehensive study needs to be conducted in future to investigate in depth the relationship

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(covariance) between social capital and human capital variables in influencing individual income in the Malaysia perspective.

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University of Malaya