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The informal sector's contribution to the economic wellbeing of people in Timor-Leste

A thesis

Submitted in partial fulfilment
of the requirements for the degree

of

Doctor of Philosophy in Economics

at

The University of Waikato

by

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THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

2019

Abstract

It is widely believed that the informal sector is growing in the modern global economy. When studying who occupies this informal sector and the nature of their business, the universal tendency is to describe the informal sector as made up of low-income producers and having opportunities for disadvantaged and low-quality sectors to run their businesses. The informal sector business has long been seen as marginalized groups working as subordinates because of economic needs and as a last resort. This thesis empirically analyses the features and characteristics of the informal sector in Timor-Leste and is made up of three connected studies.

In the first study, in Chapter 2, the factors associated with being an informal sector work were identified. The results show that women rather than men dominate the informal sector. Moreover, there is a gender dimension in informal sector economic activities. Women are more interested in small trading activities, such as retail kiosks and weaving, that are attached to homes. Men mostly perform economic activities, such as mining and construction, outside the home. The informal sector is also dominated by uneducated people. The high level of involvement of illiterate people in the informal sector creates the potential for negative consequences.

The second study, in Chapter 3, investigated the relationship between informal sector work and the income security, food security, and self-reported health. The only statistically significant relationship was with income security, where informal sector work was associated with lower income security. The relationships between informal sector work and food security and health were not statistically significant. The importance of improving income security among informal sector workers was clear.

The third study, in Chapter 4, qualitatively investigated factors preventing informal sector development from the informal sector workers' perspective. The thematic analysis demonstrated that most of the less educated informal sector actors do not have the expertise and knowledge to manage the minimal resources they have. This limited knowledge prevents them from gaining access to initial capital, markets, and other resources. Another factor is the lack of knowledge in managing capital. Most informal sector workers were unable to adequately manage their capital cash flow. The lack of skill in handling capital is a severe issue for developing their business. In addition, the unavailability of basic infrastructure further hindered the development of the informal sector.

This thesis assesses contributions to the informal sector in which most people play a role in job creation, income generation, livelihood improvement, and living standards despite it still being far from their expectations. Overall, the findings of empirical research in this thesis clarifies issues related to the informal sector. The policy implications of this work include providing a supportive environment by simplifying business-related regulations and procedures, and ensuring that there is easier access to credit. A supportive business environment will stimulate new entrepreneurs to start businesses, and thus provide job opportunities, not only for themselves but for other people as well. Also, the finding of this thesis indicated that women and the uneducated are more likely to engage in informal sector work. Hence, policies could usefully be targeted at supporting women and uneducated people. In turn, their businesses will develop as a form of supporting the household and national economy.

Notes on Publications

Chapter 2 is published as:

Mauquei, H., & Cameron, M. P. (2019). Characteristics of the informal sector in Timor-Leste. *Working Papers in Economics* 19(05). University of Waikato.

Chapter 3 is forthcoming:

Mauquei, H., & Cameron, M. P. (forthcoming). The impact of the informal sector on food security, income security, and health, in Timor-Leste, *Working Papers in Economics*, forthcoming.

Chapter 4 is forthcoming:

Mauquei, H., & Cameron, M. P. (forthcoming). Obstacles to development of the informal sector in Timor-Leste: Perspectives of informal sector workers, *Working Papers in Economics*, forthcoming.

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Acknowledgements

This thesis is a milestone of my PhD journey. It is a result of professional dedication, a tireless hard work, optimism, positive thinking, passion, and perseverance which I could say is a perfect mix of tears and joy. It is an honour for me to thank the individuals and institutions who have contributed directly or indirectly towards the completion of this thesis and made it last forever in my whole life.

My sincere gratitude goes to my supervisors, Associate Professor Michael P. Cameron and Professor John Gibson for providing me invaluable guidance and assistance throughout my PhD study. I feel so blessed to have been supervised by such great individuals. In particular, I would like to thank Associate Professor Michael P. Cameron for his diligent, countless insights and ideas offered in this thesis. This thesis would not have been completed without his generosity and constructive supports. The knowledge gained and skills built during the years of your supervision will be very beneficial for my future endeavours.

This study benefited from secretarial support provided by Maria Neal, Amanda Sircombe, Denise Martin, and Geua Boe-Gibson in the School of Accounting, Finance, and Economics, University of Waikato.

I express my most profound gratefulness to New Zealand Ministry of Foreign Affairs and Trade (MFAT) for offering me a scholarship to undertake my PhD study at the University of Waikato, Hamilton, New Zealand. To Thomas McDonald, Deonne, and the team: thank you for all your support and assistance during my study. I am also grateful to Mr. Augusto Soares and the team at the New Zealand Embassy in Dili, Timor-Leste. You all earned the highest appreciation.

My special thanks extend to Mr. Elias dos Santos Ferreira (Director General), Mr. Silvino Lopes (National Director of System and Report), Mr. João Gusmao (Cartographic Mapping Unit), and the team in the General Directorate of Statistics, Timor-Leste for facilitating me with all resources needed, such as census enumeration area maps and a GPS unit, during the field work held in Timor-Leste.

I am indebted to my wife Nina Marques and lovely children. Grace, Metia, Metio, and Kinara for their love, prayer, and unconditional companionship. Also, to my mother and families from my side and mother-in-law and families from wife's side for their support and diligent prayer. The list is long, and I am confident they all know about my debt of gratitude.

To my beloved father and father-in-law (both have passed away): thank you for always looking after me and all families from the above, your kindness and love will live forever, Amen.

Along the journey, I have greatly benefited from the support, prayer, and friendship of a large number of Timorese colleagues and friends 'Hamiltonians' both alumni and current students under the East-Timor Students Association (ETSA), Waikato University in Hamilton.

To all PhD fellows, Rose, Mohana, Thomas Soseco, Hari Sharma, Van, My, Loi, Mono, and others, thanks for the support, and the informal discussions extended. My special appreciation goes to Dr. Ngoc (my ex office-mate) for the excellent sharing and discussions during the period of study, and supporting and motivating me. It truly made a difference. Also, to Dr. Irfan, Dr. Harold, Dr. Yang, and Dr. Mashud for all your support, comments, discussions, and feedback as well as the friendship made.

Finally, my thankfulness to the Lord Jesus Christ for the abundance blessed. I am always inspired by a holy verse “When you search for me, you will find me, if you seek me with all your heart (Jeremiah, 29:13).”

Hamilton, New Zealand, May 2019

Table of Contents

Abstract	ii
Notes on Publications.....	iv
Acknowledgements	v
Table of Contents	viii
List of Figures	xi
List of Tables.....	xii
Abbreviations	xiii
1 Chapter 1: Introduction.....	1
1.1 Overview	1
1.2 Background	10
1.3 Objectives and Research Questions	15
1.4 Significance of the Thesis	21
1.5 Thesis Outline.....	25
References	27
2 Chapter 2: The characteristics of the informal sector in Timor-Leste.....	37
2.1 Introduction	37
2.2 Literature review	40
2.2.1 The dualist school of thought.....	42
2.2.2 The legalist school of thought.....	43
2.2.3 The structuralist school of thought.....	44
2.2.4 Previous studies of the informal sector	46
2.2.5 Definition of the Informal Sector.....	48
2.2.6 Definition of the Informal Sector in the Timor-Leste Context	49
2.3 Data	50
2.4 Method.....	57
2.5 Results and discussions	57

2.6	Conclusion.....	64
	References	66
	Chapter Appendix.....	76
3	Chapter 3: The impact of the informal sector on income security, food security, and health in Timor-Leste	81
3.1	Introduction	81
3.2	Literature Review	87
3.2.1	Income security	90
3.2.2	Food security.....	92
3.2.3	Health	96
3.3	Data	100
3.4	Method.....	103
3.5	Results and discussion.....	107
3.6	Conclusion.....	111
	References	112
	Chapter Appendix	121
4	Chapter 4: Obstacles to development of the informal sector actors in Timor-Leste: Perspectives of informal sector workers	130
4.1	Introduction	130
4.2	Literature Review	133
4.3	Method and data	139
4.4	Results and discussions	142
4.4.1	The impact of resources	142
4.4.2	The impact of competition	147
4.4.3	The impact of infrastructure and transportation.....	150
4.4.4	The impact of climate.....	152
4.4.5	Conflict between informal work and family responsibilities.....	153
4.5	Conclusion.....	155

4.6	Policy implications	157
	References	159
5	Chapter 5: Conclusion	168
5.1	Main findings	170
5.2	Policy implication.....	171
5.3	Future research	172
	References	174
	Thesis Appendix	176

List of Figures

Figure 1: Map of Timor-Leste	11
Figure 2: Present the location of the study Area	52
Figure 3: Present the census enumeration areas (CEAs) covered and not covered	53
Figure 4: Present the location of the study area	101
Figure 5: Present the census enumeration areas (CEAs) covered and not covered	101
Figure 6: Study location	141

List of Tables

Table 1.1: Timor-Leste selected Indicators.....	13
Table 2.1: Total Sub-districts and the Households of each CEAs Covered.....	52
Table 2.2: Questions of economic activities	54
Table 2.3: Questions of occupation, industry and main activities	55
Table 2.4: Category of economic activity	56
Table 2.5: Descriptive Statistics of the variables	58
Table 2.6: Characteristics of the Sample.....	59
Table 2.7: Logistic regression results	61
Table 2.8: Logistic regression by economic activity	63
Table 3.1: Descriptive statistics of the variables (PCA)	105
Table 3.2: Principal component with eigenvectors	105
Table 3.3: Summary statistics of the variables.....	107
Table 3.4: Result of the test of independent variables split by not informal sector / informal sector	108
Table 3.5: Ordinary least squares results (both at individual and household level)	110

Abbreviations

ADB	Asian Development Bank
BAS	Business Activity Survey
CEAs	Census Enumeration Areas
DFI	Development Finance International
DGE	Direcção Geral de Estatística (General Directorate of Statistics)
DG-MAP	Direcção Geral Ministerio da Agricultura e Pescas (Directorate General Ministry of Agriculture and Fisheries)
FAO	Food Agricultural Organization
FIES	Food Insecurity Experience Scale
GDP	Gross Domestic Product
GHI	Global Hunger Index
GNI	Gross National Income
HDI	Human Development Index
IFC	International Finance Corporation
ILO	International Labour Organization
IPC	Integrated Food Security Phase Classification
LFS	Labour Force Survey
MDG	Millennium Development Goals
MFAT	Ministry of Foreign Affairs and Trade
OECD	The Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PCA	Principal Component Analysis
PNG	Papua New Guinea
PPP	Purchasing Power Parity
SBCC	Social and Behavioural Change Communication
SDG	Sustainable Development Goals
SDP	Strategic Development Plan

SMEs	Small and Medium Enterprises
TL	Timor-Leste
TLFS	Timor-Leste Labour Force Survey
TLCLS	Timor-Leste Surveys of Living Standard
UN	United Nations
UNDP	United Nations Development Programme
UNSC	United Nations Statistical Commission
VOH	Voice of the Hungry
WB	World Bank
WHO	World Food Programme
WIEGO	Women in Informal Employment: Globalizing and Organizing
WTO	World Trade Organization

Chapter 1: Introduction

1.1 Overview

The informal sector has long been an essential part of the economic activity of countries worldwide. From a global perspective, the idea of the informal sector was initiated by ILO in the 1970s (ILO, 1972). The informal sector was brought into the broader discussion after Hart (an anthropologist) published research on the informal sector in Accra, Ghana in 1973 (Hart, 1973). Since then, informal sector issues have preoccupied scholars across several disciplines including geography, management, economics, political science, and anthropology (Nordling, 2017; Polese & Rekhviashvili, 2017).

The issue of the informal sector is a universal phenomenon in developing economies. Low productivity, limited fiscal resources, poverty, and income inequality are among the adverse economic outcomes associated with the informal sector. There is growing literature on the impact of the informal sector on various economic and social variables. Yet, researchers and economists have not reached a clear consensus on its implications, and many issues related to its nature and consequences remain inadequately explored. Few detailed studies have been conducted specifically on the informal sector economic activity in Timor-Leste. It is therefore important to investigate informal sector issues in Timor-Leste, and develop appropriate government policy.

The decision to take part in the informal economy must be based on several reasons. Turkey (2005) argues that the causes and motives of an informal sector in an economy are possibly driven by the following factors:

...the economic system and the characteristics of the economy; inequalities in the income distribution; rapidly increasing population and immigration from rural areas to the urban areas; the structure of the economic preferences and policy adopted; the intensity of the government regulations; the issues related to public sector economics like tax system; economic crises and unproductivity; political instability, and intensity of competition both at national and international level (p. 3).

Portes and Schauffler (1993) identified that from the perspectives of the demographic and economic context, the phenomenon of the informal sector growth affects development policies in the developing world. They further stated that among the various schools of thought on the informal sector there is universal recognition that rural-urban migration and labour excesses in the cities were the fundamental reason for the informal sector growing. In addition, the inability of the formal sector to absorb labour also causes an increase in the informal sector in different parts of developing countries. The growth of the informal sector has had a tremendous impact on livelihoods for many people in developing countries over the last several decades (Becker, 2004). An individual's ability to support his or her family would depend on the amount of revenue obtained to support the needs of the family members. De Soto (1989) argued that people everywhere require the same things. When the government faces some limitation in responding to what people want, people will organize their lives in remarkably similar ways to survive (De Soto, 1989). ILO (1972) observed that not all activities related to the informal sector are limited to small actions, but the sector may also involve lucrative enterprises. The informal sector activities have been ignored, lacked support, and were often discouraged by policymakers and other authorities. The increase in the informal

sector in developing countries the potential to lead to poverty alleviation because many people are engaging in productive informal economic activities (Maharjan & Joshi, 2009). In line with this, a study conducted in five African countries (Ghana, Kenya, Nigeria, Rwanda, and Tanzania) showed that in order to improve income growth and poverty reduction, it is essential to improve the productivity of the informal sector (Adams et al., 2013). Nonetheless, informal sectors grow side by side with other formal sectors in creating jobs and driving economic activities to be more productive.

The economic activities within the informal sector, and the formal sector (which includes the public and private sectors) influence each other in various ways. The different impacts are highly correlated with a country's economy and the government's socioeconomic interventions, for instance, the quality of its institutions (Pratap & Quintin, 2006; Hoa, 2019). Hoa (2019) argued that even though the informal sector might have negative consequences in the longer term, it shows a decisive role in alleviating poverty, and offers employment and revenue for many disadvantaged groups, particularly in developing countries. The potential risks may arise from ineffective policymaking, poor allocation of human resources, the unreliability of official statistics, and may create problems in dealing with taxes. In general, an informal sector that ranges between 17.6 and 35.7 percent of GDP signifies a loss of tax collection of around 3.5 percent to 6.1 percent of GDP (Shukla, Pham, Engelschalk, & Le, 2011; Hoa, 2019). As a result, numerous countries are trying to control and diminish the scope of the informal sector.

The ILO (2013) recommends that the informal sector be categorized as:

...units engaged in the production of goods or services with the primary objective of generating employment and incomes to the persons concerned. These units typically operate at a low level of organization, with little or no division between labour and capital as factors of production and on a small scale. Labour relations – where they exist – are based mostly on casual employment, kinship, or personal and social relations rather than contractual arrangements with formal guarantees (ILO, 2013, p.14).

However, empirical studies do not consistently apply this recommended definition. The terms informal economy, informal work, informal sector, and informal economic activity have been used interchangeably by scholars (Losby, Else, Kingslow, Edgcomb, Malm, & Kao, 2002). Many scholars have classified the informal economy in different ways, for example as the irregular economy (Ferman & Ferman, 1973), the subterranean economy (Gutman, 1977), the underground economy (Tanzi, 1983; Feige, 1990), the shadow economy (Schneider & Enste, 2004), the black economy, or many other labels (Losby et al., 2002). Similarly, the popular media have described the informal economy in terms such as invisible, hidden, shadow, irregular, non-official, unrecorded, or clandestine (Losby et al., 2002). Even though self-employment is sometimes associated with working informally, the term ‘working informally’ is not consistently associated with the informal economy or informal sector. Informality means different things to different people (Chen, 2012; Charmes, 2012). It is evident from the literature that the informal sector is distinguished by non-uniformity in the nature, characteristics, and circumstances of the jobs. As a result, there is no single definition adopted, and every country has its definition based on the size and nature of the economy and the related policy environment.

Morrison (1995) stated that the informal sector concept had triggered debate for many years. Three criteria are commonly used to define the informal sector: first, size, referring to self-employed and micro-businesses with fewer than ten workers; second, legality, referring to those enterprises that are unregistered and do not generally comply with legal obligations such as safety, taxes, and other labour laws; and third, limited capital, which includes a low level of physical and human capital. Morrison added that some scholars apply only one of these criteria, mostly the second. Timor-Leste defines the informal sector as all economic activity outside of agricultural activities (Timor-Leste Business Activity Survey, 2013; Harmadi & Gomes, 2013).

In relation to the informal sector debate, Polese (2015) argues that the informal sector grows worldwide, and if the policymakers intend to control its growth they must do so by management or guidance, not suppression. A productive control of informal sector growth is not one that is dissolving the informal sector but is, instead, looking for ways in which this activity can be channelled into a productive economic sector. Formal and informal sectors do necessarily complement each other, but the ratio of formality to informality depends on the capacity of the country to align both sectors and channel them to independent organizations with several instruments, for instance, providing policy and supportive environment for the sectors to grow and complement each other. Informality can also be used as a government tool to encourage citizens to take initiatives in several aspects of governance and community life. This has happened as a way to encourage and reward the work needed to build strong or specific aspects of civil society. This is the case when a country does not, willingly or unwillingly, adequately regulate aspects in encouraging citizen initiatives in contributing to a country's economy.

Providing policymakers with enough evidence on improvements in the labour market and the growth of the self-employed will enhance the country's economic performance. The economic progressive produce policy interventions not only to maintain those workers who remain self-employed but also to promote self-employed people from one level to another to secure a high-earning form of employment (Fields, 2013). As in various studies, the informal sector has different consequences. This sector has a direct impact on income, food security, and health.

Geetika, Singh, and Gupta (2011) argue that the informal sector consists of regular workers and casual labour, self-employed and those working for others, ranging from illiterate to semi-educated in all age groups (together with those below and above the normal working-age). The combination of these factors is visible in urban areas (Geetika et al., 2011).

It is evident that women are more interested in the informal sector. The flexibility, independence, enjoyment, autonomous decision-making, and closeness to family in the informal sector permits women to run their businesses and balance family work (Bull & Willard, 1993; World Bank, 2001; Schneck, 2014). For example, those who work in the informal jobs might do so for self-fulfilment, social interaction, for additional income, or as a complement to formal sector wages (World Bank, 2001).

Some researchers hold the opinion that some informal sector workers engage in the informal sector out of necessity, or because it is a better alternative than low wage formal sector employment. Alternatively, people may be involved in informal work as a choice even though more profitable opportunities are available in the formal sector. When Timothy and Wall (1997) examined street vendors in Jogjakarta-Indonesia, they found that 92 percent of the vendors worked this as their job full

time. The finding is contrary to the previous research, which stated that the informal economy is overwhelmingly part-time (Henry, 1982).

Marcouiller, de Castilla, and Woodruff (1997) identified that certain people prefer to work at home; for example, a dressmaker can watch over children and the house. Some people dislike answering to a boss and prefer to make their own decisions. Some believe they could make more money in their shops than they would in the factory. Others decided to work in the informal sector simply because they could not find any formal job. Although the informal sector contributes a significant part of the economy in the developing world, it is often stigmatized as bothersome and uncontrollable. However, the informal sector offers crucial profitable chances for the poor and has been expanding rapidly in the last decades; therefore, incorporating the informal sector into the formal sector is an essential policy challenge.

The World Bank acknowledges that there are at least two groups within the informal economy. The first informal sector group includes households and individuals who make a living as casual workers, temporary workers, and in sub-systems of agriculture, as well as those holding a variety of jobs at a particular time. The second group is those whose activity within the unofficial economy may have been initiated to evade taxes, avoid government regulations and procure income outside the law (Benjamin, Beegle, Recanatini, & Santini, 2014).

The increasing growth of the informal sector in various parts of the world in the past few decades has made this sector attractive for study. Informal sectors that have small, weak, low-quality characteristics but have a contribution to some people in developing countries. In running a business, there are undoubtedly various challenges involved. Problems in the informal sector need to be studied further

because they will give a clear picture of the appropriate policies that will be taken by the government regarding this sector. This action ensures the survival of the family and reduces the vulnerability of the family to poverty generated in part by the inefficiency of the formal sector to create jobs (Indira, 2014a, 2014b).

The informal sector economy, which accommodates the majority of non-agricultural employment, also relates to the capacity to generate greater wellbeing. There is extensive literature related to wellbeing research that emphasizes subjective well-being, and most subjective wellbeing studies in developing economies focus on a person's overall experience in life. According to Kim-Prieto, Diener, Tamir, Scollon, & Diener (2005), subjective wellbeing includes an extensive set of related concepts, such as happiness, life satisfaction, hedonic balance, fulfillment, and stress, and holds at its core the affective and cognitive evaluation of one's life. Danna and Griffin (1999) defined the term "subjective well-being" as a person's overall experience in life and suggested that it essentially reflects a person's self-described happiness. Diener (1984; 2009) further explained the dynamics surrounding the measurement of subjective well-being. First, this involves external criteria as some "ideal condition" that differs across cultures. Second, subjective well-being has been considered as life satisfaction because, in attempts to determine what leads to the positive evaluation of life, researchers have discovered that this subjective form of happiness is a global assessment of the quality of one's life guided by a person's own set of criteria. Third, the meaning of happiness is used to denote a preponderance of positive affect (e.g., being energetic, excited, and enthused) over negative affect (e.g., anger, disgust, guilt, depression) and this is how happiness is generally used. Diener concluded that subjective well-being essentially emphasises a pleasant emotional experience.

Globally, international organizations believe that the informal sector is one of the problems in employment and it is listed in the monitoring of achievement of the goals of the 2030 Sustainable Development Goals (SDGs). The informal sector is also seen as a cross-cutting issue underlying other goals as well. The relevant SDGs targets related to the informal economy include target 8 “Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity, and innovation, and encourage formalization and growth of micro, small, and medium-sized enterprises through access to financial services,” “Empowering and promoting the social, economic, and political inclusion of all irrespective of age, sex, disability, race, ethnicity, origin, religion or economic, or another status” (target 10). “End poverty in all its forms everywhere” (target 1). “End hunger, achieve food security and improve nutrition and promote sustainable agriculture” (target 2). “Ensure healthy lives and promote well-being for all at all ages” (target 3). “Achieve gender equality and empower all women and girls” (target 5). (ILO, 2018; Clausen & García, 2019).

Understanding the informal sector helps move us towards those goals and targets. Williams (2014) stated that those in poverty are more likely to participate in the informal economy. And therefore, the essence of the target 1 is to end all forms of poverty everywhere. Also, most informal sector workers are food insecure, hence, the essence of the target 2 is to eliminate hunger, achieve resilience good food and nutrition, as well as increase sustainable agriculture. Similarly, informal sector workers are vulnerable to health and other welfare shocks. The essence of target 3 is to ensure a healthy life and improve the well-being of people of all ages. Likewise, the majority of informal sector workers are women. Correspondingly, the essence of target 5 is to achieve gender equality and empowering women. While, the

essence of target 8 is to promote inclusive economic growth and sustainable, productive job opportunities, and comprehensive, and decent work for all. Finally, the essence of target 10 is to reduce intra and inter-country disparities.

The SDGs are universal, integrated, and inclusive, meaning that nothing is left behind or overlooked. The informal sector is at the center of the economic development process in developing countries. Understanding the drivers and consequences of the informal sector is at the core of sustainable and inclusive development, as the informal sector is closely linked to how fast a country grows, and to poverty and inequality, including gender inequality.

The main issue discussed in the literature has been the importance of the informal sector and its relation to the formal economy. In the Timor-Leste context, many informal economic activities carried out by people in urban areas can be observed. One of the most visible activities of the informal sector in Timor-Leste is ambulant trading. This activity attracts both men and women and is increasingly apparent on street corners. This informal activity has been shown to increase family income and, in many cases, this kind of business is the only source of household income (Hart, 1973; Reardon, 1997; Tshuma & Jari, 2013).

1.2 Background

Timor-Leste, also known as East Timor, is located on an island in Southeast Asia that shares a land border with Indonesia. Timor-Leste is one of the smallest countries in Southeast Asia, with a total area of 14,954 square kilometres. Administratively, Timor-Leste is divided into 13 municipalities (sometimes called districts), with Dili as the capital city and the largest population centre. The majority of the population of Timor-Leste is domiciled in rural areas with subsistence agriculture. With low rainfall in almost all regions, Timorese are aware of food

security issues. The “hungry season” extends from September October to March each year (Da Costa, Lopes, Ximenes, Ferreira, Spyckerelle, Williams, & Nesbit, 2013). The low level of productivity in subsistence activity often fails to produce marketable surpluses. The majority of Timorese are in rural areas. This situation leads to the dependency on agriculture, which continues to play a vital role in the country’s food security as well as for the employment, and cash income of the population. One of the main problems in developing countries is the issue of food security. The number of people suffering from chronic hunger has grown from under 800 million in 1996 to over one billion recently (FAO, 2011). The expansion of the informal sector in some developing countries has resulted in poverty reduction and improved food security (Mulwafu, 2004).

Figure 1.1 shows Timor Island as a whole. It is divided into two parts, the eastern part belongs to Timor-Leste, while the western part is under the Indonesian control.

Figure 1: Map of Timor-Leste



Source: Statistics Office, Timor-Leste

Regarding the informal sector as a means of employment creation, Timor-Leste has made several steps that lead to private sector stimulation. At the national level, Timor-Leste has formulated an inclusive vision, including economic insight. A vision for 2030 is reflected in Timor-Leste's Strategic Development Plan (SDP):

The economic vision of SDP is that by 2030, Timor-Leste will have joined the ranks of upper-middle-income countries, eradicated extreme poverty and established a sustainable and diversified non-oil economy (SDP, 2011-2030, p.227).

This vision was translated into actions called 'Reform and Economic Growth.' The guidelines for economic reform and the growth of Timor-Leste 2015-2017 are primarily aimed at private investment, economic diversification, and sustainable development. More specifically, reform and economic growth will be reflected in improvements in land and property regulation, industrial infrastructure development, labour regulation, workforce development, business environment reform, fiscal reform, private investment system reform, and private sector development reform (State Minister, Coordinator of Economic Affairs, 2016). Reform in all fields will foster an investment climate, including for small businesses.

As one of the most oil-dependent countries in the world, Timor-Leste is blessed with the gift of petroleum wealth. Given the volatility of oil prices, since 2010 the government of Timor-Leste has been initiating greater emphasis on developing its non-oil economy (Harmadi & Gomes, 2013). This has been reflected in the Timor-Leste Strategic Development Plan (SDP, 2011-2030). The main focus of the SDP is to guide the nation's farsighted goals to scale up economic growth and reduce poverty. The latest Timor-Leste Survey of Living Standards (TLSLS) conducted

from April 2014 to April 2015 showed a substantial decline in poverty compared with the previous survey in 2007 (TLSLS, 2016). At the national level, the proportion of people living in poverty decreased from 50.4 percent in 2007 to an estimated 41.8 percent in 2014. At the international extreme poverty line of \$1.90 using purchasing power parity dollars (US\$PPP) in 2011, poverty in Timor-Leste had dropped from 47.2 percent to 30.3 percent over the same period. The TLSLS, 2007 reported an income per capita of US\$ 0.88 per day (Harmadi & Gomes, 2013).

Demographic challenges, such as the fastest population growth rate in the world, are severe issues for Timor-Leste (Saikia & Hosgelen, 2010). According to the 2015 census, the annual population growth rate was around 1.81 percent between 2010 and 2015 (General Directorate of Statistics, 2015 p.19). The population growth rate is still high compared with other Southeast Asian countries. Saikia and Hosgelen (2010) further explained that this exceptional growth has mainly resulted from an extremely high total fertility rate. The demographic transition might be considered as a useful way to consider how demographics affect the economy of a country like Timor-Leste. The latest data published by the World Bank (Table 1.1) found that there were several changes in the core indicators when compared with other countries in the Asia and Pacific region.

Table 1.1: Timor-Leste selected Indicators

Selected indicators	2017
Population, (in millions)	1.3
GDP (current US\$ billions)	1.7
GDP per capita, current in US\$	1,299
GNI per capita, Atlas US\$	2,244
Basic needs poverty rate	41.8
Poverty rate (\$1.9/day 2011 PPP terms)	30.3
School enrolment, primary (% net)	95.6
Life expectancy at birth, years	68.6

Source: The World Bank, 2018

Several studies have highlighted the issues of poverty, economic infrastructure development, business environment, and private sector development in Timor-Leste. Within the government's platform on economic reform and growth, ILO (2016) researched the enabling environment for sustainable enterprises. This research underlined:

“the promotion of sustainable enterprises and called for the strengthening of the institutions and governance systems which nurture enterprises” (p. 4).

Policy reforms are essential in leading to a favourable promotion of sustainable businesses in Timor-Leste. ILO (2016) affirmed that there are some issues of the enabling environment for sustainable enterprises in Timor-Leste. Entrepreneurial culture, legal and regulatory environment, access to financial services, physical infrastructure, and education and life-long learning are among the issues that require more attention if the government expects a dynamic business environment to develop in Timor-Leste (ILO, 2016). Devi (2017) argued that in terms of economy, Timor-Leste is still being categorized as an unstable economy by some international institutions despite growing in national income per capita in the previous years. The classification is based on poverty, unemployment, and government ineffectiveness, especially the difficulty of doing business in Timor-Leste. Devi added that the main obstacle is that the economic institutions in Timor-Leste are very weak and demonstrate an unsupportive business environment for growth. Consequently, unemployment and poverty continue to be an issue in Timor-Leste even though the TLSLS (2016) reported that the poverty rate has significantly decreased in the country.

World Bank (2019) reported that in terms of ease of doing business, Timor-Leste ranks 178th out of 190 economies. The report showed that Timor-Leste is still far behind other lower-middle-income countries in Asia and Pacific such as the Philippines at 124, Papua New Guinea at 108, and Palau at 133, and Kiribati at 158. Reports on doing business summarized various essential measurements of the regulatory environment as it applies to local companies, which provides quantitative indicators on regulation for starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency. The World Bank further specified that effective contract enforcement is essential to improving the economy and continuous growth. Also, the World Bank identifies that there are two main problems hampering business growth and entrepreneurship in Timor-Leste: access to information; and inadequate government assistance. Access to information includes market, capital, and legal assistance, while inadequate support is related to necessary infrastructure and transportation (World Bank, 2019b).

The informal sector appears small but has a significant impact on individuals and households in developing nations. However, the contribution of the informal sector and its effect on the wellbeing such as income, food security, health, life satisfaction (Kingdom & Knight, 2001; Frey & Stutzer, 2002), and the inhibiting factors faced by informal sector actors have attracted less empirical research that explores it in depth, especially in the context of Timor-Leste.

1.3 Objectives and Research Questions

The main objective of this thesis is to empirically examine the informal sector's contribution to the economic wellbeing of people in Timor-Leste. To identify

whether the informal sector has an impact on informal sector economic actors, an investigation is needed to discover who is involved in this sector and what activities they are involved in. In this thesis, I will be comparing the informal sector and the not informal sector. The informal sector refers to a person's primary and secondary economic activities that are unregistered and non-agricultural. The 'not-informal' sector is any economic activity that is not in the informal sector.

After discovering who they are and what their activities are in the informal sector, further examination is needed to investigate the impact of the informal sector on the welfare of informal sector actors. Factors affecting well-being have been widely studied. However, how people take value from the informal sector activity has not been fully explored. One of the topics in this thesis provides a way to understand the effect of major determinants on income security, food security, and health, and identify the implications for the creation of relevant policies. The next step of this thesis is to identify what problems or issues are obstacles to starting and sustaining a business in the informal sector from the perspective of the informal sector workers. It is hoped that with these comprehensive studies, this research will deepen our knowledge and offer solutions to increase the positive impact of the informal sector. Decision-making and policies related to the informal sector are necessary, as this sector continues to grow almost everywhere, especially in developing countries.

This thesis is organized into three studies that aim to explore the perspectives, consequences, and other issues related to the informal sector in Timor-Leste. The thesis will address the several research questions in following sections:

RQ1: That are the characteristics of the informal sector in Timor-Leste?

(This includes who is in the informal sector; what activities are occurring in the informal sector).

To answer this question, a study based on primary data was conducted. This study examines people included and not included in the informal sector. A logistic regression analysis revealed that most of the participants in our sample participated in the informal sector. Other than women having a statistically higher proportion than men in the sector, the results also demonstrate that more people without education tend to participate in the informal sector.

Further analysis of economic activities showed a gender dimension in some specific activities. Women seem to enjoy doing business such as retail grocery, and home-based activities, while men are mostly involved in those activities out of the home like quarrying and mining. A low level of education is the trigger for most people to choose the informal sector because this sector has no educational requirements. With a little capital and courage, they can start small-scale businesses. Important human development indicators indicated that Timor-Leste is among the lowest in Southeast Asia and the Pacific (ADB, 2019).

Economic development has failed to generate adequate modern jobs to accommodate some unemployment, which increases significantly in most developing economies (ILO, 2002). Due to the demographic shift, United Nations Development Programme-UNDP (2015) estimated that there would be between 2010 and 2030, 734 million jobs worldwide. The UNDP's estimation considered the possible changes in labour force participation rates. Also, the achievement of target unemployment rates at 4 percent for adults globally. Natras (2017) classified

a high unemployment rate in low and middle-income countries is at 9.8 percent. Most of the countries with these unemployment rates have limited public or private funding to protect the unemployed from loss of income (Natrás, 2017 p.774). Although the informal sector is neglected, it makes a significant contribution.

RQ2: How does the informal sector affect the income security, food security, and health of the informal sector actors?

To answer this research question, an empirical study was undertaken. By applying primary data with a representative sample, this study explored demographic attributes and engagement in informal sector work with the wellbeing (income security, food security, and health) of informal sector workers in Timor-Leste. Linear regression models were used, and the results confirmed that informal sector status is negatively correlated with income security, but not significantly related to food security or health.

Food security and income security are two concepts used to describe poverty (Maharjan & Joshi, 2009).

The Human Development Index (HDI) highlighted three basic dimensions of human development: long and healthy life; access to knowledge; and a decent standard of living. The three dimensions are measured by life expectancy, years of education attained by the adult population, and by gross national income (GNI) per capita expressed in dollars converted using purchasing power parity (PPP) conversion rates (UNDP, 2018). Timor-Leste's HDI rank at 132 out of 189 setting Timor-Leste in the medium human development category. Timor-Leste's HDI value increased from 0.507 in 2000 to 0.625 in 2017. Although Timor-Leste's HDI improvement appears to be not significant compared with other Asian and the

Pacific countries (like Fiji ranked at 92 with HDI value 0.741), it shows an increase of 23.3 percent between 2000 and 2017 (UNDP, 2018).

From these statistics, it can be understood that every individual is looking to improve their wellbeing and to generate income for survival, while, the government as a whole is interested in the nation's wellbeing, for example tax collection from the services provided by the government. These two things are currently operating in a close relationship but almost independently of one another.

In addition to wellbeing, this thesis also examines barriers to growth in this sector. The following research question is presented to discover more about the obstacles faced in conducting business in the informal sector from the perspective of informal sector actors.

RQ3: What are the main obstacles identified by informal sector workers in Timor-Leste?

To answer this question, a qualitative study was conducted to identify the issues that hamper the informal sector businesses.

The informal sector is an essential key to economic growth and job creation in developing economies. It is crucial to determine the factors that hinder small businesses growth. The result shows that financial capital is the primary issue of the informal sector business. Another issue that also contributes to slowing down small business development is basic infrastructure such as electricity, water, roads and access to transportation. Cultural factors are also among the hindrances to informal sector development. In all sectors of the informal economy, workers may face different problems. Their lives are complicated at work, and very often also at

home (Kabeer, Milward, & Sudarshan, 2013). A study on “informal self-employed” analysed the larger group of the informal sector and those who are self-employed. This includes owners of the unregistered small-scale enterprises with employees of fewer than five, and it is necessary to identify the challenges and barriers within these businesses (Maloney, 2004).

A study conducted in five African countries (Ghana, Kenya, Nigeria, Rwanda, and Tanzania) showed that in order to improve income growth and poverty reduction, it is essential to improve the productivity of the informal sector (Adams, Johansson de Silva, & Razmara, 2013). The authors further explained that informal sector actors generally carry out their activities individually to meet their immediate needs rather than forming groups. As a result, productivity is low. Several other factors also cause low productivity in the informal sector; in addition to lack of access to finance, and underlying infrastructure problems, the level of human capital (e.g., skills) is a big issue (Adams et al., 2013).

World Bank (2011; 2014) notes that, demographically, there is a high number of women involved in the informal sector. Due to flexibility and autonomy, women may choose to work in the informal sector rather than the formal sector, because it allows them to manage both work and family duties. Other research studies have shown that many of those involved in the informal sector run businesses for enjoyment and excitement because they can control their employment destiny, and make their own decisions, also, they may want to be closer to family, while others run informal sector business to increase income opportunities and acquire personal wealth (Bull & Willard, 1993; World Bank, 2011; Schneck, 2014). Portes and Schauffler (1993) identified that in the demographic and economic context, the

phenomenon of the informal sector growth affects development policies in the developing world. They further stated that among the various schools of thought on the informal sector there is universal recognition that rural-urban migration and labour excesses in the cities were the fundamental reason for the informal sector growing.

Djankov, McLiesh, and Ramalho (2006) operated a data set at the national level to create the link within the burden of business regulations and growth. Their research adopted industry deregulation developed by the World Bank. The central focus of the research is on indicators to measure how regulations support or impede business performance. There are “seven regulatory areas”: starting a business; hiring and firing workers; registering property; getting bank credit; protecting equity investors; enforcing the contract in the courts; and closing a business. In connection with the indicators above, the World Bank (2019) found that there are two main problems hampering business growth and entrepreneurship in Timor-Leste: access to information; and inadequate government assistance. Access to information includes market, capital, and legal assistance, while inadequate support is related to basic infrastructure and transportation.

1.4 Significance of the Thesis

This thesis is a compilation of three interconnected studies attempting to cover different ideas on different aspects of the informal sector and economic wellbeing, as well as issues faced by those who engage in the informal sector in Timor-Leste. Given the geographical area of Timor-Leste with the majority of the population residing in rural areas, more than 80 percent of the rural population depends on subsistence agriculture (Timor-Leste, Population and Housing Census, 2015), the government does need to pay more attention to other sectors outside the agricultural

area. Small businesses such as trade and other small industries can develop if appropriately managed and seriously. By offering a comprehensive understanding of the informal sector characteristics, type of economic activities of the informal sector businesses, and its wellbeing as well as barriers hampering the informal sector people in this thesis, policymakers can be guided in making better decisions through positive business climate stimulation. The positive business environment created will have a positive impact on the private sector, especially small businesses which will then foster the country's economic growth.

The decision to take part in the informal economy must be based on several reasons. Turkey (2005) argues that the causes and the motives of an informal sector in an economy are possibly driven by the following factors:

the economic system and the structural features of the economy; inequalities in the income distribution; rapidly increasing population and immigration from rural areas to the cities; the structure of the economic preferences and economic policies; the problems that are caused by the public sector economics (i.e. tax system); the intensity of the government regulations; lacking of public sector services; economic crises and unproductivity; political instability, and intensity of competition both at national and international level (p.3).

In one part, researchers hold the opinion that some informal sector workers engage in the informal sector out of necessity, or because it is a better alternative than low wage formal sector employment. In other part, people may be involved in informal work as a choice even though more profitable opportunities are available in the formal sector. For example, those who work in the informal jobs might do so for self-fulfilment, social interaction, for additional income, or as a complement to formal sector wages (World Bank, 2011; 2012; 2014).

Marcouiller, de Castilla, and Woodruff (1997) identified that certain people prefer to work at home; for example, a dressmaker can watch over children and the house. Some people dislike answering to a boss and prefer to make their own decisions. Some believe they could make more money in their shops than they would in the factory. Others decide to work in the informal sector simply because they could not find any formal job. Although the informal sector contributes a significant part of the economy in the developing world, it is often stigmatized as bothersome and uncontrollable. However, the informal sector offers crucial profitable chances for the poor and has been expanding rapidly in the last decades, as such, incorporating the informal sector into the formal sector is an essential policy challenge.

The main issue discussed in the literature has been the importance of the informal sector and its relation to the formal economy. In the Timor-Leste context, many informal economic activities carried out by people in urban areas can be observed. One of the most visible activities of the informal sector in Timor-Leste is ambulant trading. This activity attracts both men and women and is increasingly apparent on street corners. This informal activity has been shown to increase family income and, in many cases, this kind of business is the only source of household income (Hart, 1973; Reardon, 1997; Tshuma & Jari, 2013). This action ensures the survival of the family and reduces the vulnerability of the family to poverty generated in part by the inefficiency of the formal sector to create jobs (Indira, 2014a, 2014b).

One of the main issues in developing economies is food shortages and food insecurity. The number of people suffering from chronic hunger has rapidly increased in the last fifteen years (FAO, 2011). On the one hand, the growth of the informal sector in some developing countries has reinforced their marginalised position (Williams, 2014). On the other hand, the expansion of the informal sector

in some developing countries has resulted in poverty reduction and improved food security (Mulwafu & Msosa, 2005).

The declaration of the World Food Summit (1996) clearly stated that one of the essential needs shared by all human beings is for enough food. This statement raises the need for an international commitment to end hunger. FAO (2012) projected that one in eight people in the world, or equivalent to 870 million, suffered from chronic undernourishment in 2010-2012.

Another issue for developing countries is that of income security; poor people in developing countries are exposed to a broad range of threats. Poverty in developing countries exists in various ways depending on geographical areas, gender, rural-urban, and ethnic division (Maharjan & Joshi, 2009). Inder, Brown and Datt (2014) assumed that the base model involves a ratio of family's food consumption to their total income. Both variables are defined in monthly per capita terms, and the model controls which permit for the disparity between households in urban or rural areas, including geographic regions, and variation in household size. When Timothy & Wall (1997) examined street vendors in Jogjakarta-Indonesia, they found that 92 percent of the vendors worked this as their job full time. The finding is contrary to the previous research which stated that the informal economy is overwhelmingly part-time (Henry, 1982). Nonetheless, the informal sector carried out shows characteristics that generally emphasize: small scale operations, ownership, and operation carried out individually or family, high labor intensity, and dependence on original resources and skills obtained outside the formal sector (Timothy & Wall, 1997).

Few studies on enterprises and workers have been made in urban areas in Timor-Leste. Inder et al. (2014), who investigated poverty in Timor-Leste, concentrated

solely on employers or managers of companies and did not study informal sector employees. Their study only provides information on the functioning at the firm level. There is still a lack of information at the household and individual levels. It remains challenging to analyse the overall labour market performance in Timor-Leste with the informal economy not being accounted for.

There is insignificant research at the family level concerning why people join the informal sector in Timor-Leste. Therefore, this study will contribute to understanding the factors associated with informal sector employment, and could assist the government in developing policies that promote entrepreneurship in the registered formal sector. This research will also be useful in identifying opportunities for further studies.

The low level of productivity in subsistence activity often fails to produce marketable surpluses. The majority of Timorese are in rural areas. This situation leads to the dependency on agriculture which continues to play a vital role in the country's food security as well as for the employment, and cash income of the population.

1.5 Thesis Outline

The remainder of this thesis consists of four chapters, including three primary research articles. Chapter 2 provides a comprehensive analysis of the characteristics of the informal sector in Timor-Leste (Article 1). This chapter begins with the background and the definition of the informal sector as well as the definition of the informal sector in the context of Timor-Leste. The chapter then describes the characteristics of the informal sector and highlights the economic activities carried out within the informal sector in Timor-Leste.

Chapter 3 discusses the relationship between informal sector work and wellbeing (measured by income security, food security, and self-reported health) (Article 2). Ordinary least squares test was adopted to analyse the impact of demographic features of the informal sector people on their income security, food security, and health. This chapter argues that the variable significant in the empirical test was the relationship between the informal sector and income security. The other variables showed less reliable with food security and health.

Chapter 4 examines the issues faced by the informal sector, based on information gathered from informal sector workers through open-ended questions (Article 3). A qualitative approach was implemented to highlight obstacles impeding informal sector growth. The chapter is thematically analysed to present informal sector actors' perspectives, views, and opinions with regards to the obstacles faced by their businesses.

Finally, Chapter 5 provides a summary and implications for policymakers, as well as limitations of the thesis and potential avenues for future research. This chapter synthesizes the overall findings of the informal sector's contribution to the economic wellbeing of those people engaged in the informal sector in Timor-Leste.

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Chapter 2: The characteristics of the informal sector in Timor-Leste

2.1 Introduction

Sectors of a country's economic activity can be categorised as belonging to the formal sector or the informal sector. The formal sector includes both public and private sector economic activity. Information gathered from these three sectors (public, private, and informal) provides an understanding of a country's economy. The informal economy or informal sector, as it is referred to interchangeably, is regarded as a group of household enterprises or unincorporated firms owned by households that include informal own-account businesses (International Labour Organization/ILO, 1972; Helen, 1973; Anne, 2005). These enterprises may use family workers and employees on an irregular basis, and informal sector employers may employ one or more employees on a continuous basis (Sookram & Watson, 2008; D'souza, 2013). Though the terms "informal economy" and "informal sector" are often used interchangeably, in this paper we will use the term "informal sector" henceforth.

Rapid population growth in some developing countries has led to difficulty for the formal sector in providing full employment opportunities for the expanding labour force (ILO, 2012). Thus, the informal sector is growing partly as a result of the slow pace of formal sector employment growth (Altman, 2008). D'souza (2013) observed that as long as economic growth is not followed by an improvement in job levels and income, the informal sector will continue to grow. Although the growing informal sector creates employment and generates income, some people view these activities as irritants to development (Indira, 2014a; Indira, 2014b). However, for

many countries, the informal sector has the potential to make a positive contribution to the economy, provided the government has appropriate policies to deal with this sector (Indira, 2014a).

In some cases, the development of the informal sector has not been accepted by either the government or the public. Many developing countries want to limit the growth of the informal sector, since it cannot be easily controlled or taxed (Bhowmik, 2010; Kanbur, 2017). However, optimists believe that the informal sector can partner effectively with the formal sector as an alternative option in generating job opportunities for the people, as a large number of people may depend on this sector for their livelihoods (Indira, 2014a; D'souza, 2013; Recio & Gomes Jr, 2013). For example, the ILO recognizes that the dynamism and growth of the informal sector has the potential to boost economic growth and overall employment (ILO, 2013). The opportunities that may arise from the informal sector could benefit communities and give people the chance to work according to their capabilities without having to depend on others.

Additionally, when looking at this from an economic, social, and political perspective, the informal sector has several advantages and disadvantages. People predominantly engage in the informal sector due to economic need (Portes, Castells & Benton, 1989). In this regard, the informal sector provides a major source of income and employment in countries where formal job possibilities are inadequate, and social security is practically non-existent. When a large proportion of the labour force is engaged in the informal sector, it has significant implications for public policy, especially policies related to issues such as safety and workers' rights (Spiegel, 2012; Kanbur, 2017). Due to these issues, developing countries are increasingly concerned with the informal sector.

Timor-Leste is an island located in Southeast Asia with an area of about 14,954.44 (km sq.) with a population of approximately 1.2 million based on the 2015 census. The island nation shares a land border with Indonesia. Most of the area is highlands, and the majority of the population is employed in agriculture, with 70% residing in rural areas (Timor-Leste Population and Housing Census, 2015).

Growth of the informal sector in Timor-Leste has followed a similar pattern to that in other developing countries. The Timor-Leste Labour Force Surveys (LFS) show a slightly increasing trend towards employment in the informal sector from about 70% in 2010 to 71% in 2013. However, there has been a change in the labour force framework based on 19th ILO conference in Geneva, as subsistence food producers are no longer considered part of the labour force. Based on the changed in the labour force framework, the informal sector seems increased in importance because 71% of labour force in 2013 (excluding subsistence agriculture) is likely to be much higher than 70% of labour force in 2010 (including subsistence agriculture). One consideration to note from the LFS 2010 and 2013 is that there is no specific definition of the informal sector in both surveys.

Few studies on enterprises and workers have been done on urban areas in Timor-Leste. For example, Inder, Brown, & Datt (2014) investigated poverty in Timor-Leste, but they concentrated on employers or managers of companies and did not specifically study informal sector employees. Their study merely provided information on operations at the firm level. As a whole, there is still a lack of information on informal sector economic activities both at the household and individual levels in Timor-Leste. The informal sector in Timor-Leste has increased largely in the recent years (World Bank, 2013). Banerjee & Duflo (2006; 2007) pointed out that in the past decade, the growth of the informal sector has increased,

especially in Timor-Leste. Self-employment is among the largest growth area in Timor-Leste's economy. Given the limitations of the previous studies, the purpose of this paper is to identify the characteristics of the informal sector in Timor-Leste. Specifically, we address the following issues: who participates in the informal sector, and what activities are they engaged in?

Overall, the remainder of the paper is organised as follows. Section 2.2 reviews the relevant literature. This section will also highlight the concepts and definitions of the informal sector, as well as the definition of the informal sector within the context of Timor-Leste. Section 2.3 discusses how the data were collected and the questions that were selected, and Section 2.4 explains the methodology used for the data analysis. Section 2.5 provides the results and discussion. Section 2.6 offers the conclusion, limitations, and suggestions for future study.

2.2 Literature review

During the 1950s and 1960s, it was broadly assumed that poor traditional economies could be transformed into dynamic modern economies if there was a proper mix of economic policies and resources. Boeke (1953) argued that during this process, the traditional sector of small traders, small producers, and casual jobs would be absorbed into modern capitalism or the formal economy, meaning that traditional economic activity would disappear (Chen, Vanek, & Carr, 2004).

In the early 1970s, the poor economic growth prospects of developing countries began to cause concern about growing unemployment rates. The first comprehensive mission of the ILO was to Kenya in 1972 (Bangasser, 2000; Chen et al, 2004). The ILO acknowledged that the traditional sector had not only survived but expanded. It had become a profitable and efficient business, even as a marginal activity (ILO, 1972). To address this fact, the ILO chose to use the term "informal

sector” rather than “traditional sector” for various small and unregistered economic activities. The term “informal sector” was also used one year prior during the “employment mission” by Keith Hart. He conducted research on economic activity in Ghana in 1971 and published his results in 1973 (Hart, 1973; Chen et al, 2004). Hart’s research was primarily focused on the people involved in economic activities who had small incomes, a lack of expertise and were illiterate. While Hart’s (1973) research was able to attract the attention of academics after its publication, there has not been much attention from the labour observers. Yet, Hart’s report has been recognized by a number of institutions as the foundation of the theory of the informal sector in an organized manner, and accordingly, Women in Informal Employment Globalizing and Organizing (WIEGO) and ILO produced several policies related to the informal sector (Chen, 2012; ILO, 2014).

However, there are pros and cons to the ideas and concepts identified by Hart and which the ILO developed from the Kenyan mission. Some people argue that the informal sector is merely marginal and peripheral to the growth of the formal sector or modern capitalism. With the development of modern industry and sufficient achievements in the economy of developing countries, the informal sector will automatically disappear. Nevertheless, other observers argue that the diversity of development in the industrial sector in developing countries could contribute to the potential growth of the informal sector rather than its disappearance (Chen et al, 2004). It is understandable that the informal sector could appear small, but expand rapidly due to the development of the global economy and the modernization that proliferates in all countries.

The long debate over the informal sector eventually crystallized into three dominant schools of thought. These groupings are based on the form of the

informal sector, the characteristics of the informal sector, and its connection to the formal sector and related formal rules (Chen et al, 2004).

2.2.1 The dualist school of thought

The dualistic labour market approach divides the economy into two subdivisions: the industrial sector and the agricultural sector. The industrial sector refers to the capitalist approach to production, capital accumulation, and economic progression. The agricultural sector is based on subsistence agriculture, pre-capitalist and with a lack of economic growth. As the agricultural sector may be heavily relied upon by the subsistence economy, the hardships experienced by the population increase in proportion to the inefficiency of the sector. Poverty and a lack of job opportunities in rural areas force people to move from their villages to the cities to search for jobs. These migrants have a greater chance of joining the informal sector, due to lack of skills or education that would enable them to find a better job with secure employment in the formal sector. Thus, they are pushed towards the informal sector for their economic survival.

In the dualistic labour market approach, the informal sector should be understood as an involuntary solution to unemployment. The informal sector is perceived by rural migrants as a transitory survival strategy while awaiting formal sector employment opportunities to open. At this time, wages in the urban sector could even be lower than wages in the rural agricultural sector (Fields, 1975; Bromley, 1978; Lipton 1980; Kay, 2011). It is true that rural migrants initially expect to get high-paying jobs while carrying out economic activities in the informal sector. However, this may not occur, so that these rural migrants may remain in the informal sector indefinitely.

2.2.2 The legalist school of thought

The legalist approach was initially proposed by Hart (1973) and was based on his ethnographic study of the informal sector in Accra, Ghana. Hart (1973) gave details of the formal and informal employment prospects in Accra and attributed the former to paid jobs and the latter to self-employment. The legalist approach looks to account for the contribution of employment creation, new businesses, and capital accumulation in urban informal economic activities. One reason for rural migrants to join the informal sector is because there are fewer barriers to entry into the informal sector. According to De Soto (1989), a general disregard for legal restrictions leads to deregulation of the economy. People have an urgency to find a livelihood in the absence of job creation. From this view, informal entrepreneurs are acknowledged as economic heroes because they manage to survive and therefore must not be perceived as low productivity marginal actors (Portes & Schauffler, 1993, Kay, 2011).

De Mel, McKenzie, & Woodruff (2013) highlighted that although reforms are being implemented, most businesses in developing countries remain informal. Small firms are usually not interested in becoming formal as they believe they will not benefit from these legal institutions (Maloney, 2004; Ulyssea, 2010). Chaudhuri & Mukhopadhyay (2009) highlight that long registration procedures, complex administrative steps and the costs involved in legalizing an enterprise discourage entrepreneurs from operating legally and instead induce them to join the informal sector. For example, according to De Mel & McKenzie (2011), the majority of firms in Sri Lanka are not registered with any government agencies. Even businesses that employ paid workers may not be registered. An informal sector actor may be concerned about his or her ability to repay a loan if they want to borrow money

from the bank. Likewise, they may worry that not being able to repay the bank loan may cause difficulties with other legal institutions. It is this kind of evaluation that will ultimately determine informal sector actors' decisions (Peatty, 1987; Perry, Maloney, Arias, Fajnzylber, Mason, & Saavedra-Chanduvi, 2007; Babbitt, Brown, Mazaheri, 2015). This view is supported by De Soto (1989), who notes that there are burdensome entry regulations that affect small enterprises trying to become formal.

Given the role of the informal sector in an economy, the legalists also suggest that, instead of being seen as the second-best choice compared to formal employment, it is better to recognize the informal sector as a partner in an economy. Chaudhuri & Mukhopadhyay (2009) and Kay (2011) further argue that the informal sector is better recognised as a voluntary strategy where entrepreneurs could initiate their businesses at low cost. As an example, data from Latin American countries such as Mexico show that over 60% of self-employed people decided to leave their previous jobs voluntarily and were happier with self-employment than with seeking a job in the formal sector. This implies that the vast majority of people entering the informal sector have a desire for greater independence or to earn more money (Maloney, 2004; Kingdon & Knight, 2005). The increase in the informal sector has some positive side. The positive contribution of the informal sector is that it provides employment and incomes and thereby alleviates poverty (Benjamin and Mbaye, 2012).

2.2.3 The structuralist school of thought

Rural-urban migration causes growth in informal sector employment and excess potential labour supply in urban areas (Lewis, 1954). While both the dualistic

approach and the legalist approach acknowledge population growth, neither approach addresses issues of production and distribution.

In contrast, the structuralist approach claims that the fundamental difference between formal and informal activities is based on the character of production and distribution processes. This approach recognizes that the condition of excess labour supply created by rural-to-urban migration has more complex consequences than acknowledged in either the dualistic or legalist perspective. It identifies that the informal sector is varied and that there are at least two distinct classifications that need to be defined. Informal micro-entrepreneurs with access to some capital and labour resources are contrasted with unprotected workers who involuntarily live on a subsistence wage.

Although the structuralist approach emphasises the difference between the formal and informal sectors in terms of character, processes of production and distribution, this approach does not perceive the informal sector as entirely separated from the formal sector. Instead, the informal sector is viewed as thoroughly related to the formal sector (Portes and Schauffler, 1993). The structuralist perspective claims that one of the main linkages between the informal and the formal sectors is the provision by the informal sector of low-cost goods and services to workers in the formal sector. This has several beneficial effects on the developing economy. First, it lowers the cost of consumption and increases the purchasing power of the urban middle class. Second, it allows poor households to make ends meet. Third, it provides formal capitalist enterprises with a subsidy that allows them to keep wage costs lower than they would be if worker consumption occurred entirely within formal markets. Finally, the informal sector provides a supply of unprotected labour, through undeclared hiring and subcontracting, which allows formal sector firms to

avoid costly labour regulation (Portes, Castells & Benton, 1989; Portes & Schauffler, 1993). This tends to suggest that both sectors (informal and formal) are complementary to one another.

2.2.4 Previous studies of the informal sector

Considering the three school of thoughts associated with the informal sector and formal sector, what precisely is the difference between the informal and the formal sector? By its nature, the informal sector is excluded from state control or regulation (Week, 1975; Kavan, 2013). There are other substantial differences between the formal and the informal sector.

On the one hand, *the formal sector is where*: People are predominantly employed by formal sectors such as government or private sector. In some circumstances, people owned the company and employed other people for wages. Employees have a formal offer, both individuals and firms pay taxes on what they earn. Individuals are counted as part of the workforce. Individual and firm production included in national income (GDP). Worker's time is well structured and individuals entitled to legal protection and rights (Kavan, 2010; 2013).

On the other hand, *the informal sector is where*: People earn money or produced goods for their own consumption, even though people do not have a job. Employees do not have a formal contract with the employer. Both individuals and firms do not contribute to taxes. Individuals are not counted as labour force as they are regarded as self-employed or household-based activities. Individual and firm production excluded from national income (GDP). No time restriction because an individual can work when they like, and individual excluded from legal protections and rights (Kavan, 2010; 2013).

It is evident from the discussion above that the informal sector is a sector that is neglected and is beyond the reach of the social security system. Most economic activities in the informal sector are found outside the non-agricultural sector. Chen, Jhabvhal, & Lund (2001) reported that the contribution of the informal, non-agricultural sector to the economy in Asia has ranged from 45% to 85% following the Asian economic crisis in 1997/1998.

Furthermore, Vanek, Chen, Carré, Heintz, & Hussmanns (2014) found the percentage of non-agricultural employment in Asia ranges from 62% in Eastern and South-eastern Asia to 82% in Southern Asia. The Asian Development Bank (ADB, 2010) reports that the growth of the informal non-agricultural sector has occurred in Africa and Asia, but the growth of the informal sector in Asia was more significant in 2010. For instance, in Indonesia, the informal non-agricultural sector was estimated to be more than 50% of the workforce (Asian Development Bank & Statistics Indonesia Country Report, 2010). Different sources indicate that the role of the informal sector outside agriculture shows similar trends among developing countries.

It is an important fact that most women in Asia and Africa work for themselves, work without being paid or work in a family business (International Finance Corporation (IFC), 2010). Of those working outside the formal sector and not agricultural, the participants are mostly composed of women (Siggel, 2010; Visaria, 2012; Chant, 2013; ILO, 2013). Previous findings in a book entitled “Invisible Work, Invisible Workers” (Leonard, 1998), confirmed that women’s involvement in the informal sector tends to be higher than that of men. Women generally become business owners due to having low levels of education and a lack of formal training to qualify for wage employment in the formal sector (Seturahman, 1976; Perry et

al, 2007; Vanek, et al, 2014; Babbitt et al, 2015). While the IFC (2010) reported that women in Timor-Leste are mostly absent from the formal sector, Timorese women are more actively in the agricultural sector at approximately 88% compared with men. However, women are also actively engaged in non-agricultural economic activities such as trading. Women in Timor-Leste are estimated to own over 40% of micro enterprises (IFC, 2010).

The barriers such as low level of education, lack of formal training, and lack of access to financial resources that women face to participate in the formal economy has an impact on the high representation of women in the informal sector. Women may intentionally stay in the informal sector because at some level, it gives them the option to work autonomously and flexibly, so that they can balance work and family responsibilities (The World Bank, 2011). Due to conflict between responsibilities and performing such economic activities among women, informal and formal activities should not be viewed as separations, but should instead have a close relationship with each other (Chant & Pedwell, 2008).

Several studies have linked education levels with informal sector employment. The World Bank explicitly says that highly educated people tend to dominate formal employment, while people with low or uneducated backgrounds dominate work in the informal sector (The World Bank, 2011; Adams & Razmara, 2013; Gillani & Naeem, 2017).

2.2.5 Definition of the Informal Sector

There are various definitions of the informal sector, but in this paper, we will use the concept initially raised by Hart (1973). Hart defined the informal sector as an integral part of the urban labour force, outside of the formal labour market. He identified the informal sector as another word for small businesses run by the self-

employed. Self-employed and casual labour are two such activities in the informal sector. An example of the self-employed are street vendors. A street vendor is generally defined as an individual who provides goods for sale to the public at large from a temporarily built structure (Bhowmik, 2010).

The following are common characteristics of the informal sector as defined by the ILO (1972 p.6; 2003).

- (a) *Easy of entry* – in the sense that there are no particular qualifications, skills, or capital required to start the business. Entry to the informal sector is relatively easy due to the low skill requirements.
- (b) *Reliance on indigenous resources* – most informal sector enterprises use locally available resources to produce and/or distribute goods and services.
- (c) *Family ownership* – family members may help out with the family business without pay or without formal employment status.
- (d) *Small scale operations* – an enterprise is considered small when it has few permanent employees; for instance, not more than five employees.
- (e) *Labour intensive and adaptive technology* – in general the business operates manually with simple technology. Most of the jobs in the informal sector are labour intensive, involving a low level of technology, and the skills required from workers are basic.
- (f) *Skills acquired outside of the formal sector* – no formal skills or school system required.
- (g) *Unregulated and competitive markets* – when businesses are not registered under national laws, for example, commercial, tax or social security laws, or professional associations' regulatory acts.

2.2.6 Definition of the Informal Sector in the Timor-Leste Context

In Timor-Leste, according to the Business Activity Survey (BAS, 2013), the formal sector is made up of firms that have registered with the Ministry of Commerce and which have formally obtained business licenses. The BAS does not include the informal sector. The survey scope excludes several types of businesses that are otherwise registered with the Ministry of Commerce. For example, petroleum producing firms that submit tax through the National Directorate of Petroleum

Revenue, general government agencies (such as administration, education, and health), public trading enterprises where the majority of their income was received from government transfers or payments, and non-businesses or non-trading enterprises (such as embassies and missions).

Based on the classifications of the formal and informal sector used by the government in the BAS (2013), we adopt the following definition of the informal sector: *“The informal sector includes all non-farm business activities that are not registered with the Ministry of Commerce and Industry Timor-Leste.”*

This definition of the informal sector excludes agricultural activities. Though subsistence agriculture may exhibit the characteristics of informality, it differs from activities related to manufacturing, trades, and services.

2.3 Data

To investigate the characteristics of the informal sector in Timor-Leste, we used primary data, directly collected in the field between January and early May 2017. The questions were adapted from the 2013 Timor-Leste Labour Force Survey (TL-LFS), or from the 2010 Census. Thus, all questions follow international standards on the statistics of work and labour issues that were adopted at the 19th International Conference of Labour Statisticians (ILO, 2013) and the UN Principle and Recommendations for Population and Housing Census (2010). The questionnaires were initially written in English and then translated by the author into “Tetum.”¹ The translations were discussed with Timorese students at the University of Waikato to ensure content validity. Geographically, Dili (the capital and largest city of Timor-Leste) is surrounded by several sub-districts of four municipalities

¹ The second national official language of Timor-Leste

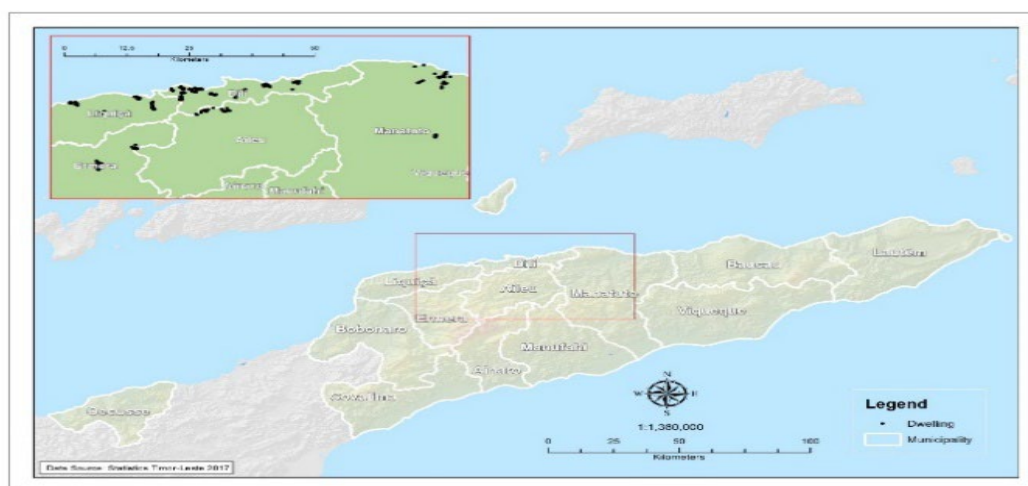
(municipality sometimes called district). Data were collected from 12 sub-districts in and around Dili, from which it is expected that many people would commute for work to Dili. A sampling frame of census enumeration areas (CEAs) was derived from the Timor-Leste 2010 Census. Furthermore, a stratified random sampling approach was applied to ensure a representative sample of households. Since the sample included in this study is derived from the 2010 census enumeration area, the sample selection is relatively representative of the national, district, and urban populations of the area around Dili. A total of 45 CEAs was selected with probability proportional to size prior to the field work. However, some selected CEAs could not feasibly be visited during fieldwork due to geographical remoteness, or adverse weather conditions. Of the 45 selected CEAs, seven were not included in the final sample.

Before commencing fieldwork, the author made contact with local authorities to obtain authorization to carry out research in their respective areas. After receiving approval, each selected CEA was visited and every household in the CEA was enumerated. Ten households were then randomly selected from the enumeration list in each CEA. In the case of refusals, or where the household members were unavailable to answer the survey, a replacement household, being the next household on the enumeration list, was selected. Table 2.1 summarises the numbers of households included and not included in the selected CEAs in Dili and the surrounded sub-districts. Figure 2.1 shows the location of the study area, Dili, on the north coast of Timor. Figure 2.2 presents the locations of the selected CEAs, where the CEAs and households included in the final sample are shown in green, while CEAs that were not able to be included in the final sample are shown in pink.

Table 2.1: Total Sub-districts and the Households of each CEAs Covered

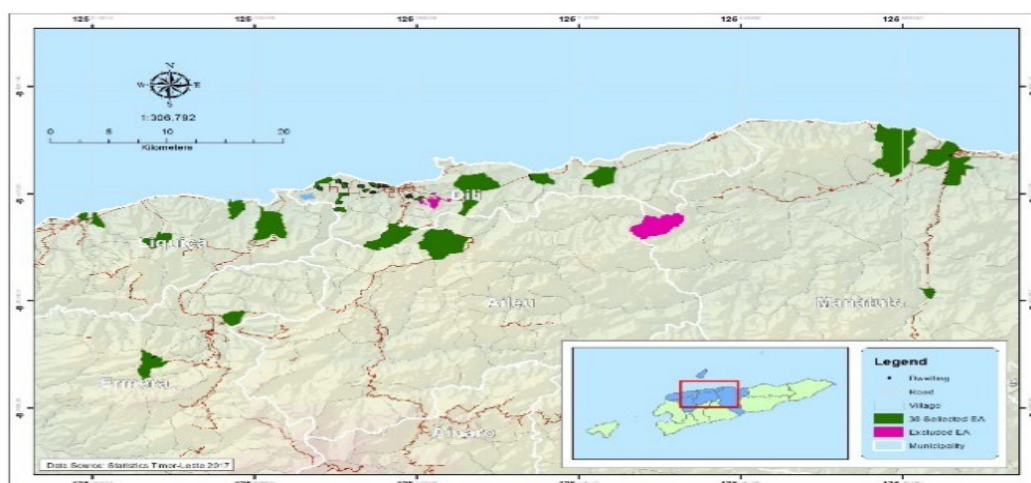
Municipality	Sub-District	CEAs in Sub-district	CEAs selected into the sample	CEAs included in final sample
Dili	Dom Aleixo	128	14	14
	Vera Cruz	45	2	2
	Nain Feto	28	2	2
	Cristo Rei	72	10	4
	Metinaro	8	1	1
Aileu	Laulara	12	1	1
Liquica	Bazartete	36	4	4
	Liquica Villa	36	1	1
Ermera	Railaco	19	1	1
	Ermera Villa	51	3	3
Manatuto	Laclo	18	2	1
	Manatuto Villa	20	4	4
Total	12	473	45	38

Figure 2: Present the location of the study Area



Source: Statistics Office, Timor-Leste

Figure 3: Present the census enumeration areas (CEAs) covered and not covered



Source: Statistics Office, Timor-Leste

Subsequently, each selected household was visited for an interview. In general, the wife of the male head of the household provided general demographic data on all family members and identified all people who were members of the household, as well as answering household-level questions. Every person who lived and ate together from the same pot at any time during the last 12 months was recorded as a member of the household. After listing all persons in the household, the next step was to identify individuals within each household to be interviewed. The individual interview was aimed at two people per household: one adult male (aged 18 or over); and one adult female. From the list of household members, the adult male and adult female with the next birthday were selected for inclusion in the sample, since this provided a plausibly random selection within each household.

The “next-birthday” method involves identifying the person in the household who will have the next birthday among all eligible household members. This method of random selection of the sample from within each household ensures random

selection into the sample (Salmon & Nicolas, 1983). The research was approved by the Waikato Management School Human Research Ethics Committee. An informed consent form was signed by each selected respondent prior to the interview. In the case of some respondents who were not able to read the informed consent form, the interviewer read the details aloud and obtained verbal consent before the interview commenced.

A total of 349 households and 658 adult respondents were included in the final sample. Data were double-entered and subjected to cross-checking. The aim of the double-entry and cross-checking process was to minimize errors, maintain consistency, and guarantee data quality.

To arrive at a dummy variable indicator for whether a person in the sample was engaged in the informal sector or not, we made use of two questions that asked about each person's primary and secondary economic activities. Specifically, the questions asked about: (1) the registered or unregistered status of the business where the person works; and (2) whether the economic activity (primary or secondary) was in the agricultural or non-agricultural sector. Table 2.2 presents these questions, and coded responses.

Table 2.2: Questions of economic activities

Primary (secondary) economic activity	
Question 1	Question 2
Was your business (the business/farm where you worked) registered at the Ministry of Justice or Ministry of Commerce and Industry?	Where do you usually work?
1. Yes 2. Is in the process of being registered 3. No 4. Do not know	1. In your home 2. Structure attached to your home 3. At the client's or employer's home 4. Enterprise, plan, factory, office, shop, workshop, and so on. (separate from house)

5. On a farm or agricultural plot
6. Construction site
7. Fixed stall in the market or on the street
8. Without fixed location/mobile
9. Other (specify)

Note: The same questions were also asked of the secondary economic activities.

From the above questions, we classified each worker into one of two categories: (1) informal sector, where *either* the primary or secondary activity was not registered *and* was not agricultural; or (2) not informal sector, where neither the primary nor secondary activity met those conditions. This resulted in an indicator variable that is equal to one if the individual was engaged in any non-registered, non-agricultural economic activity. Moreover, the few respondents (six respondents) that responded “don’t know” were recorded as not in the informal sector. Overall, 65.8% (unweighted $n = 405$) of individuals in our sample were engaged in the informal sector, while 34.2% (unweighted $n = 253$) were not engaged in the informal sector.

In addition, several open-ended questions were asked to identify which specific economic activities were performed by those people engaged in the informal sector ($n = 405$). Table 2.3 presents the questions that were used to identify economic activities based on occupation, industry, business, and the activity carried out, as well as the main functions of these activities.

Table 2.3: Questions of occupation, industry and main activities

Primary (secondary) economic activity		
Question 1	Question 2	Question 3
What kind of work do you usually do in the job/activity that you had last week: 1. Occupation title: 2. Short description of the main task or duties:	What kind of industry, business service or activity is carried out at your place of work?	What are the main goods or services produced at your place of work or its main function?

Note: The same questions were also asked of the secondary economic activities.

The above questions were then classified according to the main activities carried out by participants in the informal sector (Table 2.4). The 22 different activities initially categorized, were then grouped into eight categories based on its similarities. Eight comprehensive clusters of activities were identified and included in the logistic regression model. The activities are classified as: *food* (all food and beverages); *non-food* (fuel and firewood); *non-specialized retail* (grocery or kiosk attached to house); *trade* (ambulant trader); *construction and quarrying* (includes cash-in-hand projects, water drillers, and sand diggers); *weaving and plaiting* (traditional weaving “tais,” sewing, stitching, and also plaiting bamboo, rattan, and so forth.); *transportation and its services* (motorcycle taxi, workshop, tire repairs, and tire air filler); and *domestic service* (housemaid). These classifications were made in accordance with the International Standard and Industry Classification of all economic activities (ISIC-Rev 4, 2008).

Table 2.4: Category of economic activity

Economic activity categories		
No	Identification of the economic activities	Economic activity classification based on ISIC-Rev.4
1	Sell fruits	1. Food and beverage
2	Sell vegetables	
3	Provide and sell food and beverage	
4	Sell tofu	
5	Sell fish (fresh and grilled)	
6	Sell ice and sweetness	
7	Sell fresh coconut water	
8	Sell hot drinks	
9	Provide catering	
10	Traditional wine (palm)	
11	Sell firewood	2. Non-food
12	Sell organic fertilizer	
13	Provide or run fuel retailer	
14	Run small grocery shop (kiosk)	3. Non-specialized retail
15	Ambulant trader (three wheels)	4. Trade
16	Sands and water digger	5. Construction and quarrying

17	Motorcycle taxi service	6. Transportation and services
18	Workshop (bicycle and motorcycle)	
19	Woven or weaving	7. Weaving and plaiting
20	Tailoring, sewing or stitching	
21	Traditional weaver (tais)	
22	Housemaid (paid)	8. Domestic work (housemaid)

2.4 Method

Given the stratified nature of the sample, before analysis each observation requires appropriate weighting (Deaton, 1997). Weighting procedures at the household level as well as individual weighting calculations are described in Appendix A.

All analyses in this paper were conducted using both weighted and unweighted data, in Stata version 14. Only weighted results are reported in the paper. Unweighted results are available in Appendix B.

Given that the variable of interest (participation in the informal sector) is dichotomous, we use the logistic regression model to identify the factors associated with informal sector participation. The equation for a logistic model can be written as:

$$L_1 = \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_{3i} + \dots + \beta_k - 1Xk - 1, i'$$

where the logit (L_1) is a linear function of the independent variables, k is the number of parameters in the model (the constant and all independent variables). The independent variables included gender, age, marital status, education, urban-rural location of the household, and the economic activity.

2.5 Results and discussions

Table 2.5 presents the summary statistics for our sample, weighted to account for the stratified nature of the sample (unweighted results are provided in Appendix B).

The sample is fairly evenly split by gender (almost by construction, since one male and one female from each household were selected into the sample), with a mean age of 39.7 years. Only 7.6 percent of the sample were unmarried, and 70.2 percent of the sample resided in urban areas, in households with an average of over seven household members. The variables in the bottom half of Table 2.5 relate only to those engaged in the informal sector. Economic activities performed by informal sector workers mainly consisted of food and beverage at 29 percent, followed by non-specialized retail (grocery or kiosk) at 23 percent and weaving and plaiting at around 13 percent.

Table 2.5: Descriptive Statistics of the variables

Variable	Mean	Linearized Std. Err.
Informal sector (1=informal)	0.658	0.028
Gender (1=male)	0.502	0.014
Age	39.7	1.5
Marital status (1=not married)	0.076	0.017
Household size	7.78	0.318
Urban (1=urban)	0.702	0.076
M/F headed household (1=Male-headed)	0.921	0.018
Age of household-head	44.9	1.9
<i>Economic activity:</i>		
Food	0.288	0.030
Non food	0.076	0.015
Non-specialised retail (grocery)	0.229	0.028
Trade (ambulant trader)	0.112	0.026
Constructions and quarrying	0.112	0.020
Transportation and service	0.044	0.014
Weaving and plaiting	0.130	0.024
Domestic work (housemaid)	0.006	0.006

Table 2.6 reports the characteristics of the sample, separating those individuals who engage in informal sector work from those who do not. Differences were examined by chi-square tests (for categorical variables) or t-tests (for continuous variables).

There is a significant difference in gender between the informal sector and not informal sector, with a significantly higher proportion of women involved in the informal sector ($p < 0.001$). Education is significantly lower among those employed in the informal sector ($p = 0.003$). There are no statistically significant differences in other variables.

Table 2.6: Characteristics of the Sample

Variable	Not informal sector	Informal sector	<i>P</i>
<i>Gender:</i>			
Female	0.213	0.646	<0.001
Male	0.787	0.354	
<i>Education:</i>			
No education	0.240	0.320	0.003
Less than secondary	0.192	0.329	
Secondary	0.394	0.274	
Post-secondary	0.174	0.078	
<i>Marital status:</i>			
Married	0.898	0.938	0.165
Not married	0.102	0.062	
<i>Area of living:</i>			
Rural	0.339	0.276	0.199
Urban	0.661	0.724	
Age†	40.41	39.31	0.461
Household size†	8.0	7.7	0.445

Note: † = t-test

Table 2.7 presents the logistic regression results, weighted to account for the stratified nature of the sample. The independent variables in this analysis are the same variables used for the descriptive analysis above, with education or lack of education included as a binary variable at this point.

The results show that gender has an extremely strong statistically significant relationship with informality status. Women are significantly more likely to be engaged in the informal sector than men, and the odds ratio suggests that the odds of male participation in the informal sector are 87.2 percent lower than for females,

ceteris paribus. Marital status is one of the important factors in many studies because it affects the entire adult life course and influences psychological and physical well-being for both men and women. The final two columns disaggregate the result by gender. This analysis shows that both married women and men are less likely to engage in the informal sector, and this effect is larger for men. The effect of no education and urban location are only statistically significant for women.

The results on gender are in line with the literature that concludes that women in developing countries tend to have a greater level of involvement in the informal sector as compared with male involvement (Leonard, 1998; IFC, 2010; WB, 2011; Babbitt et al., 2015). Disaggregated data by sex from different countries in Asia generally shows the percentage of women in the non-agricultural informal sector is significantly higher than men. For example, in Liberia, 72% of those in the informal sector are women (ILO & WIEGO, 2013).

The World Bank (2011) reported that people with high education tend to be involved in the formal sector rather than in the informal sector. Other reports have suggested that the informal sector is used by some people as a transition to the formal sector (ILO, 2010). Our results show that there is a significant association between education and engagement in the informal sector. This suggests that in some circumstances, the informal sector becomes an alternative even for those with higher education while they await opportunities in the formal sector. Flexibility in working hours in the informal sector permits people with different educational backgrounds to continue looking for a job in the formal sector while performing informal economic activities (Fields, 1975 and The World Bank, 2011).

Table 2.7: Logistic regression results

The informal sector	Odds Ratio		Male Odds Ratio
		Female Odds Ratio	
Gender (1=male)	0.128*** (0.034)		
Age	1.004 (0.011)	1.004 (0.017)	1.003 (0.012)
Marital status (1=not married)	0.258*** (0.087)	0.329* (0.186)	0.125*** (0.090)
No education	1.639* (0.445)	2.334* (0.984)	1.354 (0.479)
Urban (1=urban)	1.649* (0.421)	2.906*** (0.966)	1.184 (0.390)
Constant	3.766*** (1.661)	2.348* (1.399)	0.669 (0.359)
Number of obs = 658			
Population size = .983301787			
F (5, 34) = 14.30			
Prob > F = 0.0000			

*p<0.1, **p<0.5, ***p<0.01. Std Err. In parentheses

Table 2.8 provides additional logistic regression results, where the dependent variables are whether the respondent engaged in various economic activities in the informal sector. Since these activities are not mutually exclusive, a separate logistic regression model was estimated for each activity. The sample size was limited to those engaged in informal sector work only. These results reveal a significant gender dimension to informal sector work. Women were significantly more likely to be engaged in food and beverage activities, and in non-specialized retail, for instance, grocery or kiosk work, and weaving and plaiting. These are activities that can easily take place in, or near, the home, which allows for the continuation of family and household responsibilities. In contrast, males were significantly more likely to be involved in construction and quarrying, which involves work outside of the home. Non-food activities, such as fuel retail, and collecting and selling

firewood, and weaving and plaiting were significantly more prevalent in rural areas. The results also reveal that married people were significantly more likely to be involved in transportation and service activities, while activities such as an ambulant trader, and construction and quarrying, were significantly more prevalent among urban residents.

Table 2.8: Logistic regression by economic activity

Variable	<i>Weighted</i>							
	Food	Non-food	Non-specialised retail (grocery)	Trade (ambulant trader)	Construction and quarrying	Transportation and service	Weaving and plaiting	Domestic (housemaid)
	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio
Gender(1=male)	0.383*** (0.132)	1.372 (0.560)	0.437* (0.193)	2.234 (1.700)	65.792*** (43.944)	1.977 (1.029)	0.446* (0.211)	
Age	0.985 (0.014)	1.005 (0.018)	0.995 (0.013)	0.980 (0.017)	1.026 (0.024)	0.967 (0.024)	1.043** (0.021)	1.046 (0.082)
Marital status (1= not married)	0.397* (0.210)	0.159* (0.161)	0.360* (0.264)	0.424 (0.457)	1.549 (1.647)	15.156*** (12.558)	1.548 (0.823)	
No-education	1.425 (0.683)	0.622 (0.312)	0.642 (0.231)	0.556 (0.383)	1.465 (0.945)	1.370 (0.993)	1.249 (0.535)	
Urban (1=urban)	0.644 (0.198)	0.495* (0.184)	1.083 (0.322)	4.374*** (2.166)	9.242*** (5.747)	0.873 (0.542)	0.362*** (0.126)	
Constant	1.301 (0.723)	0.119*** (0.073)	0.540 (0.338)	0.065*** (0.035)	<0.001*** (<0.001)	0.076*** (0.069)	0.056*** (0.044)	0.032 (0.120)

*p<0.1, **p<0.05, ***p<0.01. Std Err. in parentheses

2.6 Conclusion

This paper analysed the characteristics associated with informal sector work in Timor-Leste. Women were significantly more likely to be involved in the informal sector than men, and there is a tendency for those in the informal sector to be less educated than those not in the informal sector. The type of the informal sector activities that people engage in are similar to those in other developing countries, categorized as small, unregistered, unprotected, and unsecured, non-agricultural activities. This research offers an understanding of the characteristics of the informal sector in Timor-Leste. There was a significant gender dimension to labour participation; however, this does not mean that males were not involved in the informal sector. The gender dimension was indicated in some specialized activities that were mostly female-dominated, while other activities were male-dominated. Males were more likely to be involved in construction and quarrying, while females were mostly engaged in food and beverage, retail activities, and weaving and plaiting. Weaving not only refers to traditional weaving *tais* and related handicrafts from palm leaves, which are commonly crafted by women, but also bamboo and rattan work.

Older people were more likely engaged in weaving and plaiting, while unmarried persons were more engaged in transportation and services. Also, rural people were more likely to be engaged in a non-food activities like fuel retail, and collecting and selling firewood, while urban people were more often involved in an ambulant trader and, construction and quarrying activities.

The results of this study are consistent with previous reports both globally and locally. Worldwide, the informal sector employs millions of people. In Timor-Leste, the number of people engaged in the informal sector is quite high. Over 71% of the

employed population is engaged in the informal sector (LFS, 2013). Correspondingly, this study reported 65.8% of people in Dili and surrounding sub-districts are in the informal sector.

This study offers us information on the extent of people's participation in the informal sector in Timor-Leste, but we know very little about the wellbeing of informal sector workers, and that further research in this area is needed.

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Chapter Appendix

Appendix A.

Following Deaton (1997), the weighting for each household in sample was calculated first:

$$W_i^h = \frac{W_i^v}{S_i^v \sum_{k=1}^n W_k^v} \quad (1)$$

Where: $W_i^v = \gamma_v \gamma_s$

$$(2)$$

$$\gamma_v = \frac{H_i^v}{S_i^v} \quad (3)$$

$$\gamma_s = \frac{\sum_{j=1}^n H_j^v}{\sum_{i=1}^n S_i^v} \quad (4)$$

In the above equations, W_i^h is the weighting of each household in CEA i , W_i^v is the gross weighting for the CEA, S_i^v is the number of households surveyed in CEA i , and H_i^v is the total number of households in CEA i . The gross weightings W_i^v were summed, and each household was weighted by the proportion of the total gross weighting from its CEA, divided by the number of households surveyed in the CEA. The total of the weightings of all households were standardised to sum to one.

After calculating household weights, those weights were used to calculate individual weights for each survey respondent, to account for the different probabilities of selection into the sample for individuals from households of

different sizes. Weighting at the individual level therefore needs to consider the number of adult males and females in each household (Deaton, 1997; Cameron, 2003). As noted earlier, individuals aged 18 and above are considered as an adult. The individual weights were calculated as:

$$w_j^f = w_i^h f_j^h$$

(5)

Where w_j^f is the weighting of each adult female respondent in household j of CEA i , w_i^h is the weighting of each household in CEA i , and f_j^h is the number of adult females (aged 18 or over) in household j . An equivalent formula was used for male respondents:

$$w_j^m = w_i^h m_j^h$$

(6)

Where w_j^m is the weighting of each adult male respondent in household j of CEA i , w_i^h is the weighting of each household in CEA i , and m_j^h is the number of adult males (aged 18 or over) in household j .

Appendix B:

Table B1. Descriptive Statistics of the variables, unweighted

Variable	Mean	Std. Dev.	Min	Max
Informal sector(1=informal)	0.616	0.487	0	1
Gender(1=male)	0.485	0.500	0	1
Age	40.6	12.4	18	80
Marital status (1=not married)	0.079	0.270	0	1
Household size	7.14	3.15	1	20
Urban(1=urban)	0.505	0.500	0	1
M/F headed household (1=Male headed)	0.918	0.275	0	1
Age of household-head	45.5	12.9	20	80
<i>Economic activity:</i>				
Food	0.328	0.470	0	1
Non food	0.093	0.291	0	1
Non-specialised retail (grocery)	0.210	0.408	0	1
Trade (ambulant trader)	0.064	0.245	0	1
Constructions and quarrying	0.095	0.293	0	1
Transportation and service	0.044	0.205	0	1
Weaving and plaiting	0.158	0.365	0	1
Domestic work (housemaid)	0.002	0.047	0	1

Table B2. Characteristics of the Sample, unweighted

Variable	Not informal sector	Informal sector	<i>P</i>
<i>Gender:</i>			
Female	30.43	64.69	<0.001
Male	69.57	35.31	
<i>Education:</i>			
No education	28.06	33.33	0.028
Less than secondary	23.32	28.89	
Secondary	33.99	28.89	
Post-secondary	14.62	8.89	
<i>Marital status:</i>			
Married	90.12	93.33	0.137
Not married	9.88	6.67	
<i>Area of living:</i>			
Rural	54.15	46.67	0.062
Urban	45.85	53.33	
Age†	40.66	40.61	0.957
Household size†	6.99	7.23	0.334

Note: † = t-test

Table B3. Logistic regression results, unweighted

The informal sector	Odds Ratio	Female Odds Ratio	Male Odds Ratio
Gender(1=male)	0.214*** (0.039)		
Age	1.009 (0.008)	1.013 (0.013)	1.006 (0.010)
Marital status (1=not married)	0.432*** (0.138)	0.471* (0.187)	0.340* (0.203)
No education	1.277 (0.261)	1.233 (0.387)	1.319 (0.358)
Urban (1=urban)	1.489** (0.260)	1.603* (0.428)	1.414 (0.326)
Constant	2.024** (0.646)	1.721 (0.824)	0.502* (0.222)
Log likelihood = -393.74924			
Pseudo R2 = 0.1018			
LR chi2(5) = 89.25			
Prob > chi2 = 0.0000			

*p<0.1, **p<0.5, ***p<0.01. Std Err. In parentheses

Table B4. Logistic regression by economic activity, unweighted

Variable	Food	Non-food	Non-specialised retail (grocery)	Trade (ambulant trader)	Construction and quarrying	Transportation and service	Weaving and plaiting	Domestic (housemaid)
	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio
Gender (1=male)	0.403*** (0.090)	1.701 (0.570)	0.356*** (0.097)	4.695*** (2.069)	12.770*** (5.946)	2.678** (1.276)	0.949 (0.263)	
Age	0.997 (0.009)	0.991 (0.015)	1.012 (0.011)	0.985 (0.018)	1.005 (0.015)	0.982 (0.019)	1.008 (0.011)	1.018 (0.107)
Marital status (1=not married)	0.719 (0.290)	0.330 (0.341)	0.524 (0.270)	0.578 (0.614)	1.897 (1.223)	4.045** (2.499)	1.503 (0.660)	
No-education	0.876 (0.209)	0.647 (0.263)	0.648 (0.185)	0.679 (0.347)	1.412 (0.565)	1.105 (0.582)	2.138*** (0.623)	
Urban(1=urban)	0.751 (0.155)	0.784 (0.259)	1.113 (0.265)	3.193** (1.453)	3.909*** (1.515)	1.200 (0.564)	0.361*** (0.102)	
Constant	0.956 (0.364)	0.156*** (0.096)	0.261*** (0.118)	0.028*** (0.023)	0.006*** (0.005)	0.043*** (0.037)	0.146*** (0.069)	0.108 (0.568)

*p<0.1, **p<0.05, ***p<0.01. Std Err. in parentheses

Chapter 3: The impact of the informal sector on income security, food security, and health in Timor-Leste

3.1 Introduction

National development can be reflected in people fulfilling their basic needs. Poverty is associated with the ability of the people to purchase food. According to the World Bank poverty is “pronounced deprivation in well-being” which means the poor of those who do not have enough income or consumption in a minimum threshold level (World Bank, 2005 p.8). Some people have explicitly associated the informal sector with being poor and less productive, while others believe that the informal sector is an efficient productive sector that will help the formal sector in developing economies to grow (ILO, 1972; Carter & Barrett, 2006).

The informal sector is the biggest creator of new jobs in Timor-Leste’s economy. Previous studies show that over 71 percent of Timorese are engaged in the informal sector (TL-LFS, 2013). Similarly, the result found in Chapter 2 stated that 65.8 percent of the population living in Dili (the capital city of Timor-Leste) and the surrounding districts are working in the informal sector. This is consistent with the global trend of this sector as a source of employment creation and income generation for the most vulnerable people in developing countries. Globally, the informal sector employs millions of people (ILO, 2018).

Given that Timor-Leste’s economy is very dependent on government spending, economic activities such as construction, trade, and public services will be disrupted if there are problems in the country’s economy. For example, political instability (political deadlock) in the past two years (2017-2018) in Timor-Leste has caused various problems. Economic activity is estimated to have declined for a second

consecutive year (2017-2018), owing political and economic uncertainty. As a result, GDP is estimated to have contracted by 0.7 percent in 2018 (World Bank, 2019). This situation has a negative impact on the welfare of households and society as a whole. Yet, the World Bank (2018; 2019) estimated economic growth in Timor-Leste is expected to grow by around 3.9 percent in 2019 and 4.9 percent by 2021 (World Bank, 2019). Despite the government's efforts to improve its economy, many Timorese still live in poverty.

In line with Timor-Leste's strategic development plan, several fields have been classified by the government as priority concerns for reducing poverty and increasing community wealth. Improving education and skills and intensifying productive sectors such as commercial agriculture, manufacturing and tourism are top priorities for Timor-Leste.

The report notes that in recent years, Timor-Leste has achieved tremendous poverty reduction; however, this increase has not been experienced uniformly throughout the country. Poverty levels affect other issues such as income security, food security, and health. Furthermore, the World Bank (2019) reported that the issue of gender gaps to socioeconomic dimensions, for example, access to economic activities, education, and health are among the central concerns in Timor-Leste.

Undernourishment has become a major global issue in recent decades. Available data suggest that over 800 million people in the developing world experience a lack of food (Food and Agriculture Organization-FAO, 2009). Food is the most important basic human need and is a universal right. The issue of food security has long been a centrepiece of discussions among nations. Many governments have seriously considered this issue and are committed to allocating substantial resources

to help alleviate food insecurity. As stated by the World Health Organization (WHO), food security issues do not necessarily result from inadequate food supplies as most people may believe, but rather it is caused by a lack of purchasing power on the part of some nations and of households. As a result, strong economic growth assures income at the household level which affects the capacity to buy food at the household level (FAO, 2017). Pro-poor economic growth is fundamental to reducing poverty, and on the principles of such growth, it does not affect inequality (Lopez, 2004).

Asian Development Bank's *"Fighting Poverty in Asia and the Pacific: The Poverty Reduction Strategy"* (ADB, 1999,) suggests that "growth is pro-poor when it comes to employment and is accompanied by policies and programs that reduce inequality and create job opportunities for the poor, particularly women and other groups that have traditionally been excluded."

Poverty alleviation is about improving the well-being of people, in particular, the poor. Well-being is about the life people live; what they can or cannot do. In general, pro-poor growth can be defined as growth that allows the poor to participate actively and derive significant benefits from economic activities. For example, everyone should be adequately fed, no child should be allowed to die prematurely, and people should be able to enjoy a long and fulfilling life (Kakwani & Pernia, 2000; Lopez, 2004).

At the global level, the number of people experiencing hunger is growing. FAO (2018) has released recent evidence that hunger continues to rise, with one in every nine people in the world today experiencing hunger.

In Asian countries, FAO (2015) reported that 500 million people suffer from hunger, representing over 65% of total hungry people in the world. Similarly, a recent data shows that 36 percent of Timorese is categorized as food insecure (General Directorate, Ministry of Agriculture, Timor-Leste, 2018; GHI, 2018; IPC, 2019).

The Asian Development Bank (2017) noted that the root cause of malnutrition is poverty. Employment status is of critical importance in determining both income and food security (Barnes, Smith, & Yoder, 2013). All individuals need an income to meet their daily needs, including the need for nutritious food. Most of the poor people in third world countries who experience severe deprivation are those involved in the informal sector. For these people, economic activity within the informal sector is the only way to guarantee a stable income. As a result, issues around income security are prevalent among women and those with low or no education (World Bank, 2011; Babbitt, Brown, & Mazaheri, 2015).

In Timor-Leste, 36% of the population are food insecure (General Directorate-Ministry of Agriculture, 2018; Integrated Food Security Phase Classification (IPC), 2019). To overcome this problem, the government and development partners came up with a program called Social and Behavioural Change Communication (SBCC). This program is a joint and collaborative approach aimed at families to combat high levels of malnutrition in Timor-Leste. The result is to make a difference in health-related issues among the Timorese population (World Food Programme, 2018). This kind of program is needed to help public awareness of the importance of health, which in turn has an impact on knowledge, employment opportunities, and income guarantee. Some of the causes of food shortages in Timor-Leste are caused by unawareness of health, education, decent work, apart from climate factors.

Lopes & Nesbitt (2012) identified that in many ways, food security problems in Timor-Leste arise from cultivation without fertilisers and the use of very simple technologies. These issues lead to a low yield and the choice of traditional plant varieties also results in very low yields. The government, with the assistance of an international cooperation program, has identified a range of seed and plant varieties suited to conditions in Timor-Leste. Although the potential yield is improved in crops such as maize, peanuts, rice and sweet potato, the cash flow within the households is very small (Lopes & Nesbitt, 2012). An economic activity usually measured by its cash flow where the cash comes from and how it was spent within certain periods, e.g., month or year. This cash flow practice helps business owners, individual and households manage their business to raise their incomes. With this in mind, do informal sector actors consider the concept above to ensure the sustainability of their business? This question is simple, but in reality, it is difficult to manage by small businesses in the informal sector. This situation could lead to food insecurity if the drought period is extended.

An extended hungry season is associated with food insecurity, which in turn affects changes in diet. In general, the dietary changes trigger adjustments based on the food budget, including cutting down on food intake, and changes in the types of food consumed (Seligman, Laraia, & Kushel, 2010). These dietary changes may lead to health issues, for instance, decreasing immune resistance and accordingly increased exposure to disease. If that condition continues for months, it may cause death.

Uncertainty and insecure income are the main obstacles. Given the many factors that cause hunger and health issues, most people in low-income countries try to earn

income by entering the informal sector. This sector can be relied on to make a living by selling goods or other activities to get money to survive.

In the same way, numerous articles have showed that demographic characteristics such as; gender, age, status, education, skills, and employment have an impact on the income generation of informal sector. A recent study conducted by Wulantari & Armansyah (2018) on the impact of demographic characteristics on income generation of informal sector female workers in Indonesia showed that women, despite their essential role in the informal sector, are more exposed to the impact of cultural views on women's limited space in society, given the lack of access to decision-making and lower wages.

A study entitled "the characteristics of the informal sector in Timor-Leste" in Chapter two found that of persons involved in the informal sector in Timor-Leste, women and lower educated people were more likely and statistically significantly to be engaged in the informal sector. Their study focuses not only on who is involved in the informal sector but why it is important to do this activity.

Considering the above issues, the present research is important to examine the relationship between informal sector status and demographic variables toward the response variables. In particular, we investigate whether informal sector status and demographics are associated with income security, food security, health, and life satisfaction within a representative sample of households in Timor-Leste. The paper is organized as follows. Section 3.2 reviews the relevant literature. Section 3.3 discusses how the data were collected, and Section 3.4 explains the methods used for the data analysis. Section 3.5 presents the results, and Section 3.6 concludes and discusses the implications of the findings on policy.

3.2 Literature Review

This section reviews the relevant literature on how the informal sector and demographic variables such as gender, age, and education are related to income security, food security, and health. These associations will also be evaluated between the variable of interest (the informal sector), and income security, food security, and health in developing countries, particularly within the context of Timor-Leste.

Every economy is expected to maximize available resources to increase and strengthen the economic growth of the country. Rapid economic growth potentially leads to the provision of employment opportunities. Job creation reduces poverty and increases the level of economic activity. Extensive job creation enables opportunities for everyone to work and earn income that contributes positively to economic growth at the national and at the household and individual level.

Previous findings that convey the message that informal sector activities show a significant increase in all world economies, especially the third world economy. The informal sector has transformed as a provider of equal opportunities for men and women, young and old, living in rural areas and cities. While the informal sector provides access to income and employment opportunities for many people, there are also constraints on earning income (Losby, Else, Kingslow, Edgcomb, Malm & Kao, 2002).

Literature shows that economic policies do have an impact on employment. The contribution of the informal sector to reducing unemployment. The challenge is how to support and regulate the informal sector to promote employment, productivity, and income. Considering a number of perspectives in various sectors

such as economics, agriculture, health and nutrition, researchers and politicians have reached a common consensus on definitions, terminology, and conceptual frameworks for measuring hunger that combines multi-sectoral aspects.

The FAO conducted a series of studies to find a framework that could be applied at each level in different parts of the world. The FAO developed the food insecurity experience based-scales (FIES) for measuring the dimensions of food insecurity based on household data (Ballard, Kepple, & Cafiero, 2013). Referring to previous studies, it shows that there are connections between the issues of economic scarcity, food insecurity, and health.

Based on this prior literature, this study attempts to examine the relationship between informal sector and related demographic characteristics, and income security, food security, and health in the context of Timor-Leste.

Countless academic papers associate informal sector activities with poverty as the root of all difficulties, and that is why informal sector activities are so prevalent among the less fortunate (Hart, 1973; Portes, 1983; Anand & Kanbur, 1985; FAO, 2018). Regardless of who they are or what their status is, all people care about many of the same things. For instance, family, livelihood, health, and happiness and so forth.

Research has demonstrated that the increase in the size and importance of the informal sector in developing countries could potentially lead to poverty alleviation and food security, as more people are engaging in profitable informal sector activities (Maharjan & Joshi, 2009).

Gbandi & Amissah (2014) identified that employment creation reduces poverty and raises the level of economic activities leading to economic growth. About 70% of Nigerian industrial employment is in the informal sector. This indicates that if the

informal sector is supported properly through the regulatory framework, it could make a significant contribution to combating unemployment in many developing countries which in turn will decrease the number of people experiencing food insecurity (Warner, Early, Heath, Krupski, & Strebel, 2016). However, uneven economic growth reduces and worsens health and other outcomes. The consequences for the poorest people in the world are very severe especially women, illiterate, and the absence of occupation in low-income countries are the biggest contributing factors in combating poverty. The World Bank calculates that by 2030 half a billion people will remain living in extreme poverty. There will be no end to severe poverty except the government overcomes inequality and prevents this trend from increasing (Development Finance International (DFI) & Oxfam, 2018).

As in most developing economies, informal sector activities, especially street vending, in places such as Papua New Guinea (PNG) contribute to the reduction of poverty (Kialo, 2013). The informal sector business in PNG is similar to other developing countries, being dominated by shoe-shine workers, selling betel nut, foods, fruits, and vegetables. The growth of these informal activities visibly represents signs that people have started to think of ways to empower themselves despite their vulnerabilities (Muhammad, 2010). This vulnerability is related to the ability to earn a stable income and obtain nutritious food to meet the course of both individual and household requirements. These vulnerable groups often consist of women, and those with little or no education who prefer to immediately enter the informal sector, as this sector is expected to provide income to meet the needs of everyday life.

In relation to the informal sector in Timor-Leste, Chapter two in this thesis revealed that there was a significant gender dimension to the informal sector, with a

significantly higher proportion of women involved in the informal sector, and that their activities were different from those conducted by male informal sector workers. In addition, education levels were shown to be significantly lower among those employed in the informal sector. Age is marginally significant, with those in the informal sector being younger even though in many models age is not shown as statistically relevant (Chapter two). This raises the question as to what extent informal sector activity contributes to income and food security, or whether informal sector workers remain income or food insecure in spite of their activities.

Some literature admitted that individual health has a strong causal relationship with social capital. However, other contributions in the opinion that this relationship need further test because the mechanisms of social capital accumulation are quite complex in modern circumstances (Folland & Rocco, 2014). According to Folland & Rocco, social capital accumulation will depend on which factors determine individual and/or community social capital and how social capital interacts with education, employment, income, and even well-being.

Correspondingly, Ekins (2009) highlighted that wellbeing and happiness is positively correlated with increases in per capita income, but there are many factors that can contribute to economic (and non-economic) welfare. Factors such as health, education, income distribution, employment, working conditions, leisure, environmental quality and security, social cohesion and spiritual coherence are key to wellbeing. Therefore, if some or many of these factors change to better or worse, it will affect people's wellbeing.

3.2.1 Income security

Income security is about the labor market, employment opportunities and revenue. ILO (2006b) defined income security as “the level of income (absolute and relative

to needs), assurance of receipt, the expectation of income adequacy now and improvement or deterioration in the future, both during a person's working life and in old age or disability retirement." Thus, income security is about actual, perceived and expected income (p.1).

Maharjan & Joshi (2009) stated that income-poverty is significant with the gender of the household head, family size, education, and consumption. The situation of income-poverty could be based on the economic activity of the members of the household. Such distress forced each member of the households, regardless of gender, and status to involve themselves in any income generating opportunities to meet their basic needs.

The informal sector in developing countries is almost a sustained way of life for most people who live in urban areas. This area is seen as a sector that provides the opportunity to earn an income to support themselves and their families by operating small unincorporated businesses. Blades, Ferreira, & Lugo, 2011 stated that even though people in the informal sector work without access to social security and lack protection through safety legislation, most people in developing countries are dependent on informal sector activities. Maharjan & Joshi (2009) investigated the relationship between income-poverty and food security in rural areas of Nepal found that over 41% household-heads are illiterate.

The above finding followed by the World Bank (2011) statement that people with lower or no education tend to be engaged in the informal sector. As a result, demographic variables such as education, occupation, the gender of the household head, and family size were shown to be essential factors affecting income-poverty

as well as food insecurity which in turn will have an impact on the health and overall wellbeing.

Such distress forced each member of the household, regardless of age, gender, and status to involve themselves in any income generating opportunities to meet their basic needs, which was mostly through informal sector activities. As expected, low-income families are far more likely to experience food insecurity than other families. This is evidenced by various studies that have found that food insecurity is related to income levels (Townsend, Peerson, Love, Achterberg, & Murphy, 2001).

Dollar & Gatti (1999) investigated the relationship between gender inequality, income and growth found that the poorest countries do not provide equal rights and equality between men and women in various ways such as education, economics, politics, resulting in more adverse effects on economic growth and income. Women should be free to do activities in various fields including education and economics. Thus, in addition to helping with family income, they will also be able to understand health issues. When income and food security decline, health issues become more prevalent (FAO, 2018).

3.2.2 Food security

To be food secure is to have access to sufficient, nutritious, and affordable food. Food security covers the dimensions of time, place, quantity, quality, and cost. To be food insecure is to be lacking at least one of these components (Ballard, Kepple, & Cafiero, 2013).

In 1996, a global forum known as the World Food Summit was founded to control world food security data. The World Food Summit of 1996 specified that;

“Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2006 p.1).

Similarly, Timor-Leste defines food security as based on three elements; the amount of food available in the country, food access by households, and utilisation of food by households (Da Costa, Lopes, Ximenes, Ferreira, Spyckerelle, Williams, & Nesbit, 2013).

According to the 2015 MDG report, MDG 1 indicated that the percentage of people experiencing extreme poverty and hunger (defined as living on less than \$1.25 per day) had dropped by nearly half. To align the achievement of the MDG targets that ended in 2015 with the goodwill of all parties including low-income countries’ leaders, at the end of 2015 the 195 UN member states adopted a new agenda focusing on sustainable development to succeed the MDG goals. In early 2016, the United Statistical Commission (UNSC) approved a global indicator framework consisting of 230 indicators. The 230 indicators are aimed at monitoring targets and measuring progress towards achievement of the 17 new Sustainable Development Goals (SDGs). One of the SDG goals (SDG 2) is that countries commit to

“End hunger, achieve food security and improved nutrition and promote sustainable agriculture” by 2030.

All countries commit to the same standard: to eradicate hunger and ensure food security for all people, leaving no one behind (FAO, 2015).

FAO (2017) stated that the number of people who are chronically undernourished in 2016 was estimated to have increased to 815 million from 777 million in 2015, although this number is below about the estimated 900 million in 2000. The report

acknowledged that most of this hunger is due to conflict and the climatic issues of drought and floods in recent years. However, this gives a clear warning signal that the ambition of a world without hunger and malnutrition by 2030 will be challenging (FAO, 2017).

Food insecurity can lead to malnutrition, stunted growth in children, and ill-health. Food insecurity occurs when people are undernourished and is caused by the physical inaccessibility of food, the absence of social or economic access or inadequate food utilization (Bourke, 2000). Apart from high poverty, low agricultural activity, poor quality and quantity of food consumption are among factors that contribute to food insecurity in Timor-Leste (IPC, 2019). Furthermore, basic infrastructure such as irrigation, roads, sanitation and so on, and lack of financial and human capitals, negative climate hazards were also considered to have impact on food insecurity in Timor-Leste (IPC, 2019). Moreover, the latest report released by FAO indicates that the number of undernourished people in Asia and the Pacific stood at 486.1 million in 2017 against 486.5 million in 2016 (FAO, 2018). These figures clearly show that zero hunger by 2030 as stated in the SDGs will not be easy to achieve (DFI & Oxfam, 2018).

In terms of access to food, Timor-Leste is categorised as “serious” by the CONCERN Worldwide-Global Hunger Index (GHI², 2016). This situation has been in development since 2010 as in the latest GHI scores, Timor-Leste is ranked at 110 of 119 countries (GHI, 2018). Even though there have been some changes in the GHI from 42.4 in 2010 to 34.2 in 2018, Timor-Leste remains one of forty-five

² Referred to CONCERN Worldwide

countries out of 119 countries that are ranked as having “serious” levels of hunger (GHI, 2018).

A recent strategic analysis paper completed by Gorton (2018) stated that food insecurity in Timor-Leste is primarily caused by poor agricultural productivity. To respond to food shortages, Timor-Leste is highly reliant on food imports. This situation mainly affects vulnerable people because poorer households spend a higher proportion of disposable income on food when global price changes.

Food security and income security are two concepts used to describe poverty. An individual’s ability to support his or her family would depend on how much revenue they are able to obtain to support the needs of the family members. The growth of the informal sector has had a tremendous impact on the livelihoods of many people in emerging economies over the last thirty years (Becker, 2004).

A literature specified that “a family can be food secure in two main ways: food production and food purchase. Both require adequate resources or income” (Ojofeitimi, Adebayo, Fatusi, & Afolabi, 2010 p. 117).

Kerr (2005) explains that household members may have different degrees of access and control over resources that affect food security. The resources owned and the number of family members influences each other. Thus, Kerr further stated that household members might use resources to improve household food security or worsen it. Similarly, Mulwafu (2005) found that household size determines the level of household food security. For example, the size of a larger household requires more food to eat in a certain period. Supported by a similar study conducted previously, Mkandawire (2001) stated that food shortages at the family level tended to correlate with household size. However, because the food supply is limited due

to agricultural production capacity in the area, there is little difference in food security for household size depending on agricultural availability. Even so, many poor households in developing countries obtain cash deficits due to unstable seasons which significantly affect food stocks and cause various health problems.

3.2.3 Health

The WHO has stated that “countries that invest in universal health coverage make a sound investment in their human capital” (WHO, 2018 p.2). Investment in health care not only improves people’s life expectancy, but also creates jobs, and decreases poverty and food insecurity, which in turn increase economic growth and enhances gender parity (WHO, 2018).

Food insecurity can affect health and well-being in many ways, with potentially adverse consequences for mental and social in addition to physical well-being, even in the absence of measurable negative effects on nutritional status. Health, property, and livelihood are all affected by money. Health issues often becomes financial dilemmas. A bad financial situation can cause loss of sleep, and if people are sleeping poorly, they may become ill. All of these are brought on by poverty (Narayan & Petesch, 2002).

The difficulties of poor people are restricted not just to life on daily basis, but in addition to the heavy burden of attaining a sustainable and secure livelihood. This disruption may be caused by health problems which frequently require solutions greater than a simple medical cure (Collins, Morduch, Rutherford, & Ruthven, 2009). With respect to the indicators cited in Pérez-Escamilla and Vianna (2012), in their recent study using experience-based food insecurity scales they found negative psychosocial effects of food insecurity in women and children. In a particular cultural context like in Timor-Leste, women are willing to not eat and

prioritize men with the belief that men, especially husbands, must be strong to make a living. This certainly has a negative impact on women's health. Women in Timor-Leste were observed to experience higher proportions of malnutrition and illiteracy than men (Niner, 2017).

Narayan, Chambers, Shah, & Petesch (2000) elaborated that poor people repeatedly declared that being sick or not healthy is a part of a bad life. They often speak about hunger, weakness, or pain. Themes or motives that frequently affect the body are: the importance of appearance; how a strong and healthy body is needed to work and earn a living; how those who are hungry and weak cannot work well and as a result are paid less and deemed not as reliable; and how, overall, health and strength are most important to them.

According to Popkin (1998), historically there have been significant changes over time in diet and physical activity, especially body structure and overall composition. This change is reflected in nutritional results such as height and physical structure. These changes tend to be in line with lifestyle changes and health status, as well as by massive demographic and economic changes. However, these conditions are not well developed, especially in low-income countries where food shortages are declining and deteriorated health is rapidly developing.

Considering a country's economic growth depends on its workforce, health protection is a key cornerstone of overall economic development. A population in good health will affect the welfare of its people and the country's economy.

Research conducted by Jaron & Galal (2009) stated that food is an important factor that is closely related to health and well-being. To reduce the cause of chronic hunger, food assistance needs to be linked to other non-food resources. For example,

collaboration to support agricultural development, economic growth, education, health, and other programs. Once food security is incorporated with other aspects into the system as a whole, it will increase our awareness of health and welfare and also increase our knowledge of the strong relationship between food security and well-being (Callahan, 1973).

According to Narayan et al, (2000), from the perspective of poor people, good quality of life has multiple dimensions. Good quality of life can be categorised as material wellbeing, physical wellbeing, social wellbeing, security, and freedom of choice and action.

Every individual evaluates well-being from various perspectives. For some people, prosperous is when their livelihoods and assets are stable, they have a decent place to live, and there be not much risk in their lives. Their body is health, not sick or weak in appearance, and resides in a community that lives together and helps each other. For example, in rural Indonesia, it is assumed that an individual's life is satisfying if the person is able to guarantee the needs of the family by owning livestock and is able to help neighbours who seek help both materially and non-materially.

Barnes, Smith, & Yoder (2013) stated that social networking also plays a major role in dealing with income security through risk sharing and revenue collection. Social support among household members and the surrounding community can significantly reduce the possibility of food shortages, the economy and housing conditions.

Factor such as income, education, and occupation are often related with socioeconomic status. For example, education is connected with knowledge and

networks; income associated with access to housing, nutrition, and health. Alder & Snibel (2003) explained that issues on health and wellbeing do not only affect those individuals who live in poverty but also those with middle-income in general. It is clear that health and welfare issues could occur to anyone regardless of what social status a person has.

Johnson & Krueger (2006) clarified that happiness or life satisfaction is commonly considered as a result of wealth such as income and assets. In line with macroeconomic explanation, an individual's income generation has a correlation with improvement in well-being. From a psychological perspective, when investigating the relationship between income and welfare on life satisfaction, there is evidence that the greater benefit from having high income security is not having the stress of needing to meet daily requirements (Alder & Snibbe, 2003).

Research reveals that welfare or quality of life has a positive correlation with physical health, job performance, and interpersonal relationships (Sirgy, Michalos, Ferriss, Easterlin, Patrick, & Pavot, 2006). With a healthy physique, a person can work well and show good work performance which in turn has a positive financial impact. Another study found evidence proposing that positive financial behaviours play an essential part of financial satisfaction, and financial satisfaction in turn influences well-being (Xiao, Tang, & Shim, 2009).

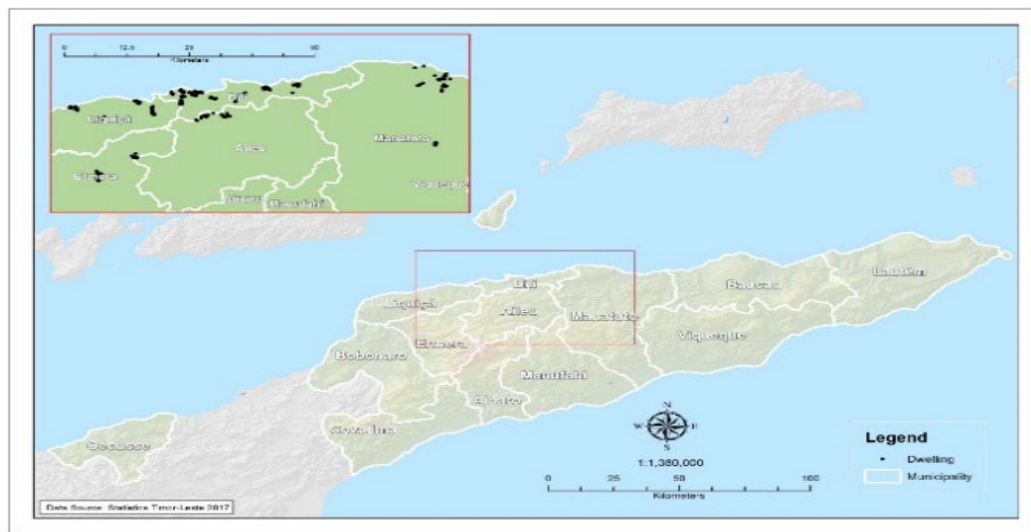
Of all the factors discussed above, it gives a general understanding that the key to all problems in low-income countries is education. Knowledge will provide an understanding of the meaning of health which then leads to opportunities for better work and ultimately leads to happiness of life. Tran (2018) in his research on

education and the livelihood showed that education has a positive effect on one's preferences of better livelihoods, household income, and poverty alleviation.

3.3 Data

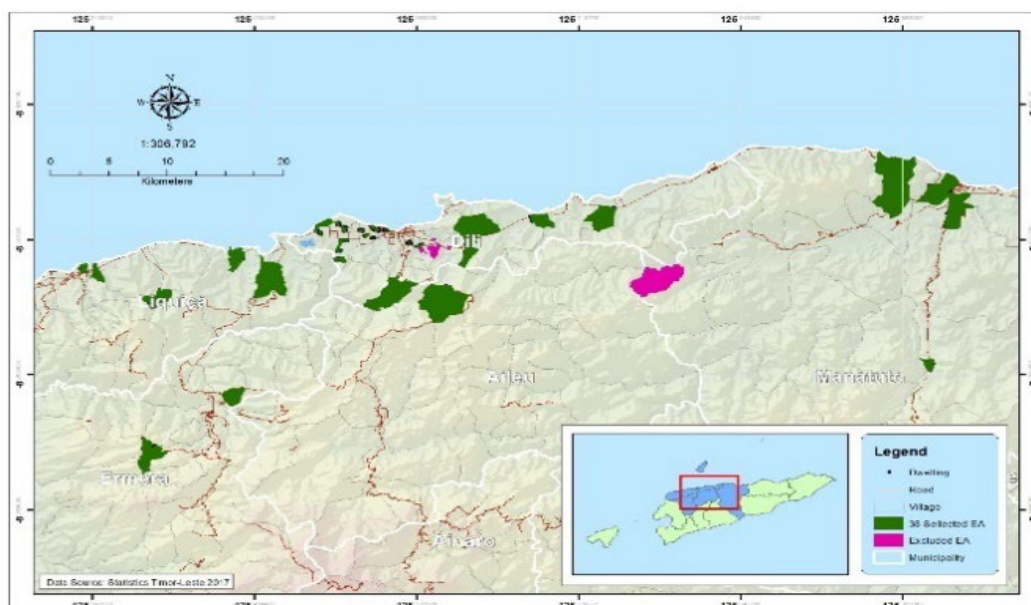
The data for this study was collected by the researcher between January 2017 and May 2017 within the capital of Dili and surrounding districts of Timor-Leste. Using the 2010 Census, the target population was grouped according to their census enumeration areas (CEAs). A stratified random sampling approach was then used to ensure a representative sample. This sample resulted in 45 CEAs being chosen based on expected size. Within each CEA, 10 a further 10 households were randomly selected. Following confirmation of authorisation to carry out research within Dili, the researcher visited each of the selected CEAs to determine the number of occupants within each household. Due to geographic limitations and scheduling issues, not all CEAs were able to be visited by the researcher. By the end of the study, 7 CEAs had not been visited. The following figures indicates the location of each CEAs, where successful data collection is coloured in green and unsuccessful attempts are coloured in pink.

Figure 4: Present the location of the study area



Source: Statistics Timor-Leste

Figure 5: Present the census enumeration areas (CEAs) covered and not covered



Source: Statistics Timor-Leste

The data for this study was collected using questionnaires. These were first written in English and then translated into “Tetum” (an official language of Timor-Leste).

These translations were then verified by Timorese students at the University of Waikato. The questions used for data collection were based on the 'Voice of the Hungry' project (VOH) organised by the FAO. It has been previously used in several developing countries and has proven effective.

These questionnaires were filled in through interviews with selected participants from representative households. To determine suitable candidates, each household had an initial visit to gather demographic and background data on the household. This visit was commonly held with the wife of the head of household. It is fairly standard in developing countries to interview the wife of the household head for aspects related to the household as a whole. The wife of the household head tends to know everything that goes on in the household or at least more of it than any other single person does (Grosh & Glewwe, 1998; Kawamura, & Brown, 2010). The criteria for being considered a member of the household was any individual who lived and ate with the same meal together with the family during the last 12 months. The primary target was to interview two such household members within each household, an adult male and female over 18 years of age. Any participants who met this threshold would then have their birthdays sorted, and the two individuals with the closest birthdate to the date of visit would be selected. As per normal procedures, this research was approved by the Human Research Ethics committee of the University of Waikato Management School, and each participant was required to sign an informed consent form. The consent form was also read aloud by the researcher for verbal consent in cases where the participant is unable to read the form.

At the conclusion of the interviews, data on 349 households and 658 adult participants was included in the research study. This data was double-entered and

verified through cross-checking. This imparts a high level of reliability and consistency to the dataset and minimises errors. Through data cross-checking, of 658 participants, 103 participants refused to answer questions related to income security, food security, and health. Therefore, only 555 respondents were included in the analysis of this chapter. There are eight questions on food security that were directed to each adult individual participant (Appendix A).

3.4 Method

Given the sample size in this study is small, we used Principal Component Analysis (PCA) to reduce the FIES questions down to a single index. PCA helps to reduce the number of variables in an analysis by defining linear groupings of the variables that comprise most of the data. Rabe-Hesketh & Everitt (2000) clarified that PCA proposed to discover the unit-length linear combinations of the variables with the highest variance. Jolliffe (2002) explained that the main purpose of PCA is to decrease the dimensionality in a dataset which may contain huge number of interrelated variables. Moreover, Jolliffe assured that PCA provides an important aspect for interpreting the components directly after obtain its components.

Before the analysis, every observation requires appropriate weighting to account for the stratified nature of the sample (Deaton, 1997). The weighting for household is based on the number of adult male and female in each household. Similarly, the weighting for each individual should consider the following criteria for instance the person is age 18 years or older. The household and individual weights procedure is available in appendix B. All analyses in this paper were conducted using both weighted and unweighted data, in Stata version 15.

Prior to the ordinary least squares (OLS) analysis, we performed Cronbach's alpha test to measure internal reliability or consistency between items in a scale for eight

items that measure food security. The eight items are *worried* (F1a), *unable eat healthy* (F2a), *few foods* (F3a), *skip meal* (F4a), *ate less* (F5a), *ran out* (F6a), *hungry* (F7a), and *went without* (F8a). The Cronbach's alpha is 0.85 which means that in common, these eight items measured similar things that is food security. Therefore, we can say that those items are highly related to each other. We also observe overall test correlation between the items and alphas for each item as well as inter-correlations of the matrix (Cronbach's alpha test is available in Appendix A1). According to Nunnally (1978) in Rothbard & Edwards (2003); Lance, Butts, & Michels (2006) stated that all reliabilities exceeded the 0.70 criterion suggested by Nunnally were considered acceptable. The minimum acceptable for exploratory research is 0.70 (Lance et al, 2006). Based on the cut-off criteria 0.70, there are six items show positive sign such as run out food (F6a = .89), worried (F1a = .82), few foods (F3a = .82), went without food (F8a = .85) ate less (F5a = .81), and unable eat healthy (F2a = .81), while, the other two items show negative sign are skip a meal (F4a) and hungry (F7a), and the two items show wrong direction (F4a and F7a) were excluded in the Principal Component Analysis (PCA).

Table 3.1 presents summarize the responses to the eight variables. Each question is a binary variable, there were no considerable variations in the mean because the mean of six variables are ranges between nearly 50 percent and 73 percent, and these six variables consider as robust measurements to measure food security except the two variables (F4a and F7a) which show reverse direction will not be considered in the next analysis.

Table 3.1: Descriptive statistics of the variables (PCA)

Variable	Mean	Std. Dev.	Min	Max
Worried (F1a)	0.654	0.476	0	1
Unable eat healthy (F2a)	0.718	0.450	0	1
Few food (F3a)	0.668	0.471	0	1
Skip a meal (F4a)	0.302	0.459	0	1
Ate less (F5a)	0.693	0.462	0	1
Ran out (F6a)	0.486	0.500	0	1
Hungry (F7a)	0.254	0.436	0	1
Went without (F8a)	0.734	0.442	0	1

Table 3.2 presents the principal component analysis used to derive the index of food security. The first principal component has an eigenvalue of 4.14 (factor loadings 1), and the proportion explains 52 percent of the covariance. The second component has an eigenvalue of 1.37 (factor loading 2), the proportion explains only 17.1 percent of the covariance. The weighted principal component results are available in Appendix A2. Based on the PCA result in factor loadings 1, this component is used as our index of food security. The rest of components have much lower eigenvalues and explain much smaller proportions of the covariance.

The factor loadings on the first principal component show that all variables have a value greater than 0. The positive sign in the principal component tells us the direction that a given variable loading on a single dimension vector. The factor loading of all variables over 20 simply mean that they have similar contribution to the overall index of food security.

Table 3.2: Principal component with eigenvectors

Principal component			Eigenvector	
Component	Eigenvalue	Proportion	Variable	Loading 1
1	4.142	0.518	F1a	0.362
			F2a	0.430
			F3a	0.401
			F5a	0.417
			F6a	0.235
			F8a	0.391

Given that most of the variables of interest are continuous, we apply an OLS model to identify the factors associated with food security, income security, and health:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \varepsilon$$

The model is linear for the reason that linear in the parameters β_0 , β_1 , β_2 , and so on. In this case the model explains three different levels such as Y , X_1 , and X_2 . The parameter β_0 is the intercept of this model. The parameters of β_1 and β_2 are referred to as partial regression coefficients. Parameter β_1 represents the change in the mean response corresponding to a unit change in X_1 when X_2 is remained constant. The same description also applies to parameter β_2 . If there is change in the mean response in parameter β_2 , will be corresponding to a unit change in X_2 when X_1 is maintained constant. Epsilon describes the random component of the linear relationship between x and y .

In this paper the outcome or dependent variable would be the food insecurity, income insecurity, and health, while the explanatory variables include informal sector and individual characteristics such as gender, age, marital status, education, and so on. The key variable of interest is informal sector work status. This study applied the food insecurity experience scale (FIES). Food insecurity analyses provide information about the adequacy of people's access to food and the severity of their food insecurity by asking them directly about their experiences of being worried, stretching food resources, the quality of diet worsening, cutting portion sizes, skipping meals, and went without eating for one or more days.

Income insecurity and health are individual self-reported. For financial satisfaction, research participants were asked how satisfied they were with their financial

situation (measured on a Likert scale from “dissatisfied” = 1 to “satisfied” = 10). For health, each person reported their health status, as excellent, very good, good, fair, or poor.

3.5 Results and discussion

Table 3.3 reports the summary statistics for the sample (n=555). The weights were applied throughout all results in this study to consider the character of the stratified sample (unweighted results are provided in Appendix C1). The sample is slightly dominated by female, to some extent males were reluctant to answer questions related to food. Most respondents are younger with an average age less than 40, over 90 percent were married, and 69 percent of the sample resided in urban areas. People with no education or less than secondary accounted for nearly 60 percent of our sample. Food security considers as an enormous issue among the participants. It shows only 45 percent of the sample have food security and that has a close correlation with the figure released by the Ministry of Agriculture, Timor-Leste stated that 36 percent of the Timorese are facing food insecurity. Health indicates not bad among the participants in our sample. Health is self-reported.

Table 3.3: Summary statistics of the variables

Variable	Mean	Linearized Std. Err.
Informal sector (<i>I=informal</i>)	0.664	0.025
Gender (<i>I=male</i>)	0.419	0.026
Age	39.8	1.5
Marital status (<i>I=not married</i>)	0.088	0.018
No-education	0.329	0.037
Less than secondary	0.264	0.037
Secondary	0.305	0.027
Post-secondary	0.097	0.032
Household size	7.96	0.36
Urban (<i>I=urban</i>)	0.686	0.079
Food security	0.449	0.253
Income security	4.059	0.133
Health	3.123	0.036

We also performed other statistical tests (Table 3.4) to examine the characteristics of our sample mainly for four main variables such as food security, income security, and health among people not in the informal sector and people involved in the informal sector. A t-test was used to examine continuous variables. There is a significantly higher proportion of income security between the informal sector and not informal sector ($p = 0.045$). Other variables show no differences.

Table 3.4: Result of the test of independent variables split by not informal sector / informal sector

Variable	Not informal sector	Informal sector	<i>P</i>
Food security	0.488	0.429	0.727
Income security	4.239	3.985	0.045**
Health	3.201	3.120	0.108

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.5 presents the OLS results for income security, food security, and health.

The independent variables in this analysis utilized the same variables as appeared in the summary analysis. However, education is included as a binary variable characterized by “any education” and “no education.” The results show that women, those with no education, and those engaged in the informal sector have significantly lower income security. The negative relationship between the informal sector and income security was statistically significant. The OLS results show that workers in the informal sector are 33.8 percentage points less likely to be income secure than workers not in the informal sector. Furthermore, females are 31.4 percentage points less income secure than males. Even though females’ income security is lower than males, females are significantly more food secure than their compatriot males, although the relationship is marginally statistically significant. Similarly, the self-reported health of males is slightly lower than females. The results also show that

those with no education have a 57.9 percentage point lower probability of being income secure than those with some education.

The result also portrays that older people are more income secure, *ceteris paribus*. It shows that for each one year older a person is, their probability of being income secure increases by 1.8 percentage points. However, the relationship is marginally statistically significant. Even though older people are more income secure, food security is more prevalent among them. The coefficient on age is negative and statistically significant for food security. On the other hand, being uneducated has a negative and statistically significant relationship with income security, but in terms of food security, it shows a positive association. This may imply that income earned by uneducated individuals does not much affect food consumption. This may be because people can grow food in a backyard garden or get support from family or others, or the price of food is low.

Similarly, rural dwellers and larger households have significantly higher food security, but the relationship is marginally statistically significant for large household members. Rural residents have more access to agricultural activities as they may grow their own food.

Table 3.5: Ordinary least squares results (both at individual and household level)

Variable	Income security		Food security		Health	
	Coef.	P>t	Coef.	P>t	Coef.	P>t
Informal sector (1=informal)	-0.338*** (0.106)	0.003	0.025 (0.224)	0.911	-0.051 (0.050)	0.321
Gender (1=male)	-0.314** (0.116)	0.010	0.362* (0.186)	0.059	0.090* (0.042)	0.039
Age	0.018* (0.009)	0.059	-0.019*** (0.006)	0.003	-0.005 (0.003)	0.108
No-education	-0.579*** (0.129)	<0.001	0.741** (0.292)	0.015	0.021 (0.074)	0.777
Marital status (1=not married)	-0.284 (0.272)	0.304	0.225 (0.309)	0.472	-0.044 (0.152)	0.773
Household size	-0.015 (0.021)	0.461	0.059* (0.031)	0.067	0.005 (0.010)	0.622
Urban (1=urban)	-0.049 (0.131)	0.713	1.169** (0.558)	0.043	0.040 (0.065)	0.544
Income security						
Food security						
Health						
Constant	4.071*** (0.236)	<0.001	-0.931 (0.607)	0.133	3.257*** (0.108)	<0.001
Number of obs = 639 Population size = .959409191 F(7, 32) = 8.73 Prob > F = 0.0000 R-squared = 0.0928			Number of obs = 555 Population size = .823156956 F(7, 32) = 3.43 Prob > F = 0.0075 R-squared = 0.1176		Number of obs = 639 Population size = .959409191 F(7, 32) = 0.99 Prob > F = 0.4556 R-squared = 0.0292	

*p<0.1, **p<0.05, ***P<0.01. Std Err. in parentheses

3.6 Conclusion

This paper analyzed the relationship between informal sector status and income security, food security, and health, controlling for a range of demographic variables. The analysis shows that from the sample ($n = 555$). Food security considers as a substantial issue because the majority of our sample (55%) indicated food insecurity. Regression analysis revealed that income security was significantly lower for the informal sector workers than for those not in the informal sector.

This research provides an understanding that the informal sector does have a significant impact on people involved in the informal sector in Timor-Leste. A large number of those involved in this sector experience a high level of income insecurity. The contributing factors are being female, and uneducated, as well as working in the informal sector.

This study offers us a piece of fruitful information that female, uneducated, and involved in the informal sector are vulnerable to income insecurity. However, further study needs to be looked at issues or problems hampering informal sector activity in Timor-Leste.

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Chapter Appendix

Appendix A: Questionnaire (food security)

Male <input type="checkbox"/>	Female <input type="checkbox"/>
The question listed below are about food consumption in the last 12 months, during the last 12 months was there any time where:	The question listed below are about food consumption in the last 12 months, during the last 12 months was there any time where:
<p>You were worried you would run out of food because of lack of money or other resources?</p> <p>Yes 2. No</p> <p>You were unable to eat healthy and nutritious food because of a lack of money or other resources?</p> <p>Yes 2. No</p> <p>You ate only a few kinds of foods because of a lack of money or other resources?</p> <p>Yes 2. No</p> <p>You had to skip a meal because there was not enough money or other resources to get food?</p> <p>Yes 2. No</p> <p>You ate less than you thought you should because of a lack of money or other resources?</p> <p>Yes 2. No</p> <p>Your household ran out of food because of a lack of money or other resources?</p> <p>Yes 2. No</p> <p>You were hungry but did not eat because there was not enough money or other resources for food?</p> <p>Yes 2. No</p> <p>You went without eating for a whole day because of a lack of money or other resources?</p> <p>Yes 2. No</p>	<p>You were worried you would run out of food because of lack of money or other resources?</p> <p>Yes 2. No</p> <p>You were unable to eat healthy and nutritious food because of a lack of money or other resources?</p> <p>Yes 2. No</p> <p>You ate only a few kinds of foods because of a lack of money or other resources?</p> <p>Yes 2. No</p> <p>You had to skip a meal because there was not enough money or other resources to get food?</p> <p>Yes 2. No</p> <p>You ate less than you thought you should because of a lack of money or other resources?</p> <p>Yes 2. No</p> <p>Your household ran out of food because of a lack of money or other resources?</p> <p>Yes 2. No</p> <p>You were hungry but did not eat because there was not enough money or other resources for food?</p> <p>Yes 2. No</p> <p>You went without eating for a whole day because of a lack of money or other resources?</p> <p>Yes 2. No</p>

Appendix B: The procedure for calculating household and individual weights

Following Deaton (1997), the weighting for each household in sample was calculated first:

$$W_i^h = \frac{W_i^v}{S_i^v \sum_{k=1}^n W_k^v} \quad (1)$$

Where: $W_i^v = \gamma_v \gamma_s$

$$(2)$$

$$\gamma_v = \frac{H_i^v}{S_i^v} \quad (3)$$

$$\gamma_s = \frac{\sum_{j=1}^n H_j^v}{\sum_{i=1}^n S_i^v} \quad (4)$$

In the above equations, W_i^h is the weighting of each household in CEA i , W_i^v is the gross weighting for the CEA, S_i^v is the number of households surveyed in CEA i , and H_i^v is the total number of households in CEA i . The gross weightings W_i^v were summed, and each household was weighted by the proportion of the total gross weighting from its CEA, divided by the number of households surveyed in the CEA. The total of the weightings of all households were standardised to sum to one.

After calculating household weights, those weights were used to calculate individual weights for each survey respondent, to account for the different probabilities of selection into the sample for individuals from households of different sizes. Weighting at the individual level therefore needs to consider the

number of adult males and females in each household (Deaton, 1997; Cameron, 2003). As noted earlier, individuals aged 18 and above are considered as an adult. The individual weights were calculated as:

$$w_j^f = w_i^h f_j^h$$

(5)

Where w_j^f is the weighting of each adult female respondent in household j of CEA i , w_i^h is the weighting of each household in CEA i , and f_j^h is the number of adult females (aged 18 or over) in household j . An equivalent formula was used for male respondents:

$$w_j^m = w_i^h m_j^h$$

(6)

Where w_j^m is the weighting of each adult male respondent in household j of CEA i , w_i^h is the weighting of each household in CEA i , and m_j^h is the number of adult males (aged 18 or over) in household j .

Appendix C: Cronbach's alpha and principal component analysis (PCA)

Table C1. Cronbach's alpha test

Test scale = mean (unstandardized items)								
Reversed items: F4a F7a								
Average inter-item covariance: .1089392								
Number of items in the scale: 8								
Scale reliability coefficient: 0.8775								
Item	Obs	Sign	item-test correlation	item-rest correlation	average inter-item correlation	alpha		
Worried (F1a)	555	+	0.779	0.696	0.460	0.856		
Unable eat healthy (F2a)	555	+	0.875	0.824	0.433	0.842		
Few food (F3a)	555	+	0.796	0.719	0.455	0.854		
Skip a meal (F4a)	555	-	0.519	0.377	0.532	0.889		
Ate less (F5a)	555	+	0.819	0.749	0.448	0.851		
Ran out (F6a)	555	+	0.524	0.384	0.531	0.888		
Hungry (F7a)	555	-	0.710	0.608	0.479	0.865		
Went without (F8a)	555	+	0.847	0.787	0.440	0.846		
Test scale					0.472	0.877		
Inter-item correlations (reverse applied) (obs=555 in all pairs)								
Item	F1a	F2a	F3a	F4a	F5a	F6a	F7a	F8a
F1a	1.000							
F2a	0.660	1.000						
F3a	0.641	0.732	1.000					
F4a	0.200	0.327	0.177	1.000				
F5a	0.619	0.764	0.816	0.198	1.000			
F6a	0.363	0.363	0.297	0.166	0.313	1.000		
F7a	0.408	0.521	0.369	0.662	0.414	0.237	1.000	
F8a	0.679	0.766	0.641	0.312	0.680	0.338	0.556	1.000

Table C2. Proportion of components and eigenvectors, weighted

Principal component			Eigenvector		
Component	Eigenvalue	Proportion	Variable	Loading 1	Loading 2
1	4.142	0.518	F1a	0.362	0.255
2	1.369	0.171	F2a	0.430	0.035
			F3a	0.401	0.278
			F4a	-0.201	0.707
			F5a	0.417	0.241
			F6a	0.235	-0.108
			F7a	-0.318	0.534
			F8a	0.391	0.045

Appendix D: Principal Component analysis test

Table D1. Summary statistics of the items, unweighted

Variable	Obs	Mean	Std. Dev.	Min	Max
Worried (F1a)	555	0.629	0.484	0	1
Unable eat healthy (F2a)	555	0.629	0.484	0	1
Few food (F3a)	555	0.598	0.491	0	1
Skip a meal (F4a)	555	0.333	0.472	0	1
Ate less (F5a)	555	0.607	0.489	0	1
Ran out (F6a)	555	0.402	0.491	0	1
Hungry (F7a)	555	0.308	0.462	0	1
Went without (F8a)	555	0.672	0.470	0	1

Table D2. Principal component with eigenvector, unweighted

Principal component			Eigenvector		
Component	Eigenvalue	Proportion	Variable	Factor loading 1	Factor loading 2
1	4.480	0.560	F1a	0.3768	0.179
2	1.256	0.157	F2a	0.4233	0.0796
			F3a	0.3916	0.2767
			F4a	-0.2122	0.727
			F5a	0.4019	0.2393
			F6a	0.2246	0.0437
			F7a	-0.318	0.5445
			F8a	0.4091	0.0292

Appendix E: Descriptive statistics

Table E1. Summary statistics of variables, unweighted

Variable	Obs	Mean	Std. Dev.	Min	Max
Informal sector (<i>1=informal</i>)	658	0.616	0.487	0	1
Gender (<i>1=male</i>)	658	0.485	0.500	0	1
Age	658	40.6	12.4	18	80
Marital status (<i>1=not married</i>)	658	0.079	0.270	0	1
No-education	658	0.313	0.464	0	1
Less than secondary	658	0.264	0.441	0	1
Secondary	658	0.310	0.463	0	1
Post-secondary	658	0.111	0.314	0	1
Household size	658	7.14	3.15	1	20
Urban (<i>1=urban</i>)	658	0.505	0.500	0	1
Food security	555	0.000	1.998	-3.01	1.97
Income security	639	4.200	1.052	1	9
Health	639	3.131	0.463	1	5

Table E2. Characteristics of the sample (t-tests), unweighted

Variable	Not informal sector	Informal sector	<i>P</i>
Food security	-0.010	0.005	0.933
Income security	4.251	4.169	0.340
Health	3.169	3.109	0.111

*p<0.1, **p<0.05, ***p<0.01

Appendix F: Ordinary least squares test

Table F1. Ordinary least squares, unweighted

Variable	Income security		Food security		Health	
	Coef.	P>t	Coef.	P>t	Coef.	P>t
Informal sector (<i>l=informal</i>)	-0.129 (0.084)	0.122	0.070 (0.195)	0.719	-0.047 (0.040)	0.235
Gender (<i>l=male</i>)	-0.160* (0.087)	0.065	0.301 (0.193)	0.120	0.054 (0.037)	0.147
Age	0.006* (0.004)	0.098	-0.024*** (0.007)	0.001	0.000 (0.002)	0.848
No-education	-0.391*** (0.095)	<0.001	0.884*** (0.186)	<0.001	0.046 (0.042)	0.270
Marital status (<i>l=not married</i>)	-0.186 (0.158)	0.240	0.071 (0.328)	0.828	0.045 (0.086)	0.598
Household size	-0.008 (0.012)	0.496	0.027 (0.027)	0.319	0.003 (0.006)	0.650
Urban (<i>l=urban</i>)	0.104 (0.082)	0.204	0.823*** (0.174)	<0.001	0.050 (0.038)	0.192
Income security						
Food security						
Health						
Constant	4.242*** (0.183)	<0.001	-0.114 0.377	0.761	3.087*** (0.080)	<0.001
Number of obs = 639			Number of obs = 555		Number of obs = 639	
F(7, 631) = 3.83			F(7, 547) = 7.80		F(7, 631) = 0.88	
Prob > F = 0.0004			Prob > F = 0.0000		Prob > F = 0.5209	
R-squared = 0.0391			R-squared = 0.0757		R-squared = 0.0122	

Root MSE	=	1.0373		Root MSE	=	2.0478		Root MSE	=	.46304
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*p<0.1, **p<0.05, ***P<0.01. Std Err. in parentheses

Chapter 4: Obstacles to development of the informal sector actors in Timor-Leste: Perspectives of informal sector workers

4.1 Introduction

It is broadly accepted that there is a positive relationship between economic growth and business activity. Empirical studies have indicated that the participation of businesses in economic development is substantial, especially in the area of employment creation (Drnovsek, 2004; Debrah, 2007; Adams, Johansson de Silva, & Razmara, 2013; Decker, Haltiwanger, Jarmin, & Miranda, 2014).

Diverse literatures have underlined that employment growth and GDP in developing countries depend heavily on the growth and strength of small businesses (Chu, Benzing, & Mcgee, 2007; Benzin, Chu, & Kara, 2009). Suleiman, Neshamba, & Valero-Silva (2016) considered small businesses as an engine of economic growth, and noted that they are beneficial for employment generation, wealth creation, and poverty alleviation, especially in developing countries. For example, Ghana and Kenya recognize the importance of small businesses that for years have contributed to and lifted economic growth. In this sense, most households in Ghana are engaged in informal sector non-agricultural activities such as craft and related trades, and services or sales (Chu et al., 2007; Osei-Boateng, & Ampratwum, 2011). The informal sector in developing countries not only makes a significant contribution to the economy, but is a major potential source of household income for less educated and unskilled people (Tshuma & Jari, 2013).

In developing countries, employment is often created by the economic activities of the informal sector. The informal sector on average in developing countries contains more than 50 percent of the urban workforce (ILO, 2003), and can be as

high as 70 percent of total employment (Bosch & Esteban-Pretel, 2012). ILO (2004) notes that the informal sector's share of the non-agricultural workforce has been as high as 55% in Latin America, 45-85% in Asia, and nearly 80% in Africa. Furthermore, reports show that the informal sector and self-employed are considered poor groups with low average earnings and high poverty risk. In developing countries, especially low-income countries, 53% of the population are in the informal sector and self-employed, while this group is 36% of the population in lower-middle-income countries (Heintz & Valoda, 2008; Fields, 2013). The expansion of the informal sector in the short term could help reduce unemployment and underemployment in developing countries and promote development for poverty reduction (Chibba, 2009).

Timor-Leste defines the informal sector as all non-farm businesses that are not registered with any government bodies (Timor-Leste Business Activity Survey, 2013). In developing economies like Timor-Leste, the informal sector plays an important role as it creates employment and supports livelihoods (Mauquei & Cameron, 2019b). The informal sector in Timor-Leste is characterized by small, unregistered, unprotected and unsecured non-agricultural activities. Porter and Requena (2017) note that from 2010 to 2013 around 50,643 new jobs were created in Timor-Leste; however, 83.23% of the new jobs were in the informal sector. Meanwhile, the working-age population in Timor-Leste is projected to increase from 696,300 in 2013 to 913,800 in 2023 (Porter & Requena, 2017). This implies that there is a risk of a gap between the ability to absorb labour in the formal sector and the growth of the workforce. Despite an increase in small businesses in the informal sector, it is evident that very little empirical research has actually been

conducted on the topic, especially from the perspectives of the informal sector workers in Timor-Leste.

The result of Chapter two in this thesis conveyed that 65.8% of people in Dili and the surrounding districts were engaged in the informal sector. Of those in the informal sector, women and lower educated people were statistically significantly more likely to be involved. Furthermore, informal sector work was strongly gendered, with men more likely to be involved in activities such as construction and quarrying. In contrast, women were mostly found in activities such as food and beverage retailing, and weaving and plaiting. ILO (2016) noted that there is a need to support female workers and entrepreneurs in Timor-Leste, due to the lack of gender parity in business ownership.

However, there are wider problems for the informal sector, beyond the gender dimension, that require our attention. Informal sector traders are people who often have relatively little capital. Informal sector business is generally carried out in places that are considered strategic but are categorized as less well-organized environments. By its nature, the informal sector is defined as having ease of entry, small-scale activities, a high proportion of family workers, insufficient capital and equipment, labour-intensive technology, low productivity and income, restricted access to regulated markets and formal credit, and low education and training (ILO, 1972; 2003; Atieno, 2006).

The purpose of this study is to identify the problems or issues faced by informal sector workers and entrepreneurs in Timor-Leste. These issues should be addressed in order to improve the contribution of the informal sector as an alternative source of employment creation in Timor-Leste. Through a better understanding of the

business owner concerns, Timor-Leste can introduce a business environment that will contribute to a stronger and more stable economy.

The remainder of this paper is organized as follows. Section 4.2 highlights relevant literature that leads to the three main research questions in this study. Section 4.3 explains the method and data used for the present study. Section 4.4 presents results and associated discussion. Section 4.5 offers conclusions, while Section 4.6 suggests related policy implications for future consideration.

4.2 Literature Review

There is limited research on the informal sector in Timor-Leste, but quite substantial literature related to other developing countries. Studies show that the informal sector is experiencing continuous growth (ILO, 2002). The informal sector is considered capable of being an alternative to the limited employment opportunities in the formal sector. The limitations of the formal sector have encouraged job seekers to turn to informal activities such as small retail trade, small service provision, and small industrial activities. Indonesia, which is one of the worlds' most populous nations, has experienced a large increase in the size of its labour force. The informal sector providing employment for informal sector workers to 67.47% in 2003 from 64.20% in 2000 which shows a rise of 3.27 percent of total informal sector workers in the labour force between 2000 and 2003 in Indonesia (Pitoyo, 2007).

A study conducted in five African countries (Ghana, Kenya, Nigeria, Rwanda, and Tanzania) revealed that in order to improve income growth and poverty reduction, it is essential to improve the productivity of the informal sector (Adams et al., 2013). The authors further explained that informal sector actors generally carry out their activities individually to meet their immediate needs rather than forming groups.

As a result, productivity is low. Several other factors also cause low productivity in the informal sector, including lack of access to finance, basic infrastructure problems, and the level of human capital (e.g., skills) (Adams et al., 2013). Adequate financial capital and human capital are business factors that must be available before carrying out activities, and will affect the development and revenue of the business (Bambang Riyanto, 2001). Insufficient financial support and legal institutions can constrain a business's growth. The smallest businesses are consistently the most adversely affected by obstacles (De Soto, 1989). There is substantial evidence that small firms face larger growth constraints and have less access to formal sources of external finance, potentially explaining the lack of small and medium enterprises' contribution to growth (Anwar, 2016; Bajcinca, 2013; Beck, Demirguc-Kunt, 2006; Beck, Demirguc-Kunt, & Maksimovic, 2005). In addition, given the limited capacity in the formal sector, any overflows in labour supply seem unlikely to be well absorbed by the formal sector. Thus, the informal sector will most likely continue to provide substantial employment in the nonfarm sector (Lindell, 2010).

Numerous studies have connected education levels with informal sector employment. Better educated people have more opportunities to find a job in the formal sector (World Bank, 2011; Gerxhani van de Werfhorst, 2013; Gillani & Naeem, 2017). World Bank (2011) note that there is a high number of women involved in the informal sector. Due to flexibility and autonomy, women may choose to work in the informal sector rather than the formal sector, because it allows them to manage both work and family duties. Moreover, other research has revealed that many of those involved in the informal sector run businesses for enjoyment and excitement because they can control their own employment destiny, and make their

own decisions. Similarly, they may want to be closer to family, while others run informal sector business to increase income opportunities and acquire personal wealth (Bull & Willard, 1993; World Bank, 2011; Schneck, 2014).

However, in some cases, domestic housework becomes a hindrance to women setting up businesses. A dilemma occurs when women must decide between leaving their children at home alone or taking their children to their place of business. Hanigsberg and Ruddick (2002) argued that taking children to the workplace diminishes the time and investments that women put into paid work. Children in the workplace can also contribute to problems of child labour, as children in the workplace gradually take on tasks as they mature (Kamerman & Gatenio-Gabel, 2007). Other aspects, such as low levels of education, lack of skills, and lack of access to financial resources, are also important reasons that people participate in the informal sector (Singh, 2008). Nevertheless, individual participation in the informal sector is not only based on an individual's human capital, but is also affected by social and institutional factors, for example laws, tax regimes, and labour regulations, as well as other informal institutions such as social norms and traditions (Djankov, McLiesh, & Ramalho 2006; Gerxhani van de Werfhorst, 2013).

Some research has been conducted on intra-household control of income. Women have fewer entitlements, particularly in regards to land, in comparison to men, which has implications for intra-household dynamics (Kerr, 2005). Moreover, Kerr (2005) argues that men have more chance to migrate to other places to earn cash from employers, while women, who have childcare responsibilities, had to sell their assets earlier or rely on government or other institutional aid. To have more opportunities in earning additional cash to support family, women need to be

educated and trained. With greater education, job opportunities for women will increase, and they will become more involved in income decisions (Kerr, 2005).

Low levels of education and skills are the main factors that lead workers to enter the informal sector. A study on those with a low level of education or who are unskilled in the informal sector found that the informal sector was considered a survival model. Even though their earnings from the informal sector are insufficient, the informal sector has indeed helped workers' livelihoods and household earnings (Kasseeah & Ragoobur, 2014).

Husmanns (2005) acknowledged that even though the informal sector provides a high proportion of employment, engagement in this sector often creates problems that affect workers' accessibility to acceptable working conditions, legal and social protection, representation and voice. Meanwhile, Mitullah (2010) revealed that challenges faced by the informal sector include lack of capital, poor marketing, no access to credit, lack of security, and physical infrastructure. Furthermore, Mitullah (2010) specified that harassment and punitive actions by local authority officials against informal sector workers are often related to lack of licenses in unauthorized sites occupied by traders. It seems that the informal sector faces challenges in directing the limited resources to their most efficient uses, if their activities carried out in an environment where there is no formal mechanisms of enforcement or dispute resolution (Pratap & Quintin, 2006).

Despite the fact that there are a number of problems associated with joining the informal sector, many people see informal sector work as a source of income to make ends meet. Research conducted by Narayan & Petesch (2002) found that under challenging situations, low-income families may sell all of their possessions

to start a business in order to survive. In addition to ignorance, fear and uncertainty about whether third parties will provide loans is another issue. De Soto (1989) stated that small businesses (including informal sector businesses) find it tough to obtain third-party loans, because lenders may be concerned that small businesses will be unable to repay the loan (World Bank, 2008; Omri, Frikha, & Bouraoui, 2015).

Benzing, Mang Chu, & Kara (2009) recognized that the problems faced by the small enterprises or informal sector businesses in developing countries are often quite similar in terms of size, dependence on local resources, and out-of-date technology and so forth. Developing economies often exhibit uncertainties and instability, as well as having a highly bureaucratic business environment. Several studies have analyzed factors such as motivation, success, and problems faced by businesses (e.g. see Chu, Benzing, & McGee, 2007; Benzing et al., 2009). In contrast, research on the factors associated with business success have concentrated on a few variables, such as the psychological and personality qualities of entrepreneurs; managerial skills and training; and the external environment (Frese, Branjet & Hoorn, 2002).

Business success may to some extent be determined by the education of the businessperson, the level of market competition, access to capital, and the level of government assistance. Business capital can be obtained from two sources, namely own capital and outside capital, such as from credit institutions. Access to finance helps to equalize opportunities and reduce inequalities (World Bank, 2008). In a study by Yusuf (1995), South Pacific Islanders considered factors such as good management skills, access to financing, personal qualities, and satisfactory government support as the most significant contributors to running a successful business. Perceptions of success factors may be partially determined by the level of competition in the market. In a situation where businesspersons must deal with

highly competitive markets, entrepreneurs may realize that marketing skills are essential success factors (Benzing, Chu, & Kara, 2009). Meanwhile, Sagie and Elizur (1999) found that the readiness to face uncertainty, the ability to calculate risk, the acceptance of personal responsibility, and the solving of problems are factors that lead to entrepreneurial success. A study on small business achievement in Malaysia found that the strategic role of technology is key to success any business including small businesses (Bukanya, Kasse, & Kansubuga, 2014; Radzi, Nor, & Ali, 2017). Technology increases efficiency, performance, and competitiveness, and can be applied to enhance business activities such as inventory management, distribution, manufacturing, and even customer service

In addition to the characteristics of entrepreneurship and business capital, marketing strategy is an area that cannot be separated from the business. Marketing strategies include plans about the elements or variables in the marketing mix which are the interaction of the four main variables in the marketing system, namely products/services, prices, distribution, and promotion (Kreutzer, 1998; Shahhosseini & Ardahaey, 2011; Išoraitė, 2016). Marketing is an integrated tool or strategy including advertising and selling a product. Any product produced is targeted at the markets or the buyers. In the context of the informal sector, most performers in this sector do not understand how to make their products sell well in the market (Išoraitė, 2016). They process raw materials into ready-made products but lack understanding about promoting their products. Raising customers' awareness is one of the main components to compete in the market place.

Another problem is having too large a bureaucracy, and too many regulations. According to Krug (2017), having too many regulations can have a negative impact on business growth. Burdensome regulations are harder to overcome for businesses

that are not already well capitalised. For this reason, only a small number of businesses can operate in an overly regulated economy (Krug, 2017). In international comparative studies, at the national level, the poor are highly protected by the constitution and other legal instruments, but at operational implementation level, the informal sector is discriminated against and excluded. Formal institutions do not adequately support the informal sector (De Soto, 1989; Nichter & Goldmark, 2009).

Considering the literature reviewed above, this paper focuses on three aspects: issues faced by the informal sector when setting up businesses, problems limiting income in the informal sector, and obstacles in developing the informal sector. Our results are based on informal sector workers' perceptions in Timor-Leste.

4.3 Method and data

This section discusses the methodological approach applied in this study. It begins by explaining the rationale for choosing a qualitative research design, the method used for sample selection, and how participants were interviewed. The role of the researcher and reflections about the interest and issues in relation to researcher's role are highlighted.

Yin (2011) noted that qualitative research involves studying the meaning of people's lives in real-world conditions. Given that this study aims to identify the factors or problems that arise related to carrying out economic activities in the informal sector in Timor Leste, and quantitative data would not be appropriate to capture the range of experiences of informal sector workers, we applied a qualitative interview-based approach. The interviews employed unstructured, open-

ended questions and interview notes were taken, which were intended to elicit views and opinions from the participants.

Creswell (2014) proposed several stages to qualitative research. It begins with gathering information throughout an interview with the participants, recording field-notes through open-ended questions, and analyzing data to form themes or categories. The researcher looks for broad patterns, then poses generalizations based on theories from past experiences and literature. Following this approach, we formed themes or categories from raw data (interview notes), which were summarized from the participants' answers to open-ended questions, then developed and categorized into general issues that were raised by the participants.

Data were directly collected by the first-named researcher from the field between January and early May 2017, covering 12 sub-districts from five municipalities in and around Dili, the capital of Timor-Leste. Stratified random sampling was adopted to ensure a representative sampling of households. The sample was selected from census enumeration areas (CEAs), using the 2010 census as a sample frame. A total of 45 CEAs were selected based on probability proportional to size. Local authorities in each selected CEA were contacted before the commencement of the fieldwork. All households in each CEA were enumerated, and then ten households were randomly selected from the enumeration list in each CEA. Only 38 CEAs out of 45 were successfully enumerated, while seven CEAs were not included in the sample due to geographical inaccessibility, or adverse weather conditions. Figure 4.1 presents sub-districts in and around Dili of five municipalities (districts) the location of the study covered.

Figure 6: Study location



Source: Statistics Office, Timor-Leste

Prior to the interview, written informed consent was obtained from each participant. The first-named researcher read the information aloud and obtained verbal consent before the interview started, if the participant was not able to read the informed consent form. The research was approved by the Waikato Management School Human Research Ethics Committee.

Every person who lived and shared food together from the same pot was recorded as a member of the household. One adult male and one adult female from each household were randomly selected to complete an individual interview. A total of 404 individuals were identified as informal sector workers, from the final sample of 658 adult respondents from 349 households that were interviewed. In this paper, we use data only from the sub-sample of individuals who were informal sector workers.

Each individual research participant (who was involved in the informal sector) was asked three open-ended questions: (1) What problems did you face when you

started your informal sector business?; (2) Is there any issue that limits your income/in what way does it limit your income?; and (3) What do you think the main issues are for other informal sector workers?

From the above questions, the first-named author took notes and listed all issues affecting the development of the informal sector based on participants' points of view. The records were made in Tetum (the second official language of Timor-Leste) and then translated from Tetum into English. The issues were listed from the most critical to the least. The method of written record was to note ideas, impressions, thoughts, and concerns. Thematic analysis was then applied to group responses into themes. The names that appear in the discussion sub-sections are pseudonyms, to protect the anonymity of the participants.

4.4 Results and discussions

This section describes the findings from the study of issues faced by the informal sector in Timor-Leste. The section is divided into five sub-sections, corresponding to the five main themes that emerged from the interviews: (1) the impact of resources; (2) the impact of competition; (3) the impact of infrastructure and transportation; (4) the impact of climate, and (5) conflict between informal work and family responsibilities.

4.4.1 The impact of resources

Financial capital

Participants acknowledged that there are many issues for new informal sector businesses, of which financial barriers are the first main concern. The participants had the same general understanding of survival strategy – even with limited resources, they try to make best use of those resources to start a business. In the

absence of a formal sector job, running a small business may be the best hope for them to meet their family's daily needs. However, it is challenging to get sufficient financial capital to start a business, even when only a small amount of financial capital is required. Because of the difficulty of obtaining the initial capital to start a business, some respondents were willing to sell their property such as land, livestock, and other possessions that had been left to them by their parents:

“In order to start my business as ojek (taxi bike), I sold livestock that I owned from my parents to buy a used motorbike to operate as ojek... I see there are some people walking every day for almost an hour to get public transport in the main road. Ojek could be an option but the money I earn from this activity is not much. Depends on luck, if I am lucky, I can carry two or three passengers in one day for two to three dollars. To sustain daily life like buying food, and purchase kids' basic needs considers tough but this is the only way I can do it” (Joaquim is a father aged 36).

“Another example is kiosk (small retail). Before starting my business, I sell assets, for example a piece of land which was left by my father. In addition to managing a kiosk (small retail) some of the money I use for renovating my house, and send kids to school.” (Marta is a mother aged 39).

The quotes above demonstrate that under challenging situations low-income families may sell many of their assets to do business. In selling the property, a portion of the cash is used for food and other costs, while some is used to start a side business. In a situation where loans from formal institutions are hard to obtain, another option is borrowing money from other family members or neighbours. The

borrower may ask for some collateral or warranty, for example land certificate, livestock or house.

Illiteracy, lack of financial skills, and fear of risk are major concerns for informal sector workers. These suggest that even when small amounts of capital are made available, some informal sector business owners are unable to (or unwilling to) take advantage of it. For example, a housewife named Teresa expressed her concern:

“I heard an NGO called “moris rasik” (independent life) provides fund for women to start a business but it has to be in a group. I am illiterate, I do not know how to deal with the requirements like forming a group, having regular weekly meetings with the group members and so on. For example, I heard that if I borrow some amount of money from “moris rasik,” then I have to repay a certain amount every week. I am afraid that I cannot repay the loan as required. So, it is better to sell my home-grown produce based on my ability to make any money in a day without having to think about paying back to the borrower” (Teresa a housewife aged 37).

For informal sector business owners with limited capital, competing cultural priorities may impede investment in their business. For example, the informal sector worker may have sufficient financial capital for investment. However, they use the money to attend to cultural calls rather than trying to retain it for business development. For example:

“In my opinion, our culture like “fetosaa”³ and “umane”⁴ are limiting factors for my daily income. I cannot save money for family needs, if there is a call from my wife’s family. Whenever one of the above situations take

³ Literally wife givers: marriage relations from wife’s side of family (Niner, 2017).

⁴ Literally wife takers: marriage relations from husband’s side of family (Niner, 2017).

place whether I like or dislike, whether I'm ready or not I have to attend. I have to offer some cash (money) or livestock based on the customary call from my wife's family. If I am not present and commit to their request, my credibility as a husband will be underestimated and I will not have any respect from my wife's family." (Roberto is a head of family aged 40).

Furthermore, Duarte (a traditional leader) conveyed his views on cultural effects and the financial difficulties they create:

Rituals, traditions or rules that require people to bring money, goats, cows or buffalo to offer when there are traditional celebrations become harder. These situations are challenging for most people in my community." (Duarte, a traditional leader aged 68).

In the Timorese viewpoint, *fetosaa* and *umane* are an inheritance from ancestors, which they have to preserve. Niner (2017) described the rules of *fetosaa-umane* as "an intricate family system established through marriage." In Timor, marriage is not only to attach two individuals but two families. Niner (2017) further explained that the tradition of *fetosaa-umane* is a complex set of rules, rights, and responsibilities that define the relationships between a groom's and a bride's family. Timorese people will try different ways to attend cultural ceremonies, even though they may have to borrow money from neighbours or others.

As Timorese is a patriarchal society, it is normal to give some amount of money or livestock on *fetosaa-umane* get together, which have been determined by the wife's parents and family. Many Timorese believe that if someone ignores this traditional practice, they will face a negative impact on their lives; for instance, they believe that their children will get sick and their family will not live in harmony. Good life

is expressed in the concept of *matak-malirin*. *Matak* meaning ‘newly green’ or ‘sprouting’ and *malirin* meaning ‘cool.’ Thus, the idea of *matak-malirin* means a state of good health and productive life energy’ (Bovensiepen, 2016; Trindade & Barnes, 2018).

The above examples imply that, where there are constant calls for resources from other family members, it will be difficult for an informal sector worker to save enough capital for business development. It is also possible that, if they get a business loan, they will share it with family rather than using it for the business. Hence, lenders may be reluctant to lend to informal sector businesses, making it difficult for them to obtain loans.

Market, raw material, and equipment

Respondents frequently raise issues related to access to market and the difficulties in finding potential market to sell their products. Due to limited knowledge to promote their product, many of them just waiting until an order comes. Normally they use word-of-mouth promotion and this is only limited to neighbours or people who have ordered their products. The informal sector is also characterized by small scale operation with simple tools and reliance on local resources. For example:

“I make tofu at home with provisional equipment. I started a tofu business a few years ago, but the problem is not many people know my product. I produce a small amount of tofu at home with inadequate equipment. I produce more only if some people order it but not many people know so far. It is also difficult to get raw materials, for instance, local soybeans. If I buy soybeans from a neighbouring country like Indonesia, it is costly because of other expenses.” (Veronica a mother aged 39.

Many are also depended on local materials:

“I have woven rattan and the like from forest substances. To get raw materials, I have to walk deep into the forest and pass ravines and cliffs to get raw materials. The products that I produce are varied, for example making sunblock shades or curtains, chairs, tables and so on but the product still there, none of them have been sold since I made it couple of months ago.” (Sabino a father age 56).

Lack of access to markets, dependence on indigenous resources with simple tools are among the impediments for informal sector business. Many of the informal sector workers also exposed to a lack of initiative in seeking out markets and raw materials, which may be related to their low level of knowledge and skills. These essential factors are directly related to the informal sector to enlarge businesses.

4.4.2 The impact of competition

Timor-Leste was granted observer status by the World Trade Organization (WTO) in 2016. However, adherence to WTO has both positive and negative impacts on the domestic informal sector. On the positive side, small-scale entrepreneurs can obtain goods from other countries that are not produced domestically, while a negative impact is the potential to destroy local businesses that maintain local features. Local markets or traditional markets generally sell local products that reflect local content.

A number of respondents stated that the presence of foreign businessmen had affected them, because handmade Timor-Leste woven textile has to compete with cheap foreign imported product, as “Liliana” explained:

“I set up a business by selling local traditional handmade cloth called “tais”⁵ a couple of years ago in a place provided by the government. The “tais” I sell are produced by myself and some are gathered from other friends. However, I stopped doing the business because no one looked after the house and children. At the moment I weave “tais” at home but this is not as productive as before which tremendously affects daily income because there are less buyers compared with before in the market place. In addition, competition with “tais-made” materials with modern machine tools by a particular group of people from China has pretty much affected the local “tais” market.” (Liliana a housewife aged 58).

“Filomena” also noted the negative consequences of competition:

“I joined the informal sector for a number of years by selling used clothes, (in a local community known as “Obralan” or “OB” which means to “sell” goods at low prices). The clothes are mainly imported but there is no guarantee that the goods will be sold. To earn one or two dollars in a day is very hard if the product does not sell or no one intends to buy the goods. I think it is because many people sell the same thing (OB) as I do. Potential buyers often simply come to see and then leave without spending a penny.” (Filomena a widowed age 39).

⁵ *Tais* are traditional hand-made clothes woven by women, and it has different sizes, types, and functions. For example, like clothes, a *tais* is a full-body wrap-around costume worn during rituals and other cultural ceremonies by both women and men. As gifts, the size of the *tais* is a bit smaller than cloth, and serves as an official means for welcoming guests or as a gift for tourists.

Foreign competition was a feature across many informal sector activities, including resource extraction or mining:

“I am one of the mining workers who works every day as a sand digger, filtering, and collecting stones from the river. This work is daily work for us who live near the riverbank. I have been doing this job for many years. This job does not guarantee daily income, it depends on luck. If fortune is on my side, I can sell one or two ret (loads) in a day but if unlucky there are no returns at all. In some situations, we have to fight among ourselves to approach buyers when buyers are rare. Normally, if there are many new projects provided by the government, many sub-contractors come to order sand for road rehabilitation or other constructions. However, since last year there have been very few sub-contractors come to buy sand or stones. They preferred buy sand and stone from big company own by foreigner. So, even if we dig sand and collect stones there are no buyers.” (Silvano, a miner aged 38).

Based on the cases above, competition is unavoidable and has negative consequences for the informal sector. Competition is increasing with the presence of foreign businesspeople who also target the same markets as informal sector businesses. In the case of “tais”, local products produced by traditional producers (hand-made textile “tais”) will be unable to compete with imported goods, if local market flooded with external products that are printing with modern technology. In general, imported goods are worth for local consumers, who can buy products more cheaply, however in some cases in the long-term, the impact not only limited to market competition, but local-handmade “tais will lose its uniqueness or local

identity will disappear at some point, particularly if Timor-Leste has yet to develop stronger industries locally.

4.4.3 The impact of infrastructure and transportation

An economy needs reliable infrastructure to expand. Lacking basic infrastructure potentially leads to socio-economic issues, for example limited business opportunities, and higher unemployment (Burdett, Lagos, & Wright, 2013). Unavailability of necessary infrastructure and inaccessible transportation will affect business mobility and creation of new businesses.

Numerous respondents referred to the significant effect of unsatisfactory basic infrastructure on the informal sector. In particular, many respondents raised issues such as roading, electricity, water and sanitation, and physical marketplaces. These factors were viewed by most respondents as discouraging factors in setting up businesses. For example:

“I sell vegetables and fruits for years. The vegetables quickly wither, and fewer buyers, are situations that I encounter every day. It is difficult to get water to spray vegetables to keep them green and fresh. No water tap or sanitation are available near the place I live. Often, I take water from home, if not I have to buy Aqua bottled water to spray the vegetables to keep them fresh. The water I use for refreshing vegetables is also for my personal use in an emergency situation “for toilet in the bush”. If vegetables and fruits are not sold, I take them home or throw them away. This has a negative impact on my income.” (Luciana, an unmarried woman aged 39).

Similarly, Mario expressed his concern about basic infrastructure, physical marketplaces, and access to public services in a sub-urban area:

“At first, I started my business by selling vegetables that I grow in the backyard garden and from the other gardens in a market prepared by the government. However, the market place is far away from the main road, and the road is damaged. Many public vehicles cannot access the market where I am. Also, electricity is often cut off, the toilet does not work, and there is no water. The environment is not clean and is smelly, so there are not many buyers coming to this market. From there, I started to sell vegetables, fruits, beans, and others with “gerobak” (two wheels). I push the “gerobak” from place to place, especially in densely populated residential areas to sell my stuff. Even though the income I earn is not a lot, I continue to do this work to support my family” (Mario, a widowed male aged 54).

Access to transportation also one of the main concerns among the informal sector workers. Products produced are challenging to get to the marketplace. Due to transportation difficulties people often carry their product by foot to get into the market or by other means of transportation like horses. An example is Hugo:

“I collected various used tires and made buckets to carry water or to wash clothes from used car tires. If I want to sell my product, I have to carry it out to sell in one place to another or display it on the main road.” I cannot afford to rent a car to carry my products to travel to different marketplaces or in the city.” (Hugo a young man aged 28)

Unlike Hugo, many informal sector workers in rural areas use other transportation methods such as horses. Domingas shared her story:

“In the absence of modern transportation, I normally use horses to transport products such as fruits, vegetables, and other products that I collected from neighbours to the market. After that, I buy some wholesale products transported back with horses to sell again at “kios” (small retail) in my home in the village.” (Domingas, a female trader aged 38).

The issue of infrastructure, especially roads and vehicle access, is not only a concern of ordinary people, but local leaders also affirm the same problems over the past few years:

“As a village leader, I am very much concern about transportation. Public transportation cannot access our village because the road is severely damaged during the rainy season. The road has long constructed during Indonesia’s occupation before our independence, and it is now completely damaged. I had raised this issue several times to national level through the head of administrative post and also a number of national leaders who visited our village, but I have not heard any follow up yet” (Honorio, a village head aged 39).

The finding suggests that basic infrastructures such as road, electricity, physical market place, and improved access to and use of clean water is indeed required for setting up a business. Increased infrastructure investment and accessible transportations possibly solving several issues that are developing economies faces.

4.4.4 The impact of climate

Climate uncertainty contributes to the development of the informal sector in a different way. Seasonal changes affect the type and volume of agricultural food components. Long dry seasons make farmers unable to grow agricultural products,

as a result of which informal sector workers find it challenging to obtain agrarian products to run their businesses. The shortened supply of foodstuffs and fruits have caused many informal sector traders to worry about their business, as Ligia noted:

“I usually sell vegetables and fruits that I buy from the village. However, lately, I have had difficulty getting this local produce. The long dry season has resulted in people in the village not being able to plant foodstuffs as there is no water. This situation is quite worrying because, by selling the local produce I am able to support my family as well as other expenses, since my husband is sick, and he cannot work.” (Ligia, a spouse aged 30).

“Duarte” is a trusted person in the village. He conveyed his observations as follows:

“I always talk to my people because I am considered the person entrusted by the community where I reside. I said, in the past, we fought together to seek independence. We have achieved independence, and now we have to fill it by working hard. We must do any work as long as it is right and does not harm others. However, I must admit that the situation is indeed tough, especially during the long dry season and the waiting period for harvest. Lately, climate change is very extreme. Getting water for daily life is tough, notwithstanding to plant crops even becomes increasingly tricky” (Duarte, a traditional leader aged 68).

4.4.5 Conflict between informal work and family responsibilities

Previous studies have highlighted several issues faced by informal sector people. This section mainly focuses on women in the informal sector. Insufficient infrastructure, and time spend for taking care of family are among the impediment

for women to perform their business (Avasthy, Ray, & Deb, 2013). Most of women participants were concerned about balancing family and business. Women generally face a dilemma. They have to choose between running a business out of the home to support household income, and their family responsibilities as housewives and mothers. These choices are undoubtedly tricky for women who have many children. In the end, they may decide not to continue their business outside the home, instead choosing to run business activities at home and also take care of their homes and children. Adonia expressed her views on balancing business and family:

“Initially, I was working in the “tais” market by selling “tais” that I made. I enjoy my work because I weaving while selling my stuff. However, I stopped doing this business because no one looked after the house and children. At the moment I weave “tais” at home, but this is not as productive as before which tremendously affects daily income because there are fewer buyers compared with before in the market place.”(Adonia, a waiver mother aged 49).

Another woman related her experience in juggling home life and informal sector work:

I prefer selling vegetables in front of the house because then I can take care of the children, cook, and so on. It was true that the income was not much, because the buyers were only neighbours around me, but I had to do it because my children are under-age and my husband worked as a wage labourer in the city, so I could not leave the children alone at home.” (Anita, a housewife aged 39).

Based on the investigation, the participants classified issues into several categories such as financial issues, physical infrastructure mainly roads, information, transportation, access to markets, human skills or abilities, seasonality, and weather-related. The findings imply that apart from the competition, seasonal hardship, infrastructure, transportation, and domestic household activities, an important aspect identified in this study were the cultural factors.

4.5 Conclusion

This paper aimed to identify the key problems faced by informal sector workers and entrepreneurs in Timor-Leste. To the best of our knowledge, this paper is the first such research on this topic in the Timor-Leste context.

This study shows that the informal sector appears small with little financial capital. In some cases, people have to sell ownership of other movable and immovable assets such as livestock and land to start a business. With a low level of education and understanding, most informal sector participants do not understand financial management, so they are misguided in their use. The unavailability of infrastructure also inhibits this marginalized community to run their businesses.

As some of the participants mentioned, many people offer the same goods and services in close competition. Competition is very high among informal sector businesses, and between these businesses and foreign competitors. Many participants noted that apart from too much competition, the marketplaces were hard for consumers to reach. Bad roads affect public transport and access to the marketplace. Lack of public facilities, like water and sanitation also affect consumers who may not come to the marketplace. Other issues include power outages, and taking care of house and children (for women). Also, customary laws and obligations are among the most prominent issues facing the informal sector.

Numerous constraints hamper the expansion of the informal sector in Timor-Leste. The restrictions differ between types of informal sector work, for instance, food and beverage, small retail, weavings, and other goods, as well as quarrying, and services. An example of this is in the tais market, where the technology that foreigners applied not only affects the authenticity of traditional hand-made tais but also makes the market increasingly flooded with similar external products which cheaper than traditional-handmade tais. However, competition between local and importing goods in one part is good for local people because local people can obtain cheap goods, learn from foreign goods, in this case skill know-how is important for Timorese people. Economic integration with other developing countries could possibly increase the size of the market and benefit the adoption of more advanced technologies. However, it may also have significant and detrimental consequences in increasing unemployment level of developing countries (Zhou, 2015).

Cultural factors are another challenge, such as fetosaa and umane. Customs are tightly attached to most Timorese people's beliefs. The cultural heritage needs to be preserved, but it is hard for informal sector workers and entrepreneurs to follow these customs and to retain enough financial capital for their businesses to grow. Despite these inhibiting factors, the informal sector creates substantial employment, especially for low-educated people in Timor-Leste (Labour Force Survey, 2013).

Nevertheless, what is needed by the community in the informal sector is adequate basic infrastructure, as well as transportation to get access to the markets. Based on the above analysis we can conclude that human capital, business capital, natural capital, public institutional capital, knowledge capital, and infrastructure are vital for individuals to be economically productive in undertaking their businesses

appropriately. These factors have already been identified in other contexts as the key to ending extreme poverty (Sachs, 2015).

4.6 Policy implications

People in the informal sector motivate each other to persevere without having to rely on the government. However, the government has to pay more attention to providing up-skilling, safety, and health to those engaged in this sector.

Policy measures must take into account that people with low education need access to loans without lengthy procedures, and expand information about access to loans for informal sector businesses. The government should prioritize essential business skills training at the first priority, while continuing providing basic infrastructure such as roads, water, and sanitation. Transportation must be available and accessible to the rural community. Cultural factors are essential to be preserved. However, as much as possible they should not burden the informal sector community.

In some places such as in a village of Mauchiga in Hatobuilico Administrative Post, Ainaro District, applied traditional rules that were rationally encouraging. The rules were created and agreed among traditional leaders in the community which commonly called “Tara Bandu”⁶ or “customary practice”. Residents in the community are only permitted to carry out customary activities such as “fetosa-umane” once in more than two years. There will be no cultural celebration within the time period “Tara Bandu”.

⁶ “Tara Bandu” has different meanings in different contexts. In this case, it is used to refer to a way to enhance traditional culture and mutual respect within society (Belun & the Asia Foundation, 2013).

This is a good alternative, because besides being able to maintain the customs of the ancestral values, it also gives time for the community to carry out economic activities and develop any business that is carried out without having to incur extra expenses. This practice has enormous benefits to be applied elsewhere in Timor-Leste, which is still very strong in holding the principle of customs from generation to generation. Traditional leaders with local leaders are important agents in transmitting these best practices to the rest of the country. This can be accomplished by good cooperation among the traditional leaders with the support of village heads in disseminating this practice across Timor-Leste. Since, these practices is an initiative of the traditional leaders with local leaders, and the community in that village, the government must ensure that the follow through on this. A national council of traditional leaders would be ideal to drive this process. Also, incentives for villages to change these cultural practices be considered.

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Chapter 5: Conclusion

The informal sector is a topic that has attracted many scholars. It is a persistent and prosperous characteristic of the contemporary global economy (Gurtoo & Williams, 2009). All over the developing world, the informal sector is an important issue. The evolution of the informal sector within the economic development context has become a widely debated topic (Hart, 1973; Fields, 1975). Thus, better understanding of the role of, and consequences of, the informal sector is important.

The informal sector creates a source of income to the people connected with this sector. The existence and continuation of informal sector activities in the contemporary economic system is not a negative trait, but rather is a mainstream economic activity that plays a vital role in the community and in national development. Mainly, when the economy is less able to provide employment opportunities for the workforce, the informal sector, despite all its deficiencies, can act as a reservoir and alternative employment opportunity for job seekers (De Soto, 1989; Chen et al, 2002; ILO, 2002; Kapoor, 2007). As a sector that is frequently considered as the economy of the poor, the informal sector is a concern of many international development agencies. Through three interconnected studies, this thesis has expanded our knowledge of the importance of the informal sector's contribution to the economic well-being of those involved in the informal sector, especially in the Timor-Leste context.

Considering that the informal sector has a large role in developing countries, the United Nations places the informal sector as a global priority issue as reflected in the SDGs (ILO, 2018; Clausen & García, 2019). Of the SDGs priorities, there are at least six that are related to the issue of the informal sector economic activity.

First, the importance of decent work in achieving sustainable development is highlighted by Goal 8 which aims to “promote inclusive and sustainable economic growth, productive employment opportunities and decent work for all”. Also, reducing disparities in sustainable development, which is highlighted in goal 10 includes fulfilling new independent entrepreneurs, increasing capacity and business access for poor households, increasing job opportunities, increasing workforce placement, improving the quality of workers, and prospective workers, supervision, and industrial relations. Moreover, Goal 1 is to eradicate extreme poverty (people below the poverty line) with a purchasing power of less than \$1.25 per day, and reduce by at least half the number of poor people (men, women, and children of all ages) based on national definitions. Furthermore, in line with development priorities that are contained in the priority of food security and job creation, Goal 2 is to end hunger, achieve food security, improve nutrition and promote sustainable agriculture. Also, ensuring a healthy life and improving the well-being of the entire population of all ages (Goal 3), and eliminating all forms of discrimination against all women and girls everywhere (Goal 5) are relevant.

Many international development policies are aimed at poverty reduction within this sector, and therefore, understanding the informal sector is essential for developing appropriate policy and (Gunter & Launov, 2012). Similarly, poverty is a significant issue of Timor-Leste economy. Poverty has a close relationship with population growth, unemployment, and equal opportunity. (World Bank, 2019).

This thesis was devoted to improving understanding of the informal sector characteristics and the welfare of the informal sector workers in Timor-Leste. It is important to study informal sector development in a young country with a high population growth rate like Timor-Leste. Specifically, this thesis addressed the

following research questions: (i) what are the characteristics of the informal sector in Timor-Leste? This includes who are in the informal sector, and what activities are occurring in the informal sector?; (ii) how is informal sector work related to the income security, food security, and health of informal sector workers?; (iii) what are the main obstacles identified by the informal sector workers in Timor-Leste?

5.1 Main findings

Chapter 2 discussed the characteristics of the informal sector in Timor-Leste. As in many developing countries, Timor-Leste's informal sector shows similar features such most informal sector business is found in urban areas. Economic activities are mainly dominated by food and beverage retail, small non-specialized retail or kiosk, and weaving and plaiting. The chapter also highlights the differences among individuals involved in the informal sector and those who are not. There are significant differences in gender between those who take part in the informal sector and those who do not. Women make up a higher proportion of the informal sector, while education is lower among those engaged in the informal sector than those in formal work. The findings in this chapter are in line with previous studies, which revealed that women in developing economies are more likely to be employed in the informal sector than men. Similarly, those with higher qualifications prefer obtaining a job in the formal sector (ILO, 2010; World Bank 2011).

Chapter 3 analyzed the relationship between informal sector work and people's wellbeing, especially income security, food security, and health. The empirical analysis of this chapter shows that the informal sector is statistically significant, decreasing income security. The findings suggest that income insecurity is high among informal sector businesses. However, the informal sector seems not directly associated with food security or health.

Chapter 4 empirically investigated the obstacles faced by the informal sector performers based on the perspective of the informal sector workers in Timor-Leste. The chapter accomplishes that Timor-Leste's informal sector development has been hampered by low education, low skills, poor infrastructure, lack of human capital, and general lack of financial support. These issues are fundamental for informal sector businesses in undertaking their businesses properly. The previous study considered that these factors are vital in dealing with poverty reduction in developing countries (Bigsten, Kimuyu, & Lundvall, 2004; Sachs, 2015)

Overall, the evidence present in this thesis suggests that the informal sector affects different aspects of the life of informal sector workers. Most informal sector businesses were engaged in trade, services, manufacturing, construction and quarrying, and transportation. In the end, all these activities are aiming to secure income security, food security, health, and wellbeing for the individuals and their families.

5.2 Policy implication

The informal sector business in Timor-Leste facing several issues that hamper its development. The main issues that affected informal sector development are financial capital, low level of education, infrastructure, as well as customary laws and obligations are among the most impediment factor of informal sector development. The government should provide a supportive environment by simplifying business-related regulations, procedures, and ensure more convenient access to credit. A supportive business environment will stimulate new entrepreneurs to start their businesses and thus, create job opportunities for many job seekers.

The results in this thesis indicate that informal business activities contribute to in particular to the wellbeing of those with low education, as well as to women's livelihoods. The phenomenon of the informal sector employment shows similar trend globally, particularly developing countries. ILO recently stated that:

“Those who have completed secondary and tertiary education are less likely to be in informal employment compared to workers who have either no education or completed primary education” (ILO, 2018 p.19).

Nonetheless, there is no single comprehensive policy intervention to overcome problems associated with the informal sector. It requires a sequence of interventions that need to be considered and implemented. Those interventions need to be appropriately planned and aimed at particular constraints, needs, and risks of various groups of informal sector workers (Chen, 2016). Hence, the policy such as capacity building through training and technical assistance in obtaining a loan, record keeping, managing capital, improving infrastructure as well as preventing unnecessary expenditure in non-productive activities like customary call and other obligations. These policies should be targeted at supporting women and illiterate people activity, even if it is in the informal sector.

5.3 Future research

The informal sector is a growing sector all over the world. This sector represents almost more than half of non-agricultural employment in most developing countries. There is no doubt that the growing of this sector and its contribution in an economy drew much attention of scholars from the emerging relevant fields such as development studies, environmental, health and many more.

Despite the fact that the informal sector faces various obstacles, the informal sector will continue to exist in today's global economy. Empirical research in this thesis is a springboard for subsequent research related to income. In chapter 3 of this thesis discovered that the informal sector shows a vulnerability in income, while this sector is the survival of life for most people, especially women and the uneducated.

Further research should make attempts to analyse wages between the informal and non-informal sectors. The analysis between the two sectors is necessary, especially the effect of the informal sector on wage setting in the formal sector.

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Thesis Appendix



Co-Authorship Form

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Please indicate the chapter/section/pages of this thesis that are extracted from a co-authored work and give the title and publication details or details of submission of the co-authored work.

Chapter 2:
Mau-Quel, H., & Cameron, M. P. (2019). Characteristics of the Informal sector in Timor Leste. Working Papers in Economics, 19(05). University of Waikato.

Nature of contribution
by PhD candidate

Literature review, field work or data collection, data analysis, writing of the initial draft, presentation at seminar and conference, revisions, and preparing for journal submission.

Extent of contribution
by PhD candidate (%)

70

CO-AUTHORS

Name	Nature of Contribution
Michael, P. Cameron	Guidance and critical feedback

Certification by Co-Authors

The undersigned hereby certify that:

- the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and

Name	Signature	Date
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Chapter 3:

Ma J-Quel, H., & Cameron, M. P. (forthcoming). The impact of income security, food security, and health in Timor-Leste. University of Waikato.

Nature of contribution
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Literature review, field work or data collection, data analysis, writing of the initial draft, presentation at seminar, revisions, and preparing for working paper, and journal submission.

Extent of contribution
by PhD candidate (%)

70


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The undersigned hereby certify that:

- the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and

Name	Signature	Date
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July 2015



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Chapter 4:

Mau-Quel, H., & Cameron, M. P. (forthcoming). Obstacles to development of the informal sector in Timor-Leste: Perspective of informal sector workers. University of Waikato.

Nature of contribution
by PhD candidate

Literature review, field work or data collection, data analysis, writing of the initial draft, presentation at seminar, revisions, preparing for working paper, and journal submission.

Extent of contribution
by PhD candidate (%)

70

CO-AUTHORS

Name	Nature of Contribution
Michael, P. Cameron	Guidance and critical feedback

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Helio Mau-Quei
44 Edinburgh Road
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Hamilton

18 October 2016

Dear Helio

Ethical Application WMS 16/127

The informal sector's contribution to the economic wellbeing of people in Timor-Leste.

The above research project has been granted Ethics Approval for Research by the Waikato Management School Ethics Committee.

Please note: should you make changes to the project outlined in the approved ethics application, you may need to reapply for ethics approval.

Best wishes for your research.

Regards,

Amanda Sircombe

Amanda Sircombe
Research Manager

Questionnaire

Section A: Demographic characteristics

1. Household members' information:

Line no.	Name (P1)	Relations hip (P2)	Sex (P3)	Age (P4)	Marital status (P5)	School Attendance (P6)	Level education reached (P7)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Codes are below:

(P2)

1. Head of household
2. Spouse (husband/wife)
3. Daughter/Son
4. Adopted
5. Stepchild
6. Daughter/Son-in-law
7. Mother/Father
8. Sister/Brother
9. Father/Mother-in-law
10. Sister/Brother-in-law
11. Grand child
12. Grand parent
13. Niece/Nephew
14. Other Relative
15. Non Relative

(P3)

1. Male
2. Female

(P5)

1. Never married
2. Married
3. Widowed
4. Divorced
5. Separated
6. Living

(P6)

1. Yes, Attending School
2. Yes, Attended before/left school
3. No, never attended school
4. Don't know

(P7)

1. Pre-Primary
2. Primary
3. Pre-Secondary
4. Secondary
5. Polytechnic/Diploma
6. University
7. Non formal

2. Which of the following best describes your current living arrangements? ☐
1. Own your home
 2. Rent
 3. Live with family/relative
 4. Other (specify)
3. Where was...born? Place of born:
4. When did...(last) come to live in the current place (suco/village)? (month and year)
- | | |
|--------|-------|
| Month: | Year: |
|--------|-------|
5. Where was last living before moving to this suco/village?
6. What was the main reason for you to move to this suco/village? ☐
1. Studying/training
 2. Job transfer
 3. To search for work
 4. Marriage
 5. Family moved/other family related reasons
 6. Natural disaster
 7. Conflict/violence/political reason
 8. Was forced to leave
 9. Other (specify _____)
7. How your household did obtained the (food) consume during the last 12 months? ☐
1. Purchase
 2. Self-production
 3. Received as a gift
8. What actions did your household take to deal with not having enough food to eat: ☐
1. Ate less food
 2. Switch from rice to corn or other food
 3. Ate less meat/vegetables
 4. Borrowed money from friends/relative
 5. Sold livestock or other assets to purchase food
 6. Got food aid from NGOs/others
 7. Other (specify _____)
 8. Not applicable
9. Which source of cash income does the household or its members, have? ☐
1. Income from the sale of own agricultural, livestock or fishing product
 2. Income from self-employment in other activities (non-agricultural)
 3. Income from wage employment
 4. Old age pension
 5. Subsidies/allowances from government
 6. Donations, scholarship, charity form churches, NGOs, int. organizations, etc.
 7. Remittances alimony, gift from family members or other households
 8. Property income (rent, interest, dividends, etc.)
 9. Other (specify _____)

10. What is the main construction material for your external wall? ☐
1. Concrete/brick
 2. Wood
 3. Bamboo
 4. Corrugated iron/zinc
 5. Clay/soil
 6. Palm trunk (bebak)
 7. Rock
 8. Other (specify _____)
11. What is the main construction material for your roof? ☐
1. Concrete
 2. Corrugated iron/zinc
 3. Tiles
 4. Asbestos
 4. Bamboo
 5. Palm laves (tali tahan) thatch/grass
 6. Other (specify _____)
12. What is the main construction material for your floor? ☐
1. Concrete/brick
 2. Tile
 3. Wood
 4. Soil/clay
 5. Bamboo
 6. Other (specify _____)
13. What is condition of the dwelling unit? ☐
1. Good
 2. Mediocre
 3. A little damaged
 4. Severely damaged
14. How many rooms do the members of your household occupy? (do not count bathrooms, kitchens, balconies, and corridors)
15. Where do members of your household bath? ☐
1. Indoor bath/shower (for exclusive use)
 2. Indoor bath/shower (shared)
 3. Outdoor bath/shower (shared)
 4. River, pond, etc.
 5. Other (specify _____)
16. What is the main type of human waste disposal used by household members? ☐
1. Pour/flush to septic tank
 2. Pour/flush to elsewhere
 3. Ventilated improved pit latrine (VIP)
 4. Pit latrine without slab
 5. Pit latrine without slab/open pit
 6. Hanging toilet/latrine
 7. Public latrine
 8. No facility or bush
 8. Other (specify _____)
17. What is the final disposal of sewage? ☐
1. Septic tank
 2. Pond/field
 3. River/lake/ocean
 4. Hole
 5. Shore/open pit
 6. Other (specify _____)
18. Does the dwelling unit has kitchen? ☐
1. Kitchen within the dwelling unit (for exclusive use)
 2. Kitchen within the dwelling unit (shared)
 3. Kitchen outside the dwelling unit (for exclusive use)
 4. Kitchen outside the dwelling unit (for shared)
 5. Dwelling unit does not have kitchen
 6. No cooking
19. What is the main source of energy for your main cooking? ☐
1. Electricity
 4. Coal

2. Cooking gas 5. Wood
3. Kerosene 6. Other (specify _____)
20. What is the main source of energy for your lighting? ☐
1. Electricity 5. Wood
2. Bio gas 6. Candlenut/candle berry tree
3. Kerosene 7. Solar panel
4. Candle/battery flashlight 8. Other (specify _____)
21. What is the main source of drinking water used by household members? ☐
1. Piped or pumped indoors 6. Bottle water
2. Pipe or pump outdoors 7. Not protected well or spring
3. Public pipe/tap 8. Water vendors/tank
4. Protected well or protected spring 9. River, lake, stream, irrigation channel
5. Rainwater collection 10. Other (specify _____)
22. Does the household owned the following items write “1” if household owned or “2” if does not owned.
1. Radio ☐
2. Television ☐
3. Telephone/mobile ☐
4. Computer/laptop (with internet) ☐
5. Computer/laptop (without internet) ☐
6. Air conditioner ☐
7. Refrigerator/freezer ☐
8. Sewing machine ☐
9. Loom for waiving tais ☐
10. Wood cutting machine ☐
11. Bicycle ☐
12. Motorcycle ☐
13. Car / Van / Angguna / Truck ☐
14. Rice husker ☐
15. Rice milling ☐
16. Boat ☐

Note: for Section B, C, D, and F researcher will select one male (aged 18+) and one female (aged 18+) to be interviewed for the individual sections. Section G, only be asked, if that person is working in the informal sector.

Section B: Individual identification of employed people

Male <input type="checkbox"/>	Female <input type="checkbox"/>
<p>23. In the last week, did you work for a wage or salary, or for other income in cash or in kind (including income obtained from your own or a family business, farm or subsistence agriculture)? <input type="checkbox"/></p> <p>1. Yes ⇨ Q25</p> <p>2. No</p> <p>24. Last week, did you do any paid or unpaid work for at least one hour (even if you are student, unemployed, housewife or elderly person and work only part-time or occasionally)? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No ⇨ Q27</p> <p>25. Has any of this work been done on your own agricultural land (or that of another household member)? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No ⇨ Q31</p> <p>26. In general, are the raw or processed products obtained from this land produced exclusively for your household's own consumption or also for sale/barter? <input type="checkbox"/></p> <p>1. Only for own consumption</p> <p>2. Mostly for own consumption and some for sale or barter ⇨ Q31</p> <p>3. Mostly for sale or barter and some for own consumption ⇨ Q31</p> <p>4. Only for sale or barter ⇨ Q31</p> <p>27. Last week, did you have work, from which you were temporarily absent because of vacation, illness, off-season, bad weather, economic reasons, etc. and to which you will definitely return? <input type="checkbox"/></p> <p>1. Yes</p>	<p>23. In the last week, did you work for a wage or salary, or for other income in cash or in kind (including income obtained from your own or a family business, farm or subsistence agriculture)? <input type="checkbox"/></p> <p>1. Yes ⇨ Q25</p> <p>2. No</p> <p>24. Last week, did you do any paid or unpaid work for at least one hour (even if you are student, unemployed, housewife or elderly person and work only part-time or occasionally)? <input type="checkbox"/></p> <p>1. Yes</p> <p>3. No ⇨ Q27</p> <p>25. Has any of this work been done on your own agricultural land (or that of another household member)? <input type="checkbox"/></p> <p>1. Yes</p> <p>3. No ⇨ Q31</p> <p>26. In general, are the raw or processed products obtained from this land produced exclusively for your household's own consumption or also for sale/barter? <input type="checkbox"/></p> <p>1. Only for own consumption</p> <p>2. Mostly for own consumption and some for sale or barter ⇨ Q31</p> <p>3. Mostly for sale or barter and some for own consumption ⇨ Q31</p> <p>4. Only for sale or barter ⇨ Q31</p> <p>27. Last week, did you have work, from which you were temporarily absent because of vacation, illness, off-season, bad weather, economic reasons, etc. and to which you will definitely return? <input type="checkbox"/></p> <p>1. Yes</p>

<p>2. No</p> <p>28. What was the main reason why you did not work last week? </p> <p>29. What is your main occupation? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Farmer 2. Share cropper 3. Farm labourer 4. Non-farm labourer 5. Fisherman 6. Trade 7. Skill worker 8. Civil servant 9. Teacher 10. Pensioner 11. Housewife 12. School student 13. University student 14. Other (specify _____) <p>30. Which of the following best describe your employment status? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Employed full time 2. Employed part time 3. Unemployed 4. Retired 5. Full time student 	<p>2. No</p> <p>28. What was the main reason why you did not work last week? </p> <p>29. What is your main occupation? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Farmer 2. Share cropper 3. Farm labourer 4. Non-farm labourer 5. Fisherman 6. Trade 7. Skill worker 8. Civil servant 9. Teacher 10. Pensioner 11. Housewife 12. School student 13. University student 14. Other (specify _____) <p>30. Which of the following best describe your employment status? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Employed full time 2. Employed part time 3. Unemployed 4. Retired 5. Full time student
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Section C: Characteristics of main job

Male <input type="checkbox"/>	Female <input type="checkbox"/>
<p>31. In the job/activity that you had during the last week, were you... <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Employee (working for someone else for pay in cash or in kind) 2. Employer (employing one or more employees) ⇨ Q41 3. Own-account worker (not employing any employees) ⇨ Q41 4. Contributing family worker (working without pay in the business or farm of another household/family member) ⇨ Q41 5. Member of producers' cooperative ⇨ Q41 6. On military service ⇨ Q47 <p>32. Were you employed on the basis of.... <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. A written contract? 2. An oral agreement? <p>33. Was your contract or agreement of..... <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. A limited time duration 2. An unlimited time duration ⇨ Q46 <p>34. Why is your contract agreement of limited duration? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. On the job training, internship, traineeship 2. Probation period 3. Seasonal work 4. Occasional work 5. Daily work 6. Work as a replacement/substitute 7. Public employment programme 8. Project work (UN, NGOs, etc.) <p>35. What is the duration of your contract? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Daily contract agreement 2. Less than 1 month 3. 1 to 2 months 	<p>31. In the job/activity that you had during the last week, were you... <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Employee (working for someone else for pay in cash or in kind) 2. Employer (employing one or more employees) ⇨ Q41 3. Own-account worker (not employing any employees) ⇨ Q41 4. Contributing family worker (working without pay in the business or farm of another household/family member) ⇨ Q41 5. Member of producers' cooperative ⇨ Q41 6. On military service ⇨ Q47 <p>32. Were you employed on the basis of..... <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. A written contract? 2. An oral agreement? <p>33. Was your contract or agreement of <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. A limited time duration 2. An unlimited time duration ⇨ Q46 <p>34. What is your contract agreement of limited duration? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. On the job training, internship, traineeship 2. Probation period 3. Seasonal work 4. Occasional work 5. Daily work 6. Work as replacement/substitute 7. Public employment programme 8. Project work (UN, NGOs, etc.) <p>35. What is the duration of your contract? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Daily contract agreement 2. Less than 1 month 3. 1 to 2 months

<p>4. 3 to 6 months</p> <p>5. 7 to 12 months</p> <p>6. Do not know</p> <p>36. How long have you been employed in this job? <input type="checkbox"/></p> <p>1. Less than 1 year</p> <p>2. 1 to 2 years</p> <p>3. 3 to 5 years</p> <p>4. 6 to 10 years</p> <p>5. 11 to 20 years</p> <p>6. 21 to 30 years</p> <p>7. 31 or more years</p> <p>37. Do you get paid annual leave or payment for leave not taken? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No</p> <p>3. Do not know</p> <p>38. Would you get paid sick leave in case of illness or injury? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No</p> <p>3. Do not know</p> <p>39. Would you get paid maternity/paternity leave? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No</p> <p>3. Do not know</p> <p>40. In which sector were employed? <input type="checkbox"/></p> <p>1. Government ⇨ Q42</p> <p>2. State-owned enterprise (e.g. TVTL, EDTL) ⇨ Q42</p> <p>3. Privately-owned business or farm</p> <p>4. Non-governmental/non-profit organization ⇨ Q42</p> <p>5. Private household ⇨ Q42</p> <p>6. Embassies and bilateral institutions (e.g. USAID, CIDA) ⇨ Q42</p> <p>7. United Nations and international organizations ⇨ Q42</p> <p>8. Other (specify _____) ⇨ Q42</p>	<p>4. 3 to 6 months</p> <p>5. 7 to 12 months</p> <p>6. Do not know</p> <p>36. How long have you been employed in this job? <input type="checkbox"/></p> <p>1. Less than 1 year</p> <p>2. 1 to 2 years</p> <p>3. 3 to 5 years</p> <p>4. 6 to 10 years</p> <p>5. 11 to 20 years</p> <p>6. 21 to 30 years</p> <p>7. 31 or more years</p> <p>37. Do you get paid annual leave or payment for leave not taken? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No</p> <p>3. Do not know</p> <p>38. Would you get paid sick leave in case of illness or injury? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No</p> <p>3. Do not know</p> <p>39. Would you get paid maternity/paternity leave? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No</p> <p>3. Do not know</p> <p>40. In which sector were employed? <input type="checkbox"/></p> <p>1. Government ⇨ Q42</p> <p>2. State-owned enterprise (e.g. TVTL, EDTL) ⇨ Q42</p> <p>3. Privately-owned business or farm</p> <p>4. Non-governmental/non-profit organization ⇨ Q42</p> <p>5. Private household ⇨ Q42</p> <p>6. Embassies and bilateral institutions (e.g. USAID, CIDA) ⇨ Q42</p> <p>7. United Nations and international organizations ⇨ Q42</p> <p>8. Other (specify _____) ⇨ Q42</p>
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<p>41. Was your business (or the business/farm where you worked) registered at the Ministry of Justice or Ministry of Commerce and Industry? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Yes 2. Is in the process of being registered 3. No 4. Do not know <p>42. Where do you usually work? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. In your home 2. Structure attached to your home 3. At the client's or employer's home 4. Enterprise, plant, factory, office, shop, workshop etc. (separate form house) 5. On a farm or agricultural plot 6. Construction site 7. Fixed stall in the market or on the street 8. Without fixed location/mobile 9. Other (specify _____) <p>43. What kind of work do you usually do in the job/activity that you had last week? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Occupational title 2. Shor description of the main task or duties <p>44. What kind of industry, business, service or activity is carried out at your place of work?</p> <p>45. What are the main goods or services produced at your place of work or its main function?</p> <p>46. How many people including yourself work at your place of work? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. 1-4 2. 5-9 3. 10-19 ⇨ Q48 4. 20-49 ⇨ Q48 	<p>41. Was your business (or the business/farm where you worked) registered at the Ministry of Justice or Ministry of Commerce and Industry? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Yes 2. Is in the process being registered 3. Do not know <p>42. Where do you usually work ? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. In your home 2. Structure attached to your home 3. At the client's or employer's home 4. Enterprise, plant, factory, office, shop, workshop etc. (separate form house) 5. On a farm or agricultural plot 6. Construction site 7. Fixed stall in the market or on the street 8. Without fixed location/mobile 9. Other (specify _____) <p>43. What kind of work do you usually do in the job/activity that you had last week? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Occupational title 2. Shor description of the main task or duties <p>44. What kind of industry, business, service or activity is carried out at your place of work?.....</p> <p>45. What are the main goods or services produced at your place of work or its main function?</p> <p>46. How many people including yourself work at your place of work? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. 1-4 2. 5-9 3. 10-19 ⇨ Q48 4. 20-49 ⇨ Q48 5. 50-99 ⇨ Q48 6. 100 or more ⇨ Q48 7. More than 9 people ⇨ Q48
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<p>5. 50-99 ☞Q48</p> <p>6. 100 or more ☞48</p> <p>7. More than 9 people ☞Q48</p> <p>8. Do not know ☞Q48</p> <p>47. Please specify the exact number of workers:</p> <p>48. In which suco (village) is your place of work located?</p>	<p>8. Do not know ☞Q48</p> <p>47. Please specify the exact number of workers:</p> <p>48. In which suco (village) is your place of work located?</p>
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Section D: Characteristics of secondary activity

Male <input type="checkbox"/>	Female <input type="checkbox"/>
<p>49. Under current conditions in Timor-Leste, with low incomes and high prices, many people have a secondary economic activity in addition to the main one. Last week, did you have any secondary job/activity from which you or your household obtained any income in cash or in kind? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No ↪ Q72</p> <p>50. Was this secondary job/activity done on your own agricultural land (or that of another household member)? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No ↪ Q52</p> <p>51. In general, are the raw or processed products obtained from this land produced exclusively for your household's own consumption or also for sale/barter? <input type="checkbox"/></p> <p>1. Only for own consumption</p> <p>2. Mostly for own consumption and some for sale or barter</p> <p>3. Mostly for sale or barter and some for own consumption</p> <p>4. Only for sale or barter</p> <p>52. In this secondary job/activity, were you..... <input type="checkbox"/></p> <p>1. Employee (working for someone else for pay in cash or in kind)</p> <p>2. Employer (employing one or more employees) ↪ Q61</p> <p>3. Own account worker (not employing any employee) ↪ Q61</p> <p>4. Contributing family worker (working without pay in the business or farm of another household/family member) ↪ Q61</p> <p>5. Member of producer's cooperative ↪ Q61</p> <p>53. Is secondary job/activity, were you employed on the basis of ..<input type="checkbox"/></p>	<p>49. Under current conditions in Timor-Leste, with low incomes and high prices, many people have a secondary economic activity in addition to the main one. Last week, did you have any secondary job/activity from which you or your household obtained any income in cash or in kind? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No ↪ Q72</p> <p>50. Was this secondary job/activity done on your own agricultural land (or that of another household member)? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No ↪ Q52</p> <p>51. In general, are the raw or processed products obtained from this land produced exclusively for your household's own consumption or also for sale/barter? <input type="checkbox"/></p> <p>1. Only for own consumption</p> <p>2. Mostly for own consumption and some for sale or barter</p> <p>3. Mostly for sale or barter and some for own consumption</p> <p>4. Only for sale or barter</p> <p>52. In this secondary job/activity, were you..... <input type="checkbox"/></p> <p>1. Employee (working for someone else for pay in cash or in kind)</p> <p>2. Employer (employing one or more employees) ↪ Q61</p> <p>3. Own account worker (not employing any employee) ↪ Q61</p> <p>4. Contributing family worker (working without pay in the business or farm of another household/family member) ↪ Q61</p> <p>5. Member of producer's cooperative ↪ Q61</p>

<p>1. A written contract?</p> <p>2. An oral agreement?</p> <p>54. In this secondary job/activity, was your contract or agreement of...<input type="checkbox"/></p> <p>1. A limited time duration?</p> <p>2. An unlimited time duration? ⇨ Q57</p> <p>55. What is your contract or agreement, in this secondary job/activity, of limited duration? <input type="checkbox"/></p> <p>1. On-the-job training, internship, traineeship</p> <p>2. Probation period</p> <p>3. Seasonal work</p> <p>4. Occasional work</p> <p>5. Daily work</p> <p>6. Work as replacement/substitute</p> <p>7. Public employment programme</p> <p>8. Project work (UN, NGOs, etc.)</p> <p>9. Specific service or task (lecturer, artist, etc.)</p> <p>10. Chain contract (succession of temporary contracts with some employer)</p> <p>11. Other (specify _____)</p> <p>56. What is the duration of your contract or agreement in this secondary job/activity? <input type="checkbox"/></p> <p>1. Daily contracts/agreements</p> <p>2. Less than 1 month</p> <p>3. 1 to 2 months</p> <p>4. 3 to 6 months</p> <p>5. 7 to 12 months</p> <p>6. More than 12 months</p> <p>7. Do not know</p> <p>57. How long have you been employed in this secondary/activity? <input type="checkbox"/></p> <p>1. Less than 1 year</p> <p>2. 1 to 2 years</p> <p>3. 3 to 5 years</p> <p>4. 6 to 10 years</p>	<p>53. Is secondary job/activity, were you employed on the basis of ...<input type="checkbox"/></p> <p>1. A written contract</p> <p>2. An oral agreement</p> <p>54. In this secondary job/activity, was your contract or agreement of... <input type="checkbox"/></p> <p>1. A limited time duration?</p> <p>2. An unlimited time duration? ⇨ Q57</p> <p>55. What is your contract or agreement, in this secondary job/activity, of limited duration? <input type="checkbox"/></p> <p>1. On-the-job training, internship, traineeship</p> <p>2. Probation period</p> <p>3. Seasonal work</p> <p>4. Occasional work</p> <p>5. Daily work</p> <p>6. Work as replacement/substitute</p> <p>7. Public employment programme</p> <p>8. Project work (UN, NGOs, etc.)</p> <p>9. Specific service or task (lecturer, artist, etc.)</p> <p>10. Chain contract (succession of temporary contracts with some employer)</p> <p>11. Other (specify _____)</p> <p>56. What is the duration of your contract or agreement in this secondary job/activity? <input type="checkbox"/></p> <p>1. Daily contracts/agreements</p> <p>2. Less than 1 month</p> <p>3. 1 to 2 months</p> <p>4. 3 to 6 months</p> <p>5. 7 to 12 months</p> <p>6. More than 12 months</p> <p>7. Do not know</p> <p>57. How long have you been employed in this secondary/activity? <input type="checkbox"/></p> <p>1. Less than 1 year</p>
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<p>5. 11 to 20 years</p> <p>6. 21 to 30 years</p> <p>7. 31 or more years</p> <p>58. In this secondary job/activity, do you get paid annual leave or payment for leave not taken? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No</p> <p>3. Do not know</p> <p>59. In this secondary job/activity, would you get paid sick leave in the case of illness or injury? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No</p> <p>3. Do not know</p> <p>60. In which sector were you employed in your secondary job/activity? <input type="checkbox"/></p> <p>1. Government ⇨ Q62</p> <p>2. State-owned enterprise (e.g. TVTL, EDTL) ⇨ Q62</p> <p>3. Private-owned business or farm</p> <p>4. Non-governmental/Non-profit organization ⇨ Q62</p> <p>5. Private household ⇨ Q62</p> <p>6. Embassies and bilateral institutions (e.g. USAID, CIDA) ⇨ Q62</p> <p>7. United Nations or other international organizations ⇨ Q62</p> <p>8. Other (specify _____) ⇨ Q62</p> <p>61. Was your business/farm (or the business/farm were you worked) registered at the Ministry of Justice or Ministry of Commerce and Industry? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. Is in the process of being registered</p> <p>3. No</p> <p>4. Do not know</p> <p>62. Where you usually work? <input type="checkbox"/></p> <p>1. In your home</p> <p>2. Structure attached to your home</p>	<p>2. 1 to 2 years</p> <p>3. 3 to 5 years</p> <p>4. 6 to 10 years</p> <p>5. 11 to 20 years</p> <p>6. 21 to 30 years</p> <p>7. 31 or more years</p> <p>58. In this secondary job/activity, do you get paid annual leave or payment for leave not taken? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No</p> <p>3. Do not know</p> <p>59. In this secondary job/activity, would you get paid sick leave in the case of illness or injury? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. No</p> <p>3. Do not know</p> <p>60. In which sector were you employed in your secondary job/activity? <input type="checkbox"/></p> <p>1. Government ⇨ Q62</p> <p>2. State-owned enterprise (e.g. TVTL, EDTL) ⇨ Q62</p> <p>3. Private-owned business or farm</p> <p>4. Non-governmental/Non-profit organization ⇨ Q62</p> <p>5. Private household ⇨ Q62</p> <p>6. Embassies and bilateral institutions (e.g. USAID, CIDA) ⇨ Q62</p> <p>7. United Nations or other international organizations ⇨ Q62</p> <p>8. Other (specify _____) ⇨ Q62</p> <p>61. Was your business/farm (or the business/farm were you worked) registered at the Ministry of Justice or Ministry of Commerce and Industry? <input type="checkbox"/></p> <p>1. Yes</p> <p>2. Is in the process of being registered</p> <p>3. No</p> <p>4. Do not know</p>
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<p>3. At the client's or employer's home</p> <p>4. Enterprise, plant, factory, office, shop, workshop etc. (separate from the house)</p> <p>5. On a farm or agricultural plot</p> <p>6. Construction site</p> <p>7. Fixed stall in the market or on the street</p> <p>8. Without fixed location/mobile</p> <p>9. Other (specify _____)</p> <p>63. What kind of work do you usually do in this secondary job/activity?</p> <p>1. Occupation title:</p> <p>2. Short description of the main task or duties:</p> <p>64. What kind of industry, business, service or activity is carried out at the place of work where you had your secondary job/activity?</p> <p>65. What are the main functions, or goods or services produced, at the place of work where you had your secondary job/activity?</p> <p>66. How many people including yourself work at the place of work where you had your secondary job/activity? <input type="checkbox"/></p> <p>1. 1-4</p> <p>2. 5-9</p> <p>3. 10-19 ⇨ Q68</p> <p>4. 20-49 ⇨ Q68</p> <p>5. 50-99 ⇨ Q68</p> <p>6. 100 or more ⇨ Q68</p> <p>7. More than 9 people ⇨ Q68</p> <p>8. Do not know ⇨ Q68</p> <p>67. Please specify the number of workers</p> <p>68. In which suco (village) is your secondary job/activity located?</p> <p>69. Beside your main and secondary job/activity, last week, did you also work on your own agricultural land (or that of another household member)?</p>	<p>62. Where you usually work? <input type="checkbox"/></p> <p>1. In your home</p> <p>2. Structure attached to your home</p> <p>3. At the client's or employer's home</p> <p>4. Enterprise, plant, factory, office, shop, workshop etc. (separate from the house)</p> <p>5. On a farm or agricultural plot</p> <p>6. Construction site</p> <p>7. Fixed stall in the market or on the street</p> <p>8. Without fixed location/mobile</p> <p>9. Other (specify _____)</p> <p>63. What kind of work do you usually do in this secondary job/activity?</p> <p>1. Occupation title:</p> <p>2. Short description of the main task or duties:</p> <p>64. What kind of industry, business, service or activity is carried out at the place of work where you had your secondary job/activity?</p> <p>65. What are the main functions, or goods or services produced, at the place of work where you had your secondary job/activity?</p> <p>66. How many people including yourself work at the place of work where you had your secondary job/activity? <input type="checkbox"/></p> <p>1. 1-4</p> <p>2. 5-9</p> <p>3. 10-19 ⇨ Q68</p> <p>4. 20-49 ⇨ Q68</p> <p>5. 50-99 ⇨ Q68</p> <p>6. 100 or more ⇨ Q68</p> <p>7. More than 9 people ⇨ Q68</p> <p>8. Do not know ⇨ Q68</p> <p>67. Please specify the number of workers?</p>
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<p>1. Yes 2. No ⇨ Q72</p> <p>70. In general, are the raw or processed products obtained from this land produced exclusively for your household's own consumption or also for sale/barter? <input type="checkbox"/></p> <p>1. Only for own consumption 2. Mostly for own consumption and some for sale or barter 3. Mostly for sale or barter and some for own consumption 4. Only for sale or barter</p> <p>71. Are there any other works you performed other than your main economic activity and or your secondary economic activity? If yes specify: <input type="checkbox"/></p> <p>1. Yes 2. No</p> <p>72. How many hours do you usually work per week?</p> <p>1. Main job/activity..... <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/> 2. Other job(s)/activity(ies)<input type="checkbox"/><input type="checkbox"/><input type="checkbox"/> 3. Total for all jobs/activities.... <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>73. How would you have liked to increase your working hours? <input type="checkbox"/></p> <p>1. Increase number of hours in current job(s)/activity(ies)... 2. Take an additional job/activity .. 3. Replace current job(s)/activity(ies) with more hours by one(s)....</p>	<p>68. In which suco (village) is your secondary job/activity located?</p> <p>69. Besides your main and secondary job/activity, last week, did you also work on your own agricultural land (or that of another household member)? <input type="checkbox"/></p> <p>1. Yes 2. No ⇨ Q72</p> <p>70. In general, are the raw or processed products obtained from this land produced exclusively for your household's own consumption or also for sale/barter? <input type="checkbox"/></p> <p>1. Only for own consumption 2. Mostly for own consumption and some for sale or barter 3. Mostly for sale or barter and some for own consumption 4. Only for sale or barter</p> <p>71. Are there any other works you performed other than your main economic activity and or your secondary economic activity? If yes specify: <input type="checkbox"/></p> <p>1. Yes 2. No</p> <p>72. How many hours do you usually work per week?</p> <p>1. Main job/activity..... <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/> 2. Other job(s)/activity(ies) <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/> 3. Total for all jobs/activities <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>73. How would you have liked to increase your working hours? <input type="checkbox"/></p> <p>1. Increase number of hours in current job(s)/activity(ies)... 2. Take an additional job/activity .. 3. Replace current job(s)/activity(ies) with more hours by one(s)....</p>
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Section E: Food security (Individual level)

Male <input type="checkbox"/>	Female <input type="checkbox"/>
The question listed below are about food consumption in the last 12 months, during the last 12 months was there any time where:	The question listed below are about food consumption in the last 12 months, during the last 12 months was there any time where:
<p>74. You were worried you would run out of food because of lack of money or other resources? <input type="checkbox"/></p> <p>1. No</p> <p>2. Yes</p> <p>3. Don't know</p> <p>4. Refused</p> <p>5. If yes, for how many months in the last year?</p> <p>75. You were unable to eat healthy and nutritious food because of a lack of money or other resources? <input type="checkbox"/></p> <p>1. No</p> <p>2. Yes</p> <p>3. Don't know</p> <p>4. Refused</p> <p>5. If yes, for how many months in the last year?</p> <p>76. You ate only a few kinds of foods because of a lack of money or other resources? <input type="checkbox"/></p> <p>1. No</p> <p>2. Yes</p> <p>3. Don't know</p> <p>4. Refused</p> <p>5. If yes, for how many months in the last year?</p> <p>77. You had to skip a meal because there was not enough money or other resources to get food? <input type="checkbox"/></p> <p>1. No</p> <p>2. Yes</p> <p>3. Don't know</p> <p>4. Refused</p> <p>5. If yes, for how many months in the last year?</p> <p>78. You ate less than you thought you should because of a lack of money or other resources? <input type="checkbox"/></p>	<p>74. You were worried you would run out of food because of lack of money or other resources? <input type="checkbox"/></p> <p>1. No</p> <p>2. Yes</p> <p>3. Don't know</p> <p>4. Refused</p> <p>5. If yes, for how many months in the last year?</p> <p>75. You were unable to eat healthy and nutritious food because of a lack of money or other resources? <input type="checkbox"/></p> <p>1. No</p> <p>2. Yes</p> <p>3. Don't know</p> <p>4. Refused</p> <p>5. If yes, for how many months in the last year?</p> <p>76. You ate only a few kinds of foods because of a lack of money or other resources? <input type="checkbox"/></p> <p>1. No</p> <p>2. Yes</p> <p>3. Don't know</p> <p>4. Refused</p> <p>5. If yes, for how many months in the last year?</p> <p>77. You had to skip a meal because there was not enough money or other resources to get food? <input type="checkbox"/></p> <p>1. No</p> <p>2. Yes</p> <p>3. Don't know</p> <p>4. Refused</p> <p>5. If yes, for how many months in the last year?</p> <p>78. You ate less than you thought you should because of a lack of money or other resources? <input type="checkbox"/></p>

1. No 2. Yes 3. Don't know 4. Refused 5. If yes, for how many months in the last year? 79. Your household ran out of food because of a lack of money or other resources? <input type="checkbox"/> 1. No 2. Yes 3. Don't know 4. Refused 5. If yes, for how many months in the last year? 80. You were hungry but did not eat because there was not enough money or other resources for food? <input type="checkbox"/> 1. No 2. Yes 3. Don't know 4. Refused 5. If yes, for how many months in the last year? 81. You went without eating for a whole day because of a lack of money or other resources? <input type="checkbox"/> 1. No 2. Yes 3. Don't know 4. Refused 5. If yes, for how many months in the last year?	1. No 2. Yes 3. Don't know 4. Refused 5. If yes, for how many months in the last year? 79. Your household ran out of food because of a lack of money or other resources? <input type="checkbox"/> 1. No 2. Yes 3. Don't know 4. Refused 5. If yes, for how many months in the last year? 80. You were hungry but did not eat because there was not enough money or other resources for food? <input type="checkbox"/> 1. No 2. Yes 3. Don't know 4. Refused 5. If yes, for how many months in the last year? 81. You went without eating for a whole day because of a lack of money or other resources? <input type="checkbox"/> 1. No 2. Yes 3. Don't know 4. Refused 5. If yes, for how many months in the last year?
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Section F: Self-reported health (Individual level)

Male <input type="checkbox"/>	Female <input type="checkbox"/>												
<p>82. Would you say your health is..... <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Excellent 2. Very good 3. Good 4. Fair 5. Poor 	<p>82. Would you say your health is..... <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Excellent 2. Very good 3. Good 4. Fair 5. Poor 												
<p>83. Health now compare to 1 year ago..... <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Much better now than 1 year ago 2. Somewhat better now than 1 year ago 3. About the same 4. Somewhat worse now than 1 year ago 5. Much worse now than 1 year ago 	<p>83. Health now compare to 1 year ago.....<input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Much better now than 1 year ago 2. Somewhat better now than 1 year ago 3. About the same 4. Somewhat worse now than 1 year ago 5. Much worse now than 1 year ago 												
<p>84. How much bodily pain have you had..... <input type="checkbox"/></p> <table border="0"> <tr> <td>1. None</td> <td>4. Moderate</td> </tr> <tr> <td>2. Very mild</td> <td>5. Severe</td> </tr> <tr> <td>3. Mild</td> <td>6. Very severe</td> </tr> </table>	1. None	4. Moderate	2. Very mild	5. Severe	3. Mild	6. Very severe	<p>84. How much bodily pain have you had..... <input type="checkbox"/></p> <table border="0"> <tr> <td>1. None</td> <td>4. Moderate</td> </tr> <tr> <td>2. Very mild</td> <td>5. Severe</td> </tr> <tr> <td>3. Mild</td> <td>6. Very severe</td> </tr> </table>	1. None	4. Moderate	2. Very mild	5. Severe	3. Mild	6. Very severe
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1. None	4. Moderate												
2. Very mild	5. Severe												
3. Mild	6. Very severe												
<p>85. Life satisfaction: All things considered, how satisfied are you with your life as a whole these days? <input type="checkbox"/></p> <p>1 'Dissatisfied' 2 3 4 5 6 7 8 9 10 'Satisfied'</p>	<p>85. Life satisfaction: All things considered, how satisfied are you with your life as a whole these days?..... <input type="checkbox"/></p> <p>1 'Dissatisfied' 2 3 4 5 6 7 8 9 10 'Satisfied'</p>												
<p>86. Describe how feel about your life<input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Terrible 2. Unhappy 3. Mostly dissatisfied 4. Mixed-about equally satisfied and dissatisfied 5. Mostly satisfied 6. Pleased 7. Delighted 	<p>86. Describe how feel about your life<input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Terrible 2. Unhappy 3. Mostly dissatisfied 4. Mixed-about equally satisfied and dissatisfied 5. Mostly satisfied 6. Pleased 7. Delighted 												
<p>87. Do you think that the income you earn from your jobs as? <input type="checkbox"/></p>	<p>87. Do you think that the income you earn from your jobs as? <input type="checkbox"/></p> <ol style="list-style-type: none"> 1. Less than adequate 2. Just adequate 												

<p>1. Less than adequate 2. Just adequate 3. More than adequate</p> <p>88. Financial satisfaction: How satisfied are you with the financial situation of your household? If '1' means you are completely dissatisfied on this scale and '10' means you are completely satisfied, where would you put your satisfaction with your household's financial situation? <input type="checkbox"/></p> <p>1 'Dissatisfied' 2 3 4 5 6 7 8 9 10 'Satisfied'</p>	<p>3. More than adequate</p> <p>88. Financial satisfaction: How satisfied are you with the financial situation of your household? If '1' means you are completely dissatisfied on this scale and '10' means you are completely satisfied, where would you put your satisfaction with your household's financial situation? <input type="checkbox"/></p> <p>1 'Dissatisfied' 2 3 4 5 6 7 8 9 10 'Satisfied'</p>
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Section G: Problems and constraints affecting informal business (individual level) *Note: This section only be asked, if that person is working in the informal sector.*

Male <input type="checkbox"/>	Female <input type="checkbox"/>
<p>89. What problems did you face when you started the informal sector business?</p>	<p>89. What problems did you face when you started the informal sector business?</p>
<p>90. If you have more than one issue, please list them in order based on the priority?</p>	<p>90. If you have more than one issue, please list them in order based on the priority?</p>
<p>91. Is there any issue limits your income? In what way does it limit your income?</p>	<p>91. Is there any issue limits your income? In what way does it limit your income?</p>
<p>92. What do you think the main issue for other informal sector?</p>	<p>92. What do you think the main issue for other informal sector?</p>

93. How do you think this issue should solve?	93. How do you think this issue should solve?
------------------------------------------------------	------------------------------------------------------

End of Questionnaire