THE DETERMINANTS OF TRADE CREDIT EXTENSION AND THE PROBLEM OF LATE PAYMENT IN THE MALAYSIAN MANUFACTURING SECTOR

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ABSTRACT

This study investigates the determinants of trade credit extension and the association between late payment from trade debtors and profitability in the Malaysian manufacturing sector. It is based on exploratory data analysis and ordinary least squares (OLS) regressions on a cross-sectional sample of 383 and 287 public-listed manufacturing companies, respectively, using audited financial statements for the financial year ending 2007/2008.

Investment in accounts receivables is even higher than in inventories in the Malaysian manufacturing sector. Contrary to previous studies, this study finds that large companies, manufacturers with higher liquidity and with higher collateral assets extend less trade credit, indicating that the listed manufacturing sector has the market power in trade credit extension and uses trade credit as a price discrimination tool. However, when experiencing from late collection of payment, these listed manufacturers seek more liquidity security coverage by tightening their credit extension irrespective of how lucrative trade credit is as a price discrimination tool in business.

This study finds based on average days sales outstanding, 60% of the companies in the manufacturing sector experienced late payment from customers and such a delay in payment has a significant inverse effect on profitability. An alternate measurement of late payment and credit management performance using days overdue based on the Pareto principle is introduced and tested along with the existing common measurements – average days overdue and days sales outstanding. By shortening the cash conversion cycle via a reduction in the number of days sales outstanding and/or days overdue, companies can improve their profitability. Owing to the tendency of customers to delay payment to suppliers, the results also show that Pareto days overdue is a better measure of late payment in Malaysia, an emerging market in the Asian region.

This study contributes to the limited empirical literature on late payment. It focuses on the manufacturing sector and is also one of the early studies in trade credit management using the Pareto 80:20 rules to derive the days overdue from secondary data, which provides openings for further comparative studies across sectors or countries using empirical data.

ABSTRAK

Kajian ini meneliti faktor-faktor penentu penawaran/perpanjangan kredit dagangan dan perkaitan di antara kelewatan bayaran oleh penghutang dagangan dan keberuntungan dalam sektor perkilangan di Malaysia. Ini berdasarkan pada analisis data eksplorasi dan regresi kuadrat terkecil biasa (OLS) pada sampel 'cross-sectional' 383 dan 287 syarikat perkilangan awam yang tersenarai, masing-masing dengan menggunakan penyata kewangan yang telah diaudit untuk tahun kewangan yang berakhir 2007/2008.

Pelaburan dalam akaun belumterima adalah lebih tinggi daripada pelaburan dalam inventori dalam sektor perkilangan di Malaysia. Bertentangan dengan kajian-kajian sebelum ini, kajian ini mendapati bahawa syarikat-syarikat perkilangan yang besar dengan kecairan tunai dan aset boleh cagar yang lebih tinggi kurang memperpanjangkan kredit perdagangan; ini menunjukkan bahawa sektor perkilangan tersenarai mempunyai kekuasaan pasaran dalam penawaran perdagangan kredit dan menggunakan kredit perdagangan sebagai satu kaedah diskriminasi harga. Namun, ketika mengalami kelewatan pungutan bayaran, pengilang-pengilang yang dinyatakan mencari lebih liputan keselamatan kecairan tunai dengan mengetatkan pemberian kredit, tidak kira seberapa lumayan kredit dagangan boleh menguntungkan pengilang sebagai alat diskriminasi harga dalam perniagaan.

Kajian ini mendapati bahawa berdasarkan purata hari terlewat waktu, 60% daripada syarikat dalam sektor perkilangan mengalami kelewatan bayaran dari pelanggan dan kelewatan sedemikian mempunyai kesan negatif yang nyata terhadap keberuntungan pengilang. Satu ukuran alternatif dengan menggunakan bilangan hari lewat waktu berdasarkan prinsip Pareto diperkenalkan dan diuji bersama-sama dengan ukuran-ukuran umum yang lazim untuk masalah kelewatan bayaran dan prestasi pengurusan kredit – purata hari terlewat waktu dan purata hari jualan belumjelas.

Dengan memendekkan kitaran penukaran tunai melalui pengurangan jumlah hari jualan belum jelas dan/atau hari terlewat waktu, firma dapat meningkatkan keuntungan mereka. Disebabkan oleh kecenderungan pelanggan-pelanggan untuk menunda pembayaran kepada syarikat pembekal, keputusan kajian ini juga menunjukkan bahawa bilangan hari terlewat waktu Pareto merupakan ukuran yang lebih baik bagi bayaran lewat di Malaysia, sebuah pasaran yang berkembang di rantau Asia.

Kajian ini menyumbang kepada kesusasteraan empirik yang terbatas dalam kelewatan bayaran oleh penghutang dagangan. Ia bertumpukan kepada sektor perkilangan dan juga merupakan salah satu kajian terawal dalam pengurusan perdagangan kredit yang menggunakan peraturan Pareto 80:20 untuk memperolehi bilangan hari terlewat waktu dari data sekunder; ini membuka peluang baru untuk kajian bandingan antara sektor atau antarabangsa dengan menggunakan data empirik.

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LIST OF ABBREVIATIONS

ACE	Taking over from the MESDAQ Market, ACE Market – ACE stands for access, certainty and efficiency.
ACP	Average Collection Period, popularly known DSO
ACT	Average Credit Term, the average credit terms granted as disclosed in the notes to the audited financial statements
ACMM	Association of Credit Management Malaysia
AP	Accounts payable
AR	Accounts receivable
ARTA	Accounts receivable to total assets
ARTO	Accounts receivable to turnover
B2B	Business-to-Business
Big4	Big four auditing firms/accounting comprising of PricewaterhouseCoopers, Ernst & Young, KPMG and Deloitte Touche Tohmatsu
BACS	Bacs Payment Schemes Limited, UK
BNM	Bank Negara Malaysia, the Central Bank of Malaysia
BoP	Balance of Payments
Bursa	Bursa Malaysia Securities Berhad, the Malaysian's bourse for equity market, formerly known as KLSE
CCC	Cash Conversion Cycle
CCM	Companies Commission of Malaysia
CMRC	Credit Management Research Centre
CT	Credit term
DOD	Days overdue
DODA	Average days overdue
DODP	Pareto days overdue
DSO	Days sales outstanding, also known as average collection period
DV	Dependent variable
EDA	Exploratory data analysis (commonly known as descriptive statistics)

LIST OF ABBREVIATIONS (continued…)

EPI	European Payment Index
EU	European Union
FRS	Financial Reporting Standards, the Malaysian equivalent of IFRS
FYE	Financial year end
IASB	International Accounting Standards Board
IFRS	International Financial Reporting Standards, as issued by IASB
IPO	Initial pubic offering
IV	Independent variable
KLSE	The Kuala Lumpur Stock Exchange (since 2004, it is known as Bursa Malaysia)
LC	Letter of Credit
LP	Late payment
MASB	Malaysian Accounting Standards Board
MESDAQ	Malaysian Exchange of Securities Dealing & Automated Quotation, now known as ACE Market
MIA	Malaysian Institute of Accountants
MICPA	Institute of Certified Public Accountants
Non-Big4	Auditing/accounting firms other than those under Big4
OECD	Organisation for Economic Co-operation and Development
OIROI	Operating Income Return on Investment, also known as operating income over total assets
OLS	Ordinary least squares
OPTA	Operating Profit over Total Assets
PP	Prompt payment
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment
SC	Securities Commission of Malaysia
SME	Small and Medium-sized Enterprises

LIST OF ABBREVIATIONS (continued…)

UK	United Kingdom
USA	United States

CHAPTER 1

OVERVIEW OF RESEARCH

1.1 INTRODUCTION

Trade credit is the ability of a business to obtain and consume goods and services on faith, in return for an expected future payment within the agreed credit period. Payment beyond the credit period granted is considered as late payment. Trade credit, to the trade credit provider or grantor, is recorded as accounts receivable (trade debtors); conversely, to the recipient, it is recorded as accounts payable (trade creditors).

Lack of information and control have been identified as the major causes of corporate collapse, particularly in the aspects of debtor's management and credit control (Argenti, 1976). Credit squeezes during periods of tight money (e.g. Asian financial crisis in 1997) in which Malaysian corporations suffered deteriorated debts level, slow debts piling up and bad debts lead to cash flow crisis and corporate restructuring (Thomas, 2002).

In the past five years, financial reporting scandals of large corporations in Malaysia have involved the manipulation of accounts receivable (Kenmark Industrial Co. Berhad, Transmile Group Berhad, Megan Media Holdings Berhad, Wimems Corporation Berhad, etc.). These debacles hover around the ballooning accounts receivable with slow recovery of debts or no recovery of questionable debts which lead to the fall of these listed companies in Malaysia.

Introduction of the *International Financial Reporting Standard (IFRS) 7 - Financial Instruments: Disclosures* into Malaysia with effect from 2010 may force companies to recognize the importance of trade credit management and to focus on core business processes in managing their credit. The lack of comprehensive research in the area of trade credit management in Malaysia is the main motivating factor that drives me to research this area. From my review of literature, notable local publications and literature on commercial credit management in Malaysia, as well as emerging economies, is limited despite its importance to all businesses.

The Malaysian commercial environment still relies heavily on credit in business, as not all companies can afford to buy strictly on cash or on a fully secured basis, no matter how good the cash discounts offered are. The Malaysian commercial trading environment relies heavily on business-to-business (B2B) credit, enjoying between 30 to 90 days credit, which has always been the case. Accordingly, an examination of the determinants of the trade credit supply in Malaysia is long overdue. Whilst studies in developed countries have examined these determinants, the implications for Malaysia have been largely ignored.

As such the exposure to slow or bad debts is a significant risk in every commercial organisation and needs to be addressed as evidenced by the 1997 financial crisis where credit squeeze was one of the main causes of collapse for most of the failed corporations (Thomas, 2002). Given the limited local published literature on this subject matter, it is important to explore the credit management issues in the Malaysian commercial environment. This study is the first to explore the determinants of trade credit extension

and late payment in Malaysia. The findings are then compared against other selected countries to identify similarities and differences between Malaysia and other countries.

Thus, this study identifies the knowledge gap that exists and explores the differences between the *actual* credit period (DSO) and that disclosed by the public-listed manufacturing companies in Malaysia. It also introduces a new measure of late payment and explains the reasoning behind this method. Some studies cover the impact of credit strategy, credit management and corporate performance (Wilson, 2000), while others examine the relationship between late payment and cash flow problems (Howorth, 1999), and others investigate the use of trade credit under financial distressed conditions (Preve, 2003). However, in Malaysia, no research has been noted in any of the areas above nor has there been any study on late payment by customers and its association with profitability. The only recent study in Malaysia linking trade credit management and profitability is on the correlation between collection period and corporate performance (Nasruddin, 2008).

This is one of the early attempts to gain insights into credit management of Malaysian non-financial companies, as there is no noted prior study in the area of determinants of trade credit. In this study, a sample of cross-sectional data for the financial year ending 2007/2008 of manufacturing companies (listed on Bursa Malaysia, the Malaysian bourse) is used to identify the determinants of trade credit extension and the association between collection period and profitability using ordinary least squares regression analysis. Despite representing a major proportion of corporate assets in Malaysia, little attention has been paid by researchers to accounts receivable. In Malaysia, especially, many

aspects of trade credit are unexplored. Further studies could investigate other aspects of trade credit management rather than DSO, e.g. credit terms and collection delay (Angappan and Nasruddin, 2003). This study attempts to fill this knowledge gap.

In the US, for instance, it is the single largest category of short-term credit, representing about one-third of the current liabilities of non-financial corporations (Weston and Copeland, 1986). Two decades later, in US and UK medium sized firms, the importance of trade credit had risen to approximately half of the short term debt, representing about 35 percent and 41 per cent of the total debt of medium sized firms in the UK and US, respectively (Cunat, 2007). Consequently, extended trade credit constitutes a substantial form of current assets in the balance sheets of these companies.

The late payment problem costs the UK economy billions of pounds each year and based on the latest June 2009 survey by Bacs Payment Schemes Limited (BACS)[1] UK, late payment had worsen in the past two years as it costs the UK economy £30 billion a year, a 50% increase from £20 billion a year reported in 2007. Despite measures such as the late payment legislation (The Late Payment of Commercial Debts (Interest) Act 1998, amended in 2000 and 2002) and a British Standard (Payment Voluntary Code of Practice), late payment is still a major problem for many firms in UK (Wilson, 2008). The intention of the legislation is to encourage companies to pay within the agreed terms and possibly change payment behaviour by creating a level 'paying' field [*sic*] (Paul and Boden, 2008, p. 274).

[1] BACS, the organisation behind Direct Debit and BACS Direct Credit, issued the press statement entitled "British businesses bear late payment burden of £30 billion" on 25-09-09. Accessed on 21 November 2009 at: http://www.bacs.co.uk/Bacs/Press/PressReleases/ 2009/Pages/ Britishbusinessesbearlatepayment burdenof£30billion.aspx

In Malaysia, the Dun & Bradstreet survey, which examined the credit management situation for Malaysian businesses, in Quarter 3, 2005, revealed that the payment pattern remained slow with the average days sales outstanding (DSO) of 86 days against an average credit term of 60 days across all industries (Infocredit D&B, 2005).

The rest of this chapter is organised as follows: Section 1.2 discusses the background of credit management, followed by the introduction of the main research questions in Section 1.3. Section 1.4 explains the methodology adopted in this study and Section 1.5 discusses the importance and contributions of this study. Section 1.6 provides an overview of the rest of the chapters in this thesis and Section 1.7 concludes.

1.2 BACKGROUND OF CREDIT MANAGEMENT

Commercial credit encompasses "trade credit" or "business credit", which is of a business-to-business (B2B) nature and excludes the credit given by financial institutions. Credit is the ability of a business or individual to obtain economic value on faith, in return for an expected future payment (Christie and Bachuti, 1981).

Credit Management is a broad subject of accountancy and financial management, which deals with accounts receivable management and control. A review of the credit management practices throughout the world indicates that whilst different countries have different practices, fundamentally, the principles of trade credit remain the same. However, it is expected that the business practices are largely influenced by the culture

and idiosyncrasies of the business environment and its people (Bell *et al.,* 1997; Wilkie and Moore, 2003).

Furthermore, whilst trade credit is common globally, the credit terms differ from one country to another and between industries. For comparative purposes, many countries have been selected. First of all the US, UK, and Germany are selected because they are among the largest trade economies in the world and have well-developed credit and business practices; Italy and Turkey are chosen as their common credit terms (60 to 90 days) are quite similar to Malaysia and some other Asian countries while Turkey is selected as a proxy for the Mediterranean countries. Singapore and Hong Kong, on the other hand, are more developed economies in the Asia-Pacific and finally India, as a highly populated economy, is included, rather than China, as data on trade credit is available, whilst Australia is chosen as a model role in Asia-Pacific for good practices in credit management, enjoying the shortest overdue record as compared to US and UK (Pike and Cheng, 2002).

As shown in Table 1.1 below, the less developed Asian countries are more reliant on trade credit than the more developed countries as demonstrated by the longer credit terms granted in practice. Even in Europe, countries in the Southern part of Europe tend to have longer common credit terms compared to EU countries in the Northern part.[2] In Asia, India has one of the longest common credit terms of 90 days, followed by Malaysia with common credit terms of 30 to 90 days while more developed Asian countries tend to have shorter credit terms of 30 days, as in the case of Hong Kong and Singapore.

[2] Source: European Payment Index

Based on global credit practices as reported in Table 1.1, the common global standard of trade credit terms is 30 days (one month) in most developed countries. Being a developing country, in Malaysia, the most common credit terms are between 30 and 90 days or simply an average of 60 days. The Survey for Quarter 3, 2005, by Dun and Bradstreet's Malaysia Credit Management reveals that the average days sales outstanding (DSO) is 86 days against the average credit terms of 60 days across all industries. In the manufacturing sector, which accounts for approximately 30% of the Malaysian national GDP, the DSO is reported to be 78 days, slightly better than the average DSO across industries.[3]

According to the survey result, the Construction and Transportation, Communication and Utilities sectors in Malaysia recorded slow payment trend with DSO at 160 days and 124 days respectively. Based on average credit term of 60 days, this had resulted in high divergence between the DSO and credit term of 144% and 183% respectively. Services sector also encounter slow collection cycle with its DSO at 106 days (Infocredit D&B, 2005).

In comparison, Wells (2004) finds that, on average, 28% of UK businesses' assets are tied up in outstanding debts. Paul (2007, p. 40) reports that 'the late payment problem has attracted more attention than any other issue regarding credit control' and firms that suffer the most from late payment are those with poor credit management practices. Moreover, it

[3] As reported in the Credence by Infocredit, Issue 2, July to Sept 2005. This survey was conducted using official sources complemented with 300 companies in Malaysia randomly selected using the ICD&B database with emphasis on payment terms and pattern experienced by respondents. Among the respondents, 2% were from the construction sector, 58% were from manufacturing sector, 7% from the services sector, 5% were from transportation sector and 28% were from communication and utilities wholesale and retail trade sector. No latest update report available after the 2005 survey at the time of completion of this thesis.

is often argued that profitable businesses can fail through a lack of cash flow caused by being paid late, especially those whose main priority is to preserve customer relationships rather than collect cash (CIMA, 1996).

Several implications can be deduced from the Malaysian Dun and Bradstreet Review. First, it appears that Malaysia's common credit terms is, on average, twice that of developed countries across the globe. This implies that there is a higher cost of doing business in Malaysia, in particular, trade financing costs. Second, the survey implies that the average collection period (ACP) or DSO is much higher than the simple average of 60 days credit terms (median between 30 days and 90 days). It appears that the DSO is skewed to 90 days credit terms, indicating that late collection of debtor payment is an issue in Malaysia. Finally, will the preparers of financial statements (in emerging countries such as Malaysia) be willing to disclose this credit information in line with IFRS 7 where such information is considered as a 'trade secret' (KPMG, 2008)?

In order to gain insight into the determinants of trade credit supply/extension and late payment by Malaysian customers, an understanding of the local credit management practices would be most appropriate before focusing on the detailed study and analysis. A local understanding of this subject matter is desirable, as the incorporation of local nuances of a developing country like Malaysia into the research framework will extend the body of knowledge of this under-researched area of trade credit and late payment in this part of the globe. Unlike the UK where the Companies Act requires the disclosure of credit policy and practice on payment to suppliers, there is no legislation addressing the problem of late payment of commercial debts in Malaysia. That requirement is intended to be effective by

exposing late payers and, as such, would help to transform the culture of payment among large businesses (Wilson, 2008).

The problem is similar to those highlighted in the Malaysian public-listed companies in that although many large companies do comply, others only comply with the requirement to state their policy and do not state their actual performance (Wilson, 2008). This leads to a disparity between the disclosure of the normal credit period granted to customers (if these are disclosed based on their credit policy) and the DSO, which is a ratio computed from the financial statements. This gap motivates a detailed study to be undertaken to pinpoint the importance of the combating late payment issue and this shall be the thrust in the final part of this thesis.

1. 3 RESEARCH OBJECTIVES

The purpose of this study is to identify the determinants of trade credit in Malaysia and examine whether late payment impacts profitability. In Malaysia, no noted literature has been published on the determinants of trade credit and late payment despite its importance; and 'a new indicator was born in the wake of the Transmile and Megan Media scandals – receivables and companies are coming under increasing scrutiny for high receivables' (The Edge Malaysia, 2007).

Using the 2007 financial year accounts, a compilation by The Edge Malaysia (2007) found that some 25% of companies (excluding the banking sector), listed on the Main Board of

Table 1.1: Credit Management Practices in Selected Countries

	Credit Management Practices	USA	UK (England)	Germany	Italy	Turkey	**Malaysia**	Singapore	Hong Kong	Australia	India
1	Common credit terms	30 days	30 days	30 days	60 - 90 days	30 - 90 days	**30 - 90 days**	30 days	30 days	30 days	90 days
2	No. of reminders before legal actions	6 or more	3	3	4 or more	1	**2**	1	3	5	4
3	Charging of late payment interest?	Some-times	Mostly	Mostly	Some-times	Some-times	**Some-times**	Hardly ever	Mostly	Seldom	Hardly ever
4	Interest on late payment	No limitation	BLR+8% p.a.	BLR+8% p.a.	BLR+7% p.a.	4% p.a.	**8% p.a. (judgement)**	6% p.a.	60%	0% (10%-judgement)	24% p.a.
5	Legal enforcement	Sometimes	Some-times	Seldom	Some-times	Always	**Seldom**	Some-times	Some-times	Mostly	Some-Times
6	Governing Collection Laws	Yes	Yes	Nil	Yes	Yes	**Nil**	Yes	Nil	Yes	Nil
7	Statutory Limitation on Invoices (unpaid)	No Restriction	Restricted to contract	3 years	10 years	10 years	**6 years**	6 years	6 years	6 years	3 years
8	Judgements	No Restriction	6 years	30 years	10 years	No Limitation	**No Limitation**	6 years	12 years	12 years	12 years

Source: www.intrum.com

Bursa Malaysia[4] (the Malaysian bourse, formerly known as the Kuala Lumpur Stock Exchange), had receivables that were more than half of their revenue at the end of their respective recent year-end results. Meanwhile, about 20% of the companies on the Second Board and 35% of companies listed on the MESDAQ Market (now known as the ACE Market) fall into this category. Companies in the stock broking, construction, property and oil and gas sectors rank among those with the highest receivables. The receivables on the list include all receivables on a company's book, other receivables and amounts due from related companies.

Trade receivables, commonly known as trade debtors or accounts receivables, arise from sales on credit – trade credit. In this context, unlike the above compilation on Malaysian listed companies, trade debtors exclude other receivables and amounts due to related companies, which are not trade in nature. As such, this study will primarily concentrate on trade credit in the manufacturing sector and its determinants and the impact of late payment on profitability in Malaysia. As such, this study covers companies listed on Bursa Malaysia in the consumer products and industrial products sectors.

This positivistic research aims to identify the determinants of trade credit supply and late payment in the Malaysian manufacturing sector and the association between late payment on companies' profitability, based on quantitative data. Black (1993) recommends a specific research question, followed by a number of hypotheses and Creswell (2003) recommends one or two *grand tour* questions, followed by no more than five to seven sub-questions. In this study, we suggest two grand tour questions:

[4] With effect from August 2009, Bursa Malaysia has combined the Main Board and Second Board companies into one category, the Main Market and the MESDAQ market has been renamed the ACE market.

- What are the determinants of trade credit extension for Malaysian large and medium-sized companies in the manufacturing sector?
- Is there an association between late payment (by customers) and profitability of Malaysian manufacturing companies?

These questions are then followed by several related sub-questions relating to the determinants of trade credit where two aspects are investigated, the trade credit supply-side and the explanatory variables lead sub-questions, which investigate the association between late payment and profitability in the Malaysian manufacturing sector.

This research is feasible as it involves econometric analysis and content analysis of published financial data, which is factual and verifiable. As this study covers only manufacturing companies listed on Bursa Malaysia, the scope of this study can be clearly defined. Econometric analysis using the OLS method and utilizing financial ratios as the explanatory variables is acceptable if the validity and robustness checks are performed, especially if the multicollinearity between the explanatory variables is within the accepted range. Established prior studies undertaken by Petersen and Rajan (1997), Pike and Cheng (2001), Delannay and Weill (2004), Paul and Wilson (2006) set the precedents in the UK, US and transition countries.

This research is of social importance as late payments from trade debtors have a spill over delay effect on the business cycle and lead to inefficiencies in the commercial environment. A lot of time is spent chasing payments instead of doing more business. Delayed payment from debtors is unnecessary and leads to credit risk exposure which in

turn leads to bad debts a significant risk in every manufacturing company or any business organization.

There is a scientific importance to this research, whereby this study uses the conventional OLS regression to identify the determinants of trade credit extension and undertakes the study of the association between late payment (by customers) and profitability of Malaysian manufacturing companies where to date such empirical research is, to my knowledge, yet to be performed in Malaysia. Ordinary least squares (OLS) regression will be applied in this study to provide simple and understandable explanations for this little understood subject matter. The results of this empirical research, if significant, could be used by policymakers, regulators and the corporations themselves in addressing the trade debts issue, which is one of the most significant assets of most companies and yet is often neglected.

1.4 METHODOLOGY

This study adopts a mixed-method research approach (Creswell and Clark, 2007), comprising a qualitative study involving an open-ended questionnaire followed by interviews with ten selected companies and quantitative empirical investigations applying the ordinary least squares (OLS) regressions to a cross-sectional sample of 383 (for determinants of trade credit extension) and 287 (for late payment) public-listed manufacturing companies for the financial year ending 2007/2008.

Accordingly, this research study is conducted in two (2) phases. Phase 1 involves a preliminary exploratory study[5] on ten companies in Malaysia on credit management issues and practices. The initial findings of this preliminary exploratory study are compared and benchmarked against the published findings of surveys conducted in Europe such as the European Payment Index (EPI).

The results of Phase 1 of this study reveal that there are some major issues that relate to: the difficulty in assessing customers' creditworthiness due to lack of information, the corroborative evidence available is not truly reliable/accurate/timely, the reluctance on the part of companies in divulging information on trade credit because it is deemed sensitive/confidential/detrimental to their business or reflects a negative impression on the management, especially if the information on late payment is adverse. As such, research on credit management based on primary data in Malaysia will not be appropriate as it is expected to be time consuming and the response rate will be low owing to the sensitivity as discussed above.

Accordingly, Phase 2 of this study uses secondary data and the coverage is limited to manufacturing companies listed on the Main and Second Board of Bursa Malaysia, under the Consumer Products and Industrial Products sectors. The determinants of trade credit can be analysed both from the demand and supply side and based on selected explanatory variables in prior studies in other countries, e.g. the US (Petersen and Rajan, 1997), UK (Paul and Wilson, 2006/2007; Soufani and Poutziouris, 2002), China (Ge and Qiu, 2007),

[5] This exploratory study was conducted in 2005/6 by the corresponding author on ten large and medium-sized companies of which five of the companies are listed companies and the remaining are multinational companies.

Japan (Ono, 2000), French (Ziane, 2004), Central and Eastern Europe (Delannay and Weill, 2004). As this study explores the determinants of trade credit extension in Malaysia and associates the issue of late payment with corporate profitability, the focus is on the supply side. This study looks to into the perspective of the selling firm (not the buyer, who demand trade credit), which apart of selling their goods, would act as a financier to customers by giving credit terms whilst selling the goods and to study the effect of late collection of payment by customers to the selling firms as a result of the credit transactions. The demand aspect of trade credit and also the net trade credit (net of demand and supply) could be explored in future research. Implications from the implementation of IFRS 7 in Malaysia on the disclosure requirements on trade receivables and the associated credit risk make this supply-side study a contemporary subject matter. Also, throughout the thesis, late payment refers to the late collection of payment from accounts receivable, not otherwise.

Accordingly, the second phase of this study attempts to gain insights into two main areas of credit management in Malaysia using empirical analysis: (a) the determinants of trade credit extension and, (b) the issue of late payment by customers and its association with profitability.

Phase 2a explores the determinants of trade credit in Malaysia through empirical study of manufacturing companies listed on Bursa Malaysia using cross-sectional data for the financial year ended 2007/8. In Phase 2b, the final phase of the study, the late payment issue in Malaysia and its impact on corporate profitability is explored using multivariate regression analysis. From the determinants of trade credit supply, the determinants of late

payment could be derived by comparing, empirically, the difference in the importance of the selected variables between late payee companies and prompt payee companies. The impact of the late payment issue on profitability is investigated for the first time in Malaysia based on the samples from the manufacturing companies listed on Bursa Malaysia.

1.5 SIGNIFICANCE OF STUDY

An examination of the determinants of the trade credit supply in Malaysia is long overdue. Whilst studies in developed countries have examined these determinants, the implications for Malaysia have been largely ignored. This study contributes empirical evidence and tests some theories on the role played by the manufacturing sector in providing finance to their customers via the extension of trade credit in Malaysia.

This study fills the gap by utilising the classic Petersen and Rajan (1997) credit extension determinants model with two additional explanatory variables used by Levchuk (2002) and tested them on the Malaysian manufacturing companies. To my knowledge, no such prior study has been conducted in Malaysia. The previous study in Malaysia on credit management by Angappan and Nasruddin (2003) was the first exploratory study in Malaysia on the DSO or the average credit collection period of Bursa Malaysia listed companies.

In addition, apart from testing the developed model on the Malaysian manufacturing sector, and unlike previous studies, this study contributes to the body of knowledge by testing the determinants of the trade credit extension model by using collection promptness versus the occurrence of late payment, i.e. the absence and presence of late payment by customers as distinguished treatment groups that act like 'switches' that turn various parameters on and off in the determinants' equation. Finally, the effect of late payment of receivables on profitability in the Malaysian manufacturing sector is empirically tested.

Based on the average days overdue, the exploratory data analysis in the Chapter 5 of this study finds that 60% of the public-listed companies in the Malaysian manufacturing sector suffer late payment problems. Section 4.17.6 in Chapter 4 of this study introduces a more objective measurement of late payment of receivables using the Pareto days overdue in place of the average days outstanding or DSO used in prior studies.

Pareto principle was first introduced in the year 1906. In one of his first published papers, Pareto[6] derived a complicated mathematical formula to prove that the distribution of income and wealth in society is not random but that a consistent pattern appears throughout history in all societies. Essentially, Pareto shows that approximately 80% of the total wealth in a society lies with only 20% of families. The Pareto principle in economics is the law concerning the vital few and the trivial many and, in essence, shows that approximately 80% of the total wealth in a society lies with only 20% of families

[6] In 1906, Italian economist Vilfredo Pareto (1848-1923) created a mathematical formula to describe the unequal distribution of wealth in his country, observing that twenty percent of the people owned eighty percent of the wealth. In the late 1940s, Dr. Joseph M. Juran inaccurately attributed the 80/20 Rule to Pareto, calling it the Pareto Principle.

(McClave and Sincich, 2009). As an alternative to the simple averaging model, this paper postulates that Malaysian manufacturing companies will find that the pattern of their trade receivables collection period follows the Pareto 80:20 rule. This means that 20% of trade receivables are granted with the shortest credit period disclosed whilst the remaining 80% are granted the longest or maximum credit period extension.

Using the Pareto-rule, a credit period granted between 30 to 90 days would mean that the given credit period would be 20% of the customers would be granted 30 days credit whilst the remaining 80% would enjoy 90 days credit, resulting in a Pareto DSO of 78 days (20% x 30 days plus 80% x 90 days). The difference between the actual DSO and the Pareto DSO is referred to as Days Overdue based on the Pareto rules (DODP).[7]

The Pareto principle is used to explore the empirical relationship between late payment and the profitability of companies in an emerging market in Southeast Asia, Malaysia. The results show that, empirically, Pareto days outstanding seems to be a better proxy for late payment than the average days outstanding, as will be explained at length later in this study. As this Pareto-based measure recognises the variation of standard credit terms offered by firms, the results of multivariate analysis on the association between late payment and profitability in Chapter 7 of this study shows that it is a better proxy for late payment and, thus, for corporate profitability with better explanatory power than DSO.

[7] This study is purposely designed to account for the downward bias for DODP calculation for the multivariate studies in Phase 2 as the literature review and the findings from the Phase 1 exploratory study (see Chapter 2 and 3) indicate that late payment is prevalent where customers tend to delay the settlement of their accounts. Based on interviews in the preliminary exploratory study, respondents replied that new credit account will be given a shorter credit term to gauge their creditworthiness. After establishing business relationship, longer credit terms are given. Applying the Pareto principle, 20% of the credit accounts are considered new and 80% of the accounts are from regular or established customers, and not otherwise.

From a review of past literature, this study identified the knowledge gap between late payment and credit period disclosure by the public-listed manufacturing companies in Malaysia. As deliberated in Section 4.17.4, this study identified the myopia of DSO if it is used as a late payment performance indicator as a shorter DSO period results in better financial performance in terms of profitability due to the shortening of the cash conversion cycle and the increase in the frequency of reinvestment, or turnover, of its capital (Nasruddin, 2008). In order to avoid the myopia of DSO as a measurement of late payment and the response bias using respondent replies on late payment indicator, i.e. days overdue, this study attempts to find an empirical measurement for late payment based on published financial data.

After a careful review of published financial statements of public-listed companies in Malaysia, this study finds that most companies disclose the normal credit period granted to their customers under the notes to accounts receivable. By computing the DSO using the financial statements and comparing the DSO with the normal credit period granted will prompt users of financial statements on the occurrence of late payment of receivables if the DSO is longer than the normal credit period granted.

However, the issue of late payment measurement is not an easy task as was earlier thought, as in Malaysia most companies disclose their credit period extension in interval range and not in absolute number of days, for example, between 30 to 90 days. One of the fundamental methods to obtain prompt and late ‘payment times’ is to obtain an absolute number of credit period days granted, by way of simple averaging. In this case, the

number of average days overdue is the difference between DSO and the average credit period granted, known as average credit term (ACT), i.e. 60 days (simple average method averaging the minimum, 30 days and the maximum credit period, 90 days granted). Late payment occurs if DSO is higher than ACT and measured by average days overdue (DODA). Unlike UK and EU where the credit term granted is fixed at 30 days by legislation and/or by the European Union, developing and emerging countries like Malaysia practices different credit terms for different customers (leading to the application of the theory of price discrimination which is discussed at length in the literature review in Chapter 2). An average credit period or some better measurement is sought to enable the empirical study in this subject matter.

Based on the exploratory study in Chapter 3, concerning rampant late payment, a number of companies responded that they grant a longer credit period instead of the normal credit period. According to Wilson (2008), the experience in the UK indicates that the disclosed normal credit period granted might not be accurate as some companies are disclosing their credit period based on their credit and payment policy, and not the actual situation. This indicates that the simple averaging method of determining days overdue may not be reflective of the Malaysian position. Nevertheless, this study will confirm or dispel the support for average days overdue as the proxy for late payment by testing the empirical models.

Accordingly, this study postulates that companies in Malaysia are inclined to grant longer credit terms than shorter terms based on the range disclosed. Taking a cue from the

Pareto principle applied in sales (Bass, 1991), this study attempts to contribute to the body of knowledge by using the Pareto rule in determining the normal credit granted to customers as an alternative to the commonly understood simple averaging method.

Based on the above discussions, this study provides three alternative variables for the empirical model on the late payment issue: DSO, average days overdue (DODA) using a simple average of the minimum and maximum credit period granted, and Pareto days overdue (DODP) using Pareto 80:20 for the maximum and minimum credit period granted.

As such, this study proves that the empirical evidence on late payment is in fact available for research and in fact could be analysed from the financial data, and is not impossible as claimed by Nasruddin (2008). In addition, DODP can be the "tripwire" (Petersen and Rajan, 1997, p. 633) for late payment that is plaguing Malaysian companies. The average days overdue can be argued to be non-representative of the late payment situation in companies (owing to the wide range of credit terms granted and credit granting perhaps is skewed towards longer payment terms). DODP gives the benefit of doubt to companies to argue out their credit period disclosure since they use the 80:20 Rule in arriving at longer credit term as the benchmark for comparison with DSO to determine late payment incidence. If a company's DSO is still longer than the DODP, then this study proves empirically that late payment is plaguing the said sample company and, in fact, it is an important issue in relation to a company's profitability. The results of the testing of three

models will have important ramifications in relation to the issue of late payment in Malaysia, specifically, and to the world at large, generally.

1.6 ORGANIZATION OF THE THESIS

This thesis is divided into nine chapters with this introduction chapter providing an overview of the study. The remaining chapters are organised as follows. Chapter 2 introduces the theories of trade credit demand and supply, and the theoretical concepts of credit periods/terms and their variations. The motives behind such theories and the determinants of trade credit extension are critically synthesized. It introduces the theoretical aspects of late payment of commercial debts. The causes behind such late payment are critically synthesized and the review of the effect of late payment on corporate profitability. The gap in the late payment issue is identified and this chapter proposes the need to examine a new measure of late payment, namely, the Pareto days overdue and explains the reasoning behind this method.

Chapter 3 discusses the results of the Phase 1 exploratory study on trade credit management and the late payment issue in Malaysia. The main objective in this chapter is to interpret the findings and responses from the exploratory study to identify issues and implications from this preliminary exploratory study, which highlights the pressing issue concerning late collection of payment from debtors. The strength of the mixed-method

approach is the insights from the first phase contribute to the formulation of the research and enquiry in Phase 2.

Chapter 4 explains the research design and methodology of Phase 2 of this by discussing the research design, sampling design and data collection, data measurement method and data analysis technique for the determination of trade credit extension and the association between late payment of commercial debts and corporate profitability. This chapter introduces the models developed for the determinants of trade credit extension and another model on the association between late payment and profitability in the Malaysian manufacturing sector. This chapter explains the various explanatory variables including the control and dummy variables and the expected relationship with the independent variables in each of the models specified.

Chapter 5 summarises the results and interpretation of the exploratory data analysis and univariate analysis, inter alia, content analysis and correlation analysis of the determinants of trade credit extension in the Malaysian manufacturing sector. The results and interpretations of the testing of the multivariate regression assumptions are also discussed in this chapter.

Chapter 6 deliberates the empirical results of the multivariate analysis of the determinants of trade credit extension using the ordinary least squares (OLS) regression techniques with the introduction of several dummy and control variables.

Chapter 7 discusses the empirical results of the multivariate analysis of the association between late payment by customers and the profitability of the Malaysian manufacturing companies. Similar OLS regression techniques are applied for this part of the study.

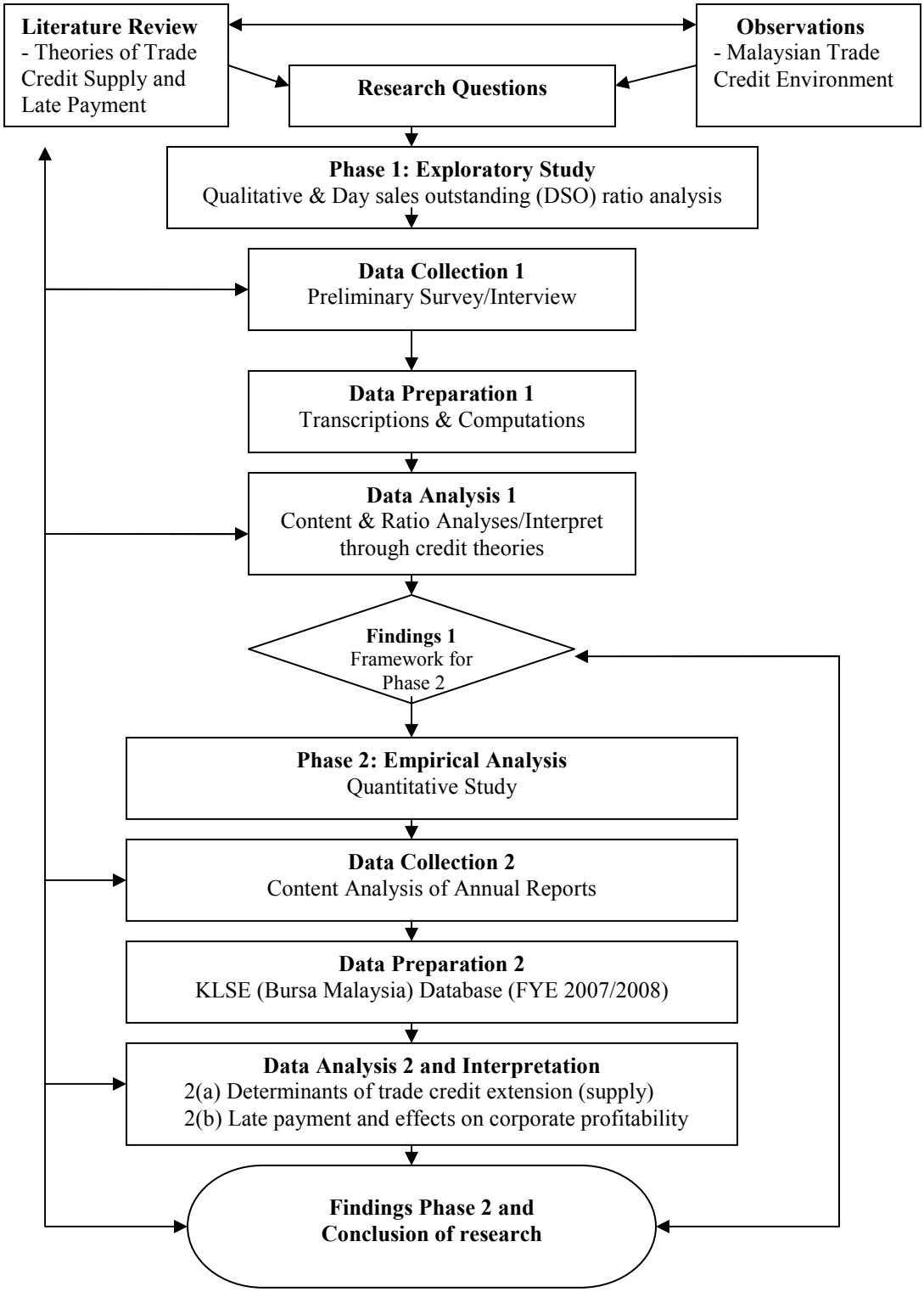
Finally, in Chapter 8, the concluding chapter of this study, the implications of the study on the practice and theory as well as the limitations and suggestions for future research are discussed. Figure 1.1 depicts the research flow of this study covering the exploratory study and the empirical analysis.

1.7 CONCLUSION

This chapter discusses the overview of the study on the determinants of trade credit extension and the problem of late payment in the Malaysian manufacturing sector. It provides a brief summary on the background of credit management, the research questions, the purpose of the study, and the methodology and research design of this study to provide empirical evidence and test some theories of trade credit extension in the Malaysian manufacturing sector.

This chapter also discusses the significance and contribution of this study, which among others, includes its theoretical contribution and the proposed improved measurement of late payment based on the Pareto rules in determining the late payment of debts to address the research problems. The next chapter discusses the review of the literature concerning the theoretical concept of trade credit and its related subjects.

Figure 1.1: Research Flow Diagram



Research Flow Diagram

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In credit management research, the history of trade credit extends back at least 3,000 years ago to the civilizations of Babylon, Assyria and Egypt. Medieval Europe is the first period rich in material for the history of credit (Crichton and Ferrier, 1986). The use of trade credit became increasingly widespread in the eighteenth and nineteenth centuries. However, one of the most quoted credit researches, post World War II, is Nadiri's (1969) paper, which estimates a model specifying the determinants of trade credit in the US total manufacturing sector. Subsequent to Nadiri's paper, several researchers examined the motives of credit and identified four major motives – the transaction motive (Ferris, 1981), the finance motive (Schwartz, 1974; Smith, 1987), the pricing motive (Brennan, Maksimovic and Zechner, 1988) and information production motive or asymmetric information (Smith, 1987).

A firm customarily buys its supplies and materials on credit from other firms, recording the debt as an account payable (Paul, 2007c; Petersen and Rajan, 1997). This trade credit, as it is commonly called, is the largest single category of short-term credit. Credit terms are usually expressed as net term terms but can be with discounts for prompt payment. In the financial management literature, from a buyer and trade credit users/demand perspective, trade credit is referred to by some as accounts payable financing, i.e. trade credit use (Brigham *et al.,* 1999; Baum *et al.,* 2003). However, this study concentrates on

the supply/extension of trade credit and, therefore, it is seen from the supplier's point of view. It refers primarily to the accounts receivables financing where the credit extended is shown as the amount outstanding in the account receivables in the seller's balance sheet.

The dominance of customers can be a good reason for trade credit (Emery, 1984). Suppliers find ways to attract buyers to their products in terms of competitive pricing and when this cannot be compromised further, trade credit, deferring payment for the goods supplied for an extended period, may attract certain buyers. Despite the fact that trade credit extension can become a source of finance for survival and growth of firms of all sizes (Soufani and Poutziouris, 2002), trade credit is something of a Cinderella subject, often neglected and rarely understood (Paul and Boden, 2008). Extant trade credit literature (Mian and Smith, 1992; Pike *et al*., 1998; Ng *et al.,* 1999; Wilson, 2003; Paul, 2007b) evidences the issue.

Many studies have been carried out globally in recent decades and this chapter aims to synthesize the theories of trade credit extension and relate the theories to the determinants of trade credit extension.

The remainder of the chapter is organised as follows: Section 2.2 gives an overview of the theories of credit from both supply (extension) and demand (use) perspectives while Section 2.3 to 2.7 synthesizes the theory of credit extension and the theoretical aspects of trade credit supply. Section 2.8 gives insights into the theories of trade credit demand while Section 2.9 discusses the credit period/terms and their variations. Section 2.10 examines the empirical evidences on the determination of trade credit extension. Section

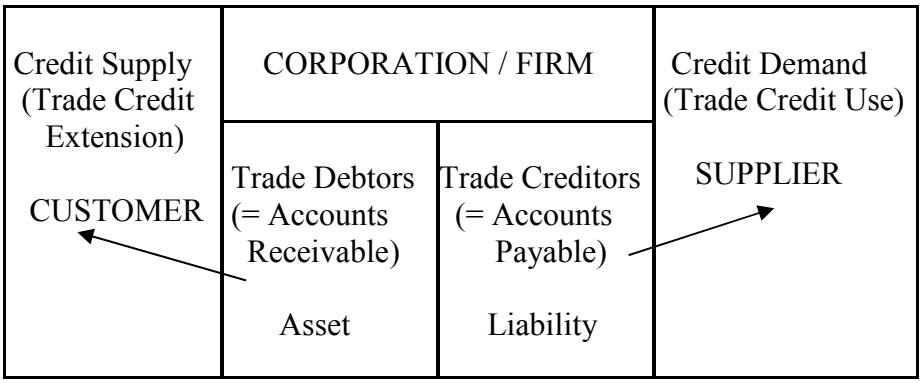
2.11 covers the extant literature on late payment while Section 2.12 reviews the Malaysian position on late payment of commercial debts. The association between late payment and profitability is discussed in Section 2.13 while Section 2.14 reviews the impact of late payment and the importance of DSO on profitability and the chapter concludes with Section 2.15.

2.2 THEORIES OF TRADE CREDIT

In order to gain a background understanding of credit management, the theories of trade credit are reviewed in sections 2.3 to 2.8 below from both perspectives: demand-side and supply-side. Trade credit demand refers to the use of credit from suppliers and is represented by the accounts payable (commonly known as trade payables or trade creditors) in the buyer cum credit user's books (and as accounts receivable in the seller cum credit provider's books). Vice versa, trade credit supply refers to trade credit granted by sellers to buyers and is represented by the accounts receivable (commonly known as trade receivables or trade debtors) in the credit provider's books (and corresponding representation as accounts payable in the credit recipient's books). These two sides of trade credit in the management of working capital are shown in Figure 2.1.

Confusion can arise as most firms act as both users and providers of trade credit. For the purposes of this thesis, the focus is on the supplier or seller of goods and the supplier of credit (i.e. seen from the credit provider's perspective). Trade credit extension will be consistently used throughout this thesis when referring to trade credit supply. Accounts receivable and accounts payable are the terms used when referring to trade receivables or

Figure 2.1: Two Sides of Trade Credit (in the Management of Working Capital)



Source: Paul (2007b)

trade debtors and trade payables or trade creditors, respectively. Similarly, customers refer to buyers and recipients of trade credit while suppliers refer to sellers of goods and providers of trade credit extension.

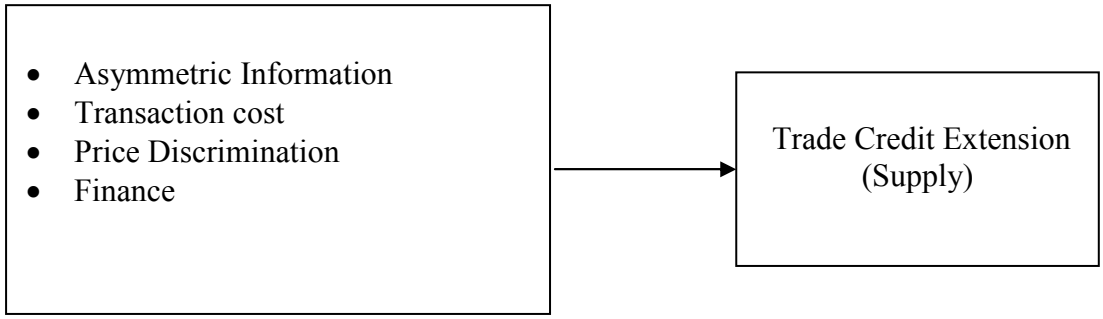
In the same vein, late payment in this study refers to the late payment of receivables by customers, i.e. the delays in the collection of accounts receivables suffered by the public-listed companies in the Malaysian manufacturing sector and not the delay in paying off their accounts payable.

The next section examines the two-sides of trade credit theories, each in turn, beginning with the theories of trade credit supply in Section 2.3 to 2.7 and then the theories of trade credit demand, which is beyond the scope of this study, is briefly introduced in Section 2.8 for general conceptual understanding.

2.3 THEORIES OF TRADE CREDIT SUPPLY

Previous research findings indicate that numerous motives and several reasons are put forward to explain the theories of the extension of trade credit: asymmetric information, transaction costs, price discrimination and finance. Figure 2.2 summarises the theoretical aspects of credit supply, which provide a fundamental foundation to the theories of trade credit extension.

Figure 2.2: Theoretical Aspects of Trade Credit Extension/Supply



Source: Paul (2007c)

Under the asymmetric information theory, several motives for trade credit extension have been identified: verification or signalling of product quality, sales-promotion motive, seller's compliance motive, specific-investment (in buyer-seller relationship and reputation) motives and economies of scale. These are discussed in depth in the following section.

2.4 ASYMMETRIC INFORMATION MOTIVE (also called "the Verification Motive" or "Information Production Motive")

Asymmetric information between sellers and buyers is the everlasting problem of any business (Paul and Boden, 2008). Sellers may not know the buyers' financial status to part with their goods to the buyers on credit; buyers may not know about the sellers' products quality in making the best purchase decision. In such instances, trade credit is used as a means to deal with information asymmetries. Sellers use trade credit extension as a quality signal for their products where buyers receive the goods without immediate payment and only make payment for the goods supplied when they are satisfied with the products' quality or by the end of the credit terms granted (Paul, 2007c).

2.4.1 Verification/Signalling of Product Quality

Much of the past literature focuses on asymmetric information regarding the quality of products and risk of default, therefore, trade credit serves as a mechanism that provides an implicit guarantee of product quality. Long *et al.* (1993) found that firms with established reputations for offering quality goods tend to extend less trade credit than smaller ones that need to prove quality through the credit period offered. Pike and Cheng (1996) conclude that the credit period serves as a valuable opportunity for reducing asymmetries in product quality awareness. They argue that in this context, trade credit is a signal of product quality.

The model advanced by Smith (1987) maintains the assumption that the products available from sellers differ with respect to quality and assumes that information is

asymmetrically held with respect to the probability of payment. This signalling theory views trade credit as a device that screens buyers when the seller knows more about the quality of the product than the buyer, and the buyer knows more about its probability of payment, i.e. where information about the buyers' default risk is asymmetrically held and if buyers are offered a discount for early payment and do not take it, this signals their limited access to finance and, thus, suppliers can identify those with possible cash flow problems (Smith, 1987). In short, Paul and Boden (2008) posit the role of trade credit as a screening device that identifies, earlier than otherwise, potential problems and, therefore, signal the need for more monitoring and control.

Petersen and Rajan (1997) found that suppliers appear to have an advantage in financing growing firms, especially if their credit quality is in doubt, as high-growth firms might be a major source of business, and suppliers are willing to provide credit while expecting to capture business; suppliers are likely to have a comparative advantage over financial institutions in obtaining the information they need. If a buyer is unable to take advantage of early payment discounts, this may serve as a 'trip wire to alert the supplier of deterioration in the buyer's creditworthiness' (Petersen and Rajan, 1997, p. 663). Moreover, suppliers may rely on their ability to repossess and resell the goods against which credit has been provided. In sum, by using trade credit, the seller may avoid the moral hazard problem (Wilson, 2008).

2.4.2 Sales-Promotion Motive

Nadiri (1969) states that sellers may use trade credit like an advertisement as sales inducement, i.e. credit terms can be used to gain or maintain market shares or to offload

excess inventories. Furthermore, trade credit is a non-price factor that influences product demand, e.g. it is possible to stabilize the demand level by smoothing business or seasonal cycles without price variations (Emery, 1987). As such, trade credit is an investment that sellers use to maintain a long-term relationship with buyers, especially small or newly set-up firms due to reputation and asymmetric information effects (Summers and Wilson, 2002a).

2.4.3 Seller's Compliance Motive

Smith (1987) develops this view in her model of the presence of specialized, non-salvageable investments as a determinant of a seller's decision to offer two-part trade credit.[8]

By offering more favourable credit terms as the screening contract, the seller can identify prospective defaults quicker to protect their specific investment, which has been endowed on the buyers through the course of doing business (Wilson, 2008). In addition, trade credit offers the buyer an inspection period before payment is made thereby allowing recourse in case of inferior quality. Higher quality producers offer lower cash discounts

[8] A two-part trade credit offers a discount if payment is made within the discount period, or full payment is required at the end of the net period. The most common two-part terms are 2/10 net 30 (Ng et al., 1999), i.e. the buyer has the option of taking a 2 percent discount if payment is made within ten days or a full payment is expected within 30 days. This implies a 44.6% effective annualized interest rate - assuming a 10 day discount period and 2% discount rate for a $100 purchase; the full price can be viewed as the future value of a loan on the discounted amount for the remaining 20 day period. The implicit annualized interest rate can be found from the expression $98(1+i)^{365/20}=100$, which gives $i=0.446$ (Cunningham, 2006)

(and less trade credit) since suppliers are more certain that their products will not 'fail' in the market (Paul and Boden, 2008, p. 274).

2.4.4 Specific-Investment Motive

Trade credit extension can be a specific investment in the buyer-seller relationship and in the buyers' reputation. According to Wilson (2008, p. 59), 'trade credit extension can be viewed as an important means of managing "relationships" with customers e.g. generating repeat purchase behaviour, establishing reputation and building stable and long-term relationships with customers, i.e. goodwill and a future income stream, and of generating market or customer information'. Section 2.4.4.1 discusses the specific investment in the buyer-seller relationship while section 2.4.4.2 covers the industry-specific investment in reputation.

2.4.4.1 Buyer-Seller Relationship

Similar to the 'bail-out' theory, the seller has a stake in the future of the buyer's business if the seller has made a specific investment in the buyer, as the seller can only earn a return on investment if the buyer stays in business (Smith, 1987; Ng *et al.,* 1999). As such, the seller is motivated to help improve the buyer's liquidity via trade credit extension. The seller can also learn about the buyer's financial difficulties more quickly and is able to distinguish between buyers who are good or going to fail. With the presence of non-salvageable investment, sellers have potentially more to lose if they no longer offer credit to their customers, while this incentive is absent when dealing with financial institutions (Smith, 1987; Wilson, 2008).

From the sellers' perspective, much of the credit extension can be seen as customer focused, encouraging frequent purchasers, which offers the potential for relationship development, or accommodating customers' demand for credit to help finance their production period (Paul and Wilson, 2007). 'By investing in their customers via credit extension rather than earning interest on the market, suppliers may benefit from their customers' survival through secured sales; this in turn will increase the suppliers' market share and therefore reduce the problem which market size imposes on the suppliers' own growth' (Paul and Boden, 2008; p. 277).

2.4.4.2 Reputation

Ng *et al. (*1999) posit another theory on industry-specific investment on reputation (for the product quality of the seller or the credit quality of the buyer). Firm reputation is facilitated by making non-salvageable investments in an industry, which suggests that buyers would have made sunken investments in the industry they are operating in if buyers were to leave the industry (Ng *et al*., 1999). A buyer's reputation tends to affect the credit terms offered to them. Larger firms are more likely to offer trade credit as the wider the sellers' customer base, the greater the likelihood that experience with some customers will yield information on the default risks (Ng *et al.,* 1999). The supplier's concern with the buyer's credit is reduced if the buyer has made a significant sunken investment in the industry; as such, buyer reputation is an expected determinant of credit terms and practice (Wilson, 2008).

2.4.5 Economies of Scale

As customer bases expand, fixed costs associated with investigating credit quality and managing outstanding credit is spread over more customers. In addition, this may lead to a reduction in some variable costs due to bulk discount (Ng *et al.,* 1999). Therefore, under the economies of scale hypothesis, the size and nature of a firm's customer base may affect the trade credit extension decision (Wilson and Summers, 2002). However, Wilson and Summers (2002) find that smaller firms can manage trade credit efficiently when they deal with a smaller more stable customer base relative to their turnover, i.e. a small number of larger orders. This implies the diseconomies of scale effect when smaller firms try to cope with large customers or orders as smaller firms have limited capacity and resources.

2.5 TRANSACTION MOTIVE

The transaction cost theory posits that trade credit is a mechanism that separates the exchange of money from the uncertainty present in the exchange of goods; thereby lowering the exchange costs (Ferris, 1981; Paul and Wilson, 2007).

According to Ferris (1981), firms can economise on the joint costs of exchange by using trade credit. Trade credit permits the exchange of goods to be separated from the immediate use of money and transforms an uncertain stream of payments into a sequence that can be known with certainty (Ferris, 1981). Within this framework, Ferris suggests that trade credit can serve to provide information on the flow of receipts and outlays for

the firm. This permits both the vendor and buyer to minimize the costs of converting real financial assets into transaction balances. Buyers can minimize their transaction cost by not paying all the bills each time goods are delivered; they pay them all as per the agreed period.

Trade credit also reduces the transaction costs of the sellers, who would receive one total payment for the amount due instead of having to collect individual bills (Ferris, 1981). In the absence of trade credit, buyers would have to hold large cash balances in order to pay suppliers. By delaying the payment for purchases towards the end of the agreed credit period, the buyer may be able to better match the timing of their cash flow from cash receipts from sales with their purchases on credit to minimise the cash required to finance the working capital (Ferris, 1981; Mateut and Mizen, 2002). Finally, Mateut and Mizen (2002) state that the transaction cost theory approach implies that larger firms with greater financial expertise are better than their smaller counterparts at exploiting economies of scale in managing trade credit and at implementing an integrated investment approach into current assets (especially net trade credit[9] and inventories).

Mian and Smith (1992) identified cost advantage as one of the main incentives for suppliers to extend trade credit: it is less costly to supply goods and provide credit from one source and so suppliers can evaluate the credit risk of buyers more effectively. Moreover, the extension of trade credit reduces the costs of transacting business between the sellers and the buyers, facilitating regular exchanges of goods and smoothing the

[9] Net trade credit is the difference between credit extended to customers (accounts receivable) and that taken from suppliers (accounts payable).

periodic payments for goods sold thereby completing the business cycle in a desired and orderly manner (Ferris, 1981; Ng *et al.*, 1999; Nilsen, 2002).

In addition, trade credit enables a firm to accumulate invoices and anticipate its cash requirement with greater certainty and, therefore, hold smaller precautionary cash balances, which are used to deal with timing of cash flow and working capital management and movements in the most cost effective manner (Schwartz, 1974; Ferris, 1981; Paul and Boden, 2008).

For products with seasonal demand, trade credit can be used to reduce the transaction costs, by offering discount for early payment to stabilise and improve their cash flow as well as to reduce monitoring costs (Emery, 1994/1988). Sellers often adjust their accounts receivable balance in response to fluctuations in demand by relaxing/tightening credit terms to meet the temporary deficit/excess in demand (Paul and Wilson, 2007).

2.6 PRICE-DISCRIMINATION MOTIVE (also referred to as the "Pricing Motive")

Trade credit can be used to differentiate between valued customers with other customers when suppliers cannot discriminate by price (Schwartz and Whitcomb, 1978; Petersen and Rajan, 1997; Mian and Smith, 1992). According to Schwartz and Whitcomb (1978), price discrimination may occur when the supplier does not enforce the agreed upon credit terms thereby allowing the customer to pay later than the agreed date without any

punitive actions. Such trade credit extensions allow suppliers to surreptitiously violate price regulation (Emery, 1984).

If anti-trust laws prevent direct price discrimination, high-priced trade credit may be a subsidy targeted towards risky clients (customers will find trade credit overpriced and will try to pay within the discount period to take advantage of the huge discount); alternatively lower prices offered through these means may ensure the long-run survival of customers at risk of failure (Mateut and Mizen, 2002). This is especially demanded by buyers in the situation of price-controlled elastic goods for which selling below the controlled price is prohibited; trade credit may act as an incentive to the buyers in terms of enjoyment of longer than usual payment terms in periods of excess supply over demand (Mateut and Mizen, 2002).

Petersen and Rajan (1997) find evidence of price discrimination as a motive for offering credit; sellers may price discriminate to make additional sales without reducing the price to their existing customers. They posit that firms that enjoy a high profit margin are more likely to offer credit and if sellers have enough market power to discriminate between customers, the profit margin from a sale allows sellers to accept a lower/greater profit/loss on the credit than financial institutions.

Brennan, Maksimovic and Zechner (1988) show that trade credit can be used to discriminate between customers when the reservation price differs or when adverse selection allows customers to be separated by risk class. This motive assumes that the necessary conditions for successful price discrimination are met, allowing the seller to set

the terms of the credit offer to correspond to a different elasticity of demand. Mian and Smith (1992) identify market power as one of the main incentives for suppliers to extend trade credit where the scope for price discrimination is higher when credit is extended together with the sale of goods.

Schwartz (1974) treats the formulation of credit terms as an integrated part of the seller's pricing policy. Suppliers may vary their two-part credit term and offer higher discounts to selected customers or allow them to take an unearned discount (Ng *et al.,* 1999; Smith, 1987). In the US, companies are more likely to change the credit terms to match the competition than to modify policies because of economic changes (Hill *et al.*, 1981). Whereas Emery (1984) assumes that as demand for a firm's product varies, the firm can change or modify the product price via trade credit terms to differentiate between customers in response to changes in product demand by changing the terms of the credit offer.

Paul and Wilson (2006) found that specific customers could influence suppliers' credit periods by paying later than the credit period granted. They argue that both overt and implicit interest rates may vary across industries due to both marketing conditions and investment requirements. Payment later than the agreed date leads to late payment of receivables; this will be discussed in the subsequent sections.

2.7 FINANCING MOTIVE (also referred to as "Liquidity Motive")

When extending credit to customers, sellers are effectively financing their customers' inventories as they are parting with their goods earlier in anticipation of a consideration that will be realised subsequent to the sale. 'Companies will monitor the costs of offering credit, which is effectively the opportunity cost of alternative investment opportunities' (Paul and Wilson, 2006; p. 88).

Since suppliers can monitor their customers' financial status better than financial institutions, they are in a better position to finance customers' inventories. Compared to financial institutions, suppliers that sell on credit may be able to assess the creditworthiness of their buyers in their day-to-day business dealings. They are able to gather hands-on information on buyers and can enforce repayment of credit granted, as there is an implied threat to cut-off future supplies if there is a default in repayment (Petersen and Rajan, 1997). In the worst scenario of default, the suppliers have the advantage of an available network to dispose of repossessed goods (Petersen and Rajan, 1997, Ng *et al.*, 1999, and Nilsen, 2002).

Schwartz's (1974) model suggests that trade credit works as a facilitator in that firms that are able to borrow do so and pass on the benefit to those that are unable to access funds in the same way. Therefore, more liquid firms tend to extend credit to less liquid buyers. Schwartz's model predicts that large, more financially secure firms grant credit to smaller, less financially healthy customers. In a perfect capital market, a firm would be indifferent between trade credit and institutional credit because suppliers and financial

institutions would charge the same price for credit. Imperfect capital markets enable suppliers to finance firms at a lower cost than financial institutions, mitigating the credit rationing firms may experience in financial markets (Schwartz, 1974 and Smith, 1987). Since suppliers can monitor their customers' financial status better than financial institutions, they can play a role as a source of their customers' financing. Therefore, those companies pass on funds to their customers with the intention of increasing or bringing forward sales; this is called the 'helping hand theory'.[10] Excess cash is used to extend credit to customers (Summers and Wilson, 1997).

2.8 THEORIES OF TRADE CREDIT DEMAND

Having synthesized the theories behind the trade credit extension – supply-side of the trade credit – this section focuses on the theories of trade credit demanded by buyers who use trade credit as a source of funds to finance their inventory. Trade credit demand, which is a function of purchases on credit, is shown in the firms' balance sheet as accounts payable. The literature indicates that there are a number of theories related to the demand for trade credit, inter alia, asymmetric information, transaction cost, financing, specific investment, operating conditions and firm's business environment (Smith, 1987; Lee and Stowe, 1993, Summers and Wilson, 2002).

[10] The 'Helping hand' theory posits that large/cash rich firms finance their customers' inventory both to secure repeat business/higher sales and to build long-term relationships. Further analysis is needed of the opportunity costs of ''lending'' to customers through the extension of trade credit against investing elsewhere (Paul and Boden, 2008, p. 277-278).

There are relatively few studies of trade credit demand for working capital financing as the demand for trade credit is mainly as a source of financing. Elliehausen and Wolken (1993), and Wilson *et al.* (1999) examine trade credit demand by small firms in the US and UK based on the theories of transaction costs and financing using Chant and Walker's (1988) model. Petersen and Rajan (1997) consider trade credit demand using primarily financial data for their analysis based on US SMEs database, covering three aspects of trade credit demand theories: supplier information costs, marketing and transaction cost theories. Deloof and Jegers (1999) investigate the role of trade credit as a source of finance for large Belgian firms and examine the substitution effect between trade credit use and bank financing based on the pecking order theory.

More recently, Paul and Wilson (2007) analyse the determinants of trade credit demand, modelled from several theories: financing, transaction cost, asymmetric information, firm's business environment and specific investment, building on the level of purchase on credit and the credit period – within and outside the agreed period. They found that trade credit is used to complement and/or substitute other sources of funds, and the level of credit demanded and the credit period are affected by the need for short-term finance.

The major underlying theories of trade credit demand are similar to those discussed earlier except that these are now examined from the buyers' viewpoint rather than the suppliers. Figure 2.3 depicts the underlying theoretical aspects of trade credit demand. The theories on asymmetric information, transaction cost, and finance and seller compliance have been discussed in section 2.2 to 2.5. Accordingly, the ensuing sections

2.8.1 and 2.8.2 discuss the operating conditions and firm's business environment, respectively.

Figure 2.3: Theoretical Aspects of Trade Credit Demand

Source: Paul (2007c)

2.8.1 Operating Conditions – the Operating Cycle of Firms

The length of a firm's production cycle may influence their demand for credit; otherwise firms have to provide alternative finance, which incurs costs before they make sales (Summers and Wilson, 2002). The longer the production and sales cycle, the longer the firm has to wait for its cash and to fund such operations; firms usually turn to external finance, including trade credit to finance the purchase and conversion of raw materials into finished products until sale – which in turn is influenced by the length of the production cycle (Paul, 2007c).

In addition, the level of inventory held has an impact on demand on trade credit: slow inventory turnover prolongs the cash conversion cycle and needs to be funded, however, at the same time, firms try to avoid stock-out situations in order to maintain their order fulfilment and customer service level, especially for products with seasonality in demand (Summers and Wilson, 2002). Accordingly, compared to non-manufacturers, manufacturing companies may have longer production cycles as well as longer inventory

conversion cycles, as raw materials and work-in-progress have to be converted into finished goods and remain as inventory until the time of sale (Paul and Wilson, 2007; Nasruddin, 2008). A large amount of working capital such as cash is tied up in this production process, which, in turn, influences the demand for trade credit (Paul and Wilson, 2007).

2.8.2 Firm's Business Environment

In most industrialised countries with an environment where trade credit is prevalent, a buyer would not choose to pay cash unless the discount offered for early settlement is attractive enough (Summers and Wilson, 2002). Trade credit demand is also influenced by both internal and external factors affecting the business environment – internal firm's organisation, the firm's position in the value chain and the industry it is in, the prevailing economic conditions and the environment in which the business operates – all have an influence on the demand for credit (Summers and Wilson, 2002; Paul and Wilson, 2007). In times of recession, financial crisis, credit rationing and financial distress, more generous credit terms may be demanded to substitute and/or complement other sources of finance such as bank finance, which is tightened (Paul and Wilson, 2007). Atanasova and Wilson (2004) suggest that firms that are rationed by banks might be expected to increase their reliance on trade credit as a source of funds.

Fast growing companies may demand more trade credit to finance their operations as they may in turn offer generous credit terms to attract more customers; this demand may be even higher when customers pay late (Paul and Wilson, 2007). They also claim that

trade credit demand is influenced by the cost of alternative sources of finance: firms may compare trade credit cost with other forms of financing but there may be more to trade credit than just the cost. This implies that sometimes trade credit is demanded despite the presence of lower alternative sources of financing, as the firm may not have the ability to take advantage of other lower cost alternatives due to the lack of credit standing or market power.

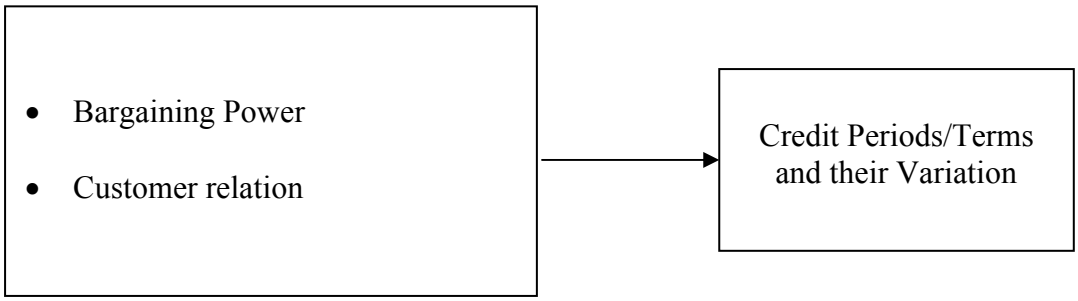
An in-depth synthesis of trade credit demand is beyond the scope of this study as this study concentrates on the determinants of trade credit extension and late payment of receivables. Nevertheless, as discussed above, there may be a vicious cycle in the demand and supply of trade credit when late payment occurs at the lowest level of the supply chain. This will have a knock-on effect when the companies move up the value chain and the delay of payment would affect each level up the supply chain where longer credit terms will be demanded and be extended in the business cycle.

2.9 CREDIT PERIODS/TERMS AND THEIR VARIATION

In this section, the factors that determine trade credit periods/terms and their variation are considered. The agency theory suggests that customers will tend to maximise the credit period taken unless there are appropriate controls or incentives (Pike and Cheng, 2001). In determining their trade credit offerings firms have to take account of endogenous capacity as well as exogenous factors if they are to maintain their market competitiveness. As shown in Figure 2.4, trade credit decisions are driven by

considerations such as bargaining power and customer relationships (Paul and Boden, 2008). These are discussed in turn.

Figure 2.4: Theoretical Aspects of Credit Periods/Terms and their Variation



2.9.1 Bargaining Power

Large customers can influence suppliers and the credit terms offered to them; suppliers may vary their terms to attract specific customers in order to achieve a certain level of market share (Summers and Wilson, 1999). Although trade credit may be influenced by industry norms in general, the bargaining power of some companies may have a disproportionate effect on the credit terms offered (Paul and Wilson, 2007). Mian and Smith (1992) conclude that trade credit is more likely to be offered the greater the returns from exploiting market power through effective price discrimination. Suppliers may purposively use trade credit as a device to capture business and thus support sales and business growth (Summers and Wilson, 1999).

2.9.2 Customer Relations

Establishing and maintaining good relationships with customers is one of the most important motives for sellers to vary credit terms (Summers and Wilson, 1999). It is in

the economic interest of the sellers to invest in their relationships with buyers to maximise market share, particularly in highly competitive environments. This can be achieved by varying credit terms – sellers invest in their customers by offering them long credit periods with the aim of strengthening long-term relationships (Summers and Wilson, 1999; Paul and Wilson, 2007).

Credit can provide an opportunity to build goodwill, enhance image and improve customer loyalty. Small, new and growing firms in particular may not have the same image, reputation, creditworthiness or borrowing power as those of larger companies and trade credit gives them the opportunity to demonstrate their capability of offering credit (Paul and Wilson, 2007). This is particularly true in the Asian businesses credit relations as it is an important means of securing positions in the flow of credit, especially as there is a lack of a well-developed legal system for enforcing trade credit contracts compared to the West. For instance, Barton (1977) finds that in Vietnam, large merchants owe their success largely to credibility and creditworthiness and small merchants remain small because of their lack of creditworthiness (small merchants may be credible but have less collateral/tangibility).

Competition often provides an imperative to invest in relationships with buyers through credit terms offered. However, when such investments are non salvageable, their value is lost if the buyer fails or terminates the relationship (Smith, 1987). Sellers that have an interest in a buyer's long-term survival might be expected to take into account not only the immediate profit margin on current sales but also the present value of any future

profits on subsequent sales in deciding whether to invest in a specific customer (Petersen and Rajan, 1997). According to Smith (1987), the reward to the seller from the investment and the development in relationships should at least be equal to the initial outlay. As such, once the investment in the buyer is made, the seller may not benefit from it unless the relationship is maintained.

2.10 DETERMINANTS OF TRADE CREDIT EXTENSION

Following the review of the theories of trade credit and credit periods and their variations in the earlier sections, this section moves on to examine the empirical evidence on the determinants of trade credit extension based on prior literature in order to explain these variations across firms, industries or sectors and company size.

Wilson (2008) suggests that trade credit terms and periods are related to the industry sector, product and customer-base characteristics, trading relationships, financial strength and other firm-level characteristics such as age/reputation and perhaps size. Empirical support for the extant theory on trade credit extension can be found in the work of Ng *et al.* (1999); Petersen and Rajan (1994); Wilson and Summers (2002); Summers and Wilson (2003) and Paul and Wilson (2006). Several determinants have been identified: company size, access to internal and external financing, sales revenue growth, and incentive to price discriminate, liquidity of company and collateral to secure financing.

2.10.1 Company Size

Prior studies indicated that, generally, large companies are more in a position to grant trade credit to their customers (Petersen and Rajan, 1997; Main and Smith, 1982; Pike and Cheng, 2001; Soufani and Poutziouris, 2002; Delannay and Weill, 2004). The size of a firm may bear a relationship to its creditworthiness. Large companies are more likely to have a higher tendency to grant trade credit to their customers as they tend to be more creditworthy and often with fewer growth opportunities (Delannay and Weill, 2004), Petersen and Rajan, 1997). The financial motive and commercial motive – price discrimination theory and transaction costs theory – are the main theories behind size as a determinant of trade credit extension (Delannay and Weill, 2004). On the other hand, large means higher relative bargaining power in the trade relationship between suppliers and clients. Larger companies are more reluctant to hold large amounts of costly accounts receivable and may impose stricter conditions for payments by their clients.

2.10.2 Access to External Financing via Short-term Line of Credit

Companies with higher short-term borrowings are likely to use the short-term borrowings to extend trade credit (Petersen and Rajan, 1997; Soufani and Poutziouris, 2002). Owing to their size and, accordingly, their creditworthiness, large established companies may borrow more even though they have higher cash flows and fewer opportunities for growth compared to their smaller counterparts. Such companies have easier access to funds and are expected to be in a better position to extend more trade credit (Petersen and Rajan, 1997).

Companies are unlikely to fund trade credit with long-term borrowings but nonetheless those with higher short-term borrowings (if trade payables and short-term loans are substitutable) are likely to use the short-term borrowings to extend trade credit (Petersen and Rajan, 1997). This 'helping hand theory' postulates that large/cash-rich companies finance their customers' inventory both to secure repeat business or higher sales and to build long-term relationships (Paul and Boden, 2008).

2.10.3 Access to Internal Financing

Most prior studies use the net profit margin ratio as the proxy for access to internal financing (Petersen and Rajan, 1997; Levchuk, 2002; Delannay and Weill, 2004) generated from firms' profit and internal cash generated from the profit. Profitability is usually considered as an indicator of finance. In line with the financial theory, profitable companies with sound internal cash flow tend to offer more trade credit (Petersen and Rajan, 1997, Levchuk, 2002, Delannay and Weill, 2005). Profitability measurement may be positively linked with the trade receivables ratio (Delannay and Weill, 2005). More profitable companies are more inclined to grant trade credit to their clients because of their better financial situation. (Ge and Qiu, 2007). On the other hand, loss-making companies may exhibit a higher trade receivables ratio as clients noticing supplier's difficulties may also take advantage of this fragility to postpone their payment (Delannay and Weill, 2005). Indeed, distressed companies are not in a position to enforce payment of receivables, as they are dependent on the remaining clients (Petersen and Rajan, 1997; Soufani and Poutziouris, 2002).

2.10.4 Sales Revenue Growth

Wilson (2007) indicates that smaller, growing firms, and those with the objective to grow, are likely to have a larger investment in trade debtors relative to their assets; this is consistent with the use of credit as a marketing/signalling tool. Summers and Wilson (2003) find that growing firms make relatively higher investments in the accounts receivables by extending credit to encourage customers who are frequent purchasers with the potential to develop a long-term relationship. Similarly, Petersen and Rajan (1997) find that companies that have had positive sales growth offer slightly more receivables, as an increase in sales leads to the demand for trade credit increase.

2.10.5 Incentive to Price Discriminate

According to Petersen and Rajan (1997), trade credit can be used as a strategic tool for price discrimination. Companies with higher gross margin products or those with a high gross margin track record tend to extend longer more credit if they can make additional sales without reducing the price for existing customers (Petersen and Rajan, 1997; Soufani and Poutziouris, 2002). Prolonging the credit period without penalty is in itself price discrimination (Schwartz, 1974). Schwartz and Whitcomb (1978) explain the price discrimination, which relates to changing terms (such as interest rate of discount, length of credit) to discriminate between customers.

Higher levels of investment in accounts receivable are correlated with low margins and cash flow and may indicate the necessity of offering better credit terms to make adequate

profits in low margin businesses; it could also be a sign of firms in financial difficulty offering credit in an attempt to boost flagging sales (Petersen and Rajan, 1997).

2.10.6 Liquidity

In relation to firm characteristics, theory suggests that firms with relatively lower costs of capital and higher liquidity are more likely to extend trade credit (Summers and Wilson, 2003). A higher value of disincentives promotes sales through the investment in a low-return financial instrument such as trade credit (Marotta, 2000; Levchuk, 2002), thus, a negative relationship with trade credit extension is expected.

High quick ratio companies have less incentive to promote sales via trade credit due to potential overtrading and, therefore, are unlikely to extend trade credit (Marotta, 2000). There is a trade off between the opportunity cost and financing cost where financing high risk accounts receivable (though this debtors financing may generate more turnover and more customers in the long term) with low financial return will increase the credit risk more than investing in other lower risk short-term instruments.

In summary, based on previous studies, companies with a high quick ratio are more likely to extend less trade credit despite their good liquidity and, hence, the ability of utilizing the favourable cash position to finance their customers.

2.10.7 Collateral to Secure Financing

The Collateral variable, being the ratio of net fixed assets to a company's total assets represents the company's ability to secure bank loans (Levchuk, 2004). Higher assets-based companies could offer better or higher collateral to obtain more external financing, which, in turn, (using the helping hand theory) could be used to extend trade credit to their customers who may be constrained by adequacy of collateral. However, Petersen and Rajan (1997) find the opposite – companies that do not have significant high fixed assets (such as trading companies) with the bulk of them being current assets (liquid asset) would extend more trade credit.

2.10.8 Summary of the Determinants of Trade Credit Extension

This is the beginning of the explanation chapter concerning the determinants of trade credit supply. Based on a review of the literature on the trade credit extension, seven main determinants that may influence the extension of trade credit are identified: company size, access to external financing via short-term line of credit, access to internal financing, sales revenue growth, incentive to price discriminate, liquidity, and collateral to secure financing.

Apart from the above determinants for credit extension, there are several factors that may impact the decision to extend credit, for example, product characteristics and the nature of the suppliers' market (manufacturers versus distributors/retails, durable versus non-durable goods; fast-moving consumer goods versus industrial products). For instance, product characteristics (particularly collateral values) have an impact on the length of

credit periods (Paul and Wilson, 2006; Wilson, 2008). Shorter credit periods are used to protect suppliers' interests when they are vulnerable to opportunistic behaviour by buyers so more generous periods are extended when the supplier has more opportunity to recover from such situations, often by resale of the goods.

Summers and Wilson's (2003) empirical results show clear links between credit extension and both the nature of the suppliers' market and the characteristics of its customer base. Furthermore, they find evidence of the impact of the firm's non-salvageable investment in customer relationships while Ng *et al.*'s study (1999) did not find a significant relationship. Summers and Wilson's results in this area are generally consistent with those of Ng *et al.* (1999), in that firms extend more credit to manufacturers than to wholesalers and retailers as discussed in the buyer-seller relationship theory where customers with non-salvageable industry specific investment are found to be more creditworthy.

Accordingly, this study focuses on the main determinants of trade credit extension while holding the other factors as control and/or dummy variables, wherever possible or applicable and move into the major issue that results from credit extension, which is the late payment of debts by the customers after the credit granting. This delay has an impact on the cash conversion cycle and, ultimately, the profitability in terms of reduced profitability, affecting cash flow and even firms survival.

2.11 LATE PAYMENT BY CUSTOMERS

When discussing trade credit extension, it is not complete without a discussion on the consequences and implications of late payment of accounts receivable or simply late collection from customers. Should there be a late payment, the amount of working capital requirement for financing the trade debtors will increase and without any actual increase or value-added in revenue generation, this will affect the overall cost of doing business. Late payment related costs will arise including administrative costs and debts collection and recovery costs, not to mention other opportunity costs that are not quantifiable.

It should be cautioned that a pursuit to extend credit to customers to increase the volume of business may lead to a liability position if collections are not forthcoming. When a company extends trade credit to customers, the company itself will either fund the trade credit extension by obtaining credit from its supplier or getting bank financing or, at best, from its own equity/shareholders fund. When a customer delays payment, this creates a vicious cycle in the company's supply-chain where the accounts receivable could turn into liabilities of the company instead of current assets if payment is not forthcoming and, subsequently, turn bad and yet the company still needs to honour its financial obligations with its suppliers or banks.

According to Angappan and Nasruddin (2003), and Nasruddin (2008), studies on trade credit management and late payment are very scarce in Malaysia and there are no studies on late payment by customers in Malaysia to date. Local studies are mainly on DSO (also

known as average collection period) but these studies do not address the late payment issues *per se* (Angappan and Nasruddin, 2003; Nasruddin, 2008). In addition, in the absence of empirical measurement and the lack of data on late payment, the usage of DSO as a proxy for late payment performance indicator would be myopic, as a shorter DSO period would result in better financial performance in terms of profitability due to the shortening of the cash conversion cycle and increase in the frequency of reinvestment or turnover of its capital (Nasruddin, 2008).

Having recognised the importance of prompt payment as opposed to late payment in business, the remainder of this section 2.11 covers the literature review on late payment by customers, which affects the suppliers cum providers of trade credit. In this study, late payment refers to the delays in payment by customers, i.e. the trade debtors, the recipient of the credit extended by the suppliers/sellers.

2.11.1 Late Payment of Commercial Debts

According to Howorth and Wilson (1998; p. 311), 'the issue of the late payment of commercial debt has been cited as a major problem facing small business and has precipitated much political debate in the UK in the 1990s which has led to establishing the Better Payment Practice Group and legislation to enforce a statutory right to interest on late payments in 1998'. Despite the enforcement of legislation aimed to combat late payment, it was reported that the legislation is not effective with payment periods continuing to lengthen (Paul, 2007).

Chittenden and Bragg (1997) conclude that longer payment terms are detrimental to the national economy, as well as to the suppliers (cum credit providers). In particular, SME companies with lower capitalization have less scope for accommodating late payment by increasing equity or long-term debt. As such, SMEs suffering from late payments have two main avenues: increase short-term bank borrowings (such as overdraft facility) and/or delay payments to creditors. The latter, if used, would cause a chain-effect cycle of late payment in economies, each owing party delaying payments. Owing to the constraints of SMEs' discussed earlier, it would not be expected that small firms could, on average, pay their suppliers more promptly than their larger counterparts (Chittenden and Bragg, 1997). Further research has highlighted that much of the problem for SMEs is in balancing cash flows into and out of the firm and that late payment is both a cause and effect of this difficulty (Howorth, 1999).

Howorth and Wilson (1998) find that a large number of small firms in the UK experience debtors' late payment problems. They argue that these firms are undercapitalized, have poor credit management practices and feel powerless to remedy this problem. Those who find late payment to be the greatest problem were 'juggling' various forms of short-term finance to fund their working capital (Howorth and Wilson, 1998; p. 312). However, they argue that firms with good credit management procedures suffer less from late payment. They also report that firms that managed late payment properly have systematic credit management procedures in place, a good knowledge of when to expect payment from each of their customers and appeared to be more in control of the process. In the same

way, Paul (2004) found that companies that managed their credit efficiently had lower bad debts and better credit control than those whose credit management was more ad hoc.

2.11.2 Causes of Late Payment

Late payment is often associated with market power position and competitiveness, technology changes and customer concentration (Paul, 2004). Nevertheless, issues such as seasonal demand, capital rationing and financial distress contribute to delinquency and default risk (Paul and Wilson, 2006).

Paul (2004) shows that 77% of respondents admit to have paid up to two weeks after the due date and Peel and Wilson (1996) reports that around 66% of the firms in their survey claim that the slowest payers are large businesses. Similarly, Pike and Cheng (2001, p. 1017) find that 'often the "guilty" parties are alleged to be large, ruthless companies, unsympathetic to the financial pressures on smaller suppliers and customers'. This has been further supported by Paul's findings (2004) that show that over 40% of large firms paid outside the agreed credit terms.

Dominant buyers with bargaining power in the competitive supply market are able to dictate the credit terms/periods from suppliers and/or take extended credit (pay late) when it is advantageous to do so without fear of a loss of supply (Wilson, 2008). Bargaining power occurs where the buyer is a large company and the supply chain is composed of many small competitive businesses or where the market structure is one of imperfect competition. Buyers with bargaining power may insist on longer credit periods than the

supplier might wish to extend and/or discounts on the invoice values; moreover, buyers with bargaining power may insist on high standards of delivery, after-sales service and invoicing providing much scope for disputing invoices and, in consequence, extending the credit period (Wilson, 2008).

Bargaining power may not necessarily be a function of the relative sizes of businesses. It can be due to customer-supplier relationships; nature of the product/service being supplied, such as those involving investing a lot of time and effort in securing a sale with a customer (specific investment), the need for repeat business to make the relationship profitable and/or industry sector (Ng *et al.,* 1999). Smaller companies with low profit margins are more sensitive to late payments and the impact on cash flow than larger more profitable companies (Howorth and Wilson, 1998).

Late payment can be asserted as a function of poor business and credit management practice (Howorth and Wilson, 1998; Paul, 2007). Where there is scope for disputing the quality of the supplier's products/services or after-sales service then the customer is likely to do so and withhold payment until satisfied. This may be perceived as a valid practice by the customer but as late payment by the supplier (Wilson, 2008). Extending credit to customers without establishing the credit terms in advance with the customer or without even specifying a payment date could gives rise to possible disputes surrounding the due date and precipitates uncertainty about the timing of cash-inflows resulting in late collection from debtors. Disputes should be identified and resolved quickly and 'excuses' for payment delays minimised or eliminated.

Good credit management practice would ensure that credit terms, credit limits and credit periods are clearly established with the customer prior to any trade and that goods and invoices are supplied as pre-agreed and payments are received within agreed upon terms; credit checking to establish the financial health, risk and creditworthiness of the customer is important and credit management tools such as credit scoring system could be used to facilitate credit evaluation (Wilson, 2008). On the other hand, customers that do not manage their own working capital well may not always have cash resources available to pay creditors as debts fall due. Indeed financial and working capital practice (or lack of) has often been cited as being a major reason for late payments between businesses (Wilson, 2008).

Late payments and bad debts increase as the economy moves into recession (Wilson, 2008). Subsets of small businesses that overtrade as the economy moves into growth are potential late payers. Often trade creditors will not be a priority in the pecking order of creditors as the business attempts to stay afloat and firms in financial difficulty often stretch their creditors in order to alleviate cash-flow problems (Wilson, 2008). Thus, businesses in financial distress will be late payers and suppliers that continue to supply goods on credit will run the increased risk of slow or non-payment from these customers.

Wilson (2008) further asserted that small and growing businesses can get into difficulty with cash-flow and payment when they have difficulty raising external finance from

financial institutions as businesses that are undercapitalised or inappropriately financed have a constant battle with cash-flow.

2.11.3 Knowledge Gap on the Issues of Late Payment and Credit Period Disclosure

Delayed payment has become a major factor behind the business failure rate, especially for smaller firms and too many companies still fail because of poor credit management (Perrin, 1998). In Malaysia, several recent corporate scandals (Transmile, Megan Media) were surrounded by the issue of long day sales outstanding (DSO) in the receivables (The Edge, July 2007). Despite the fact that in Malaysia, the most common credit period or term for business-to-business (B2B) is between 30 to 90 days,[11] it is reported that there are 177 Main and Second-board public-listed companies (PLCs) or approximately 18% of the PLCs in Malaysia with receivables amounting to at least 50% of their sales based on financial year ending 2006/2007 (The Edge, July 2007). This translates to an average collection period or DSO of more than 180 days, which is at least twice as long as the normal credit period granted. This gap between the DSO and the average credit period granted (disclosed in the audited financial statements of these respective companies) pinpoints the issue relating to late collection of receivables in Malaysia.

This gap warrants further investigation in this study, as this is an apparent knowledge gap in the area of trade credit management in Malaysia, specifically, and the world at large. Unlike laws, regulations or practices in developed countries, such as the US and UK,[12]

[11] www.intrum.com

[12] In the UK, in respect of payment to suppliers, for example, the amendments to the UK Companies Act 1985 in 1997 introduced the disclosure of policy on the payment of creditors under Part VI Section 12 of the Companies Act 1985 (Directors' Report) (Statement Payment Practice) Regulations 1997.

where DSO and the average credit period granted are mandatory disclosures in the financial statements of listed entities, such requirements and the related financial reporting standards (IFRS 7) are not yet mandated in Malaysia. KPMG Malaysia (2008, p. 5) reports that many companies will find such disclosures onerous: conventionally, many entities have regarded ageing analysis as one of their "top secrets". At present, only a handful of outsiders have access to the ageing analysis (e.g. auditors, bankers) of a company and, as such, without mandatory requirements, some companies may opt not to disclose as some deem such disclosure may divulge their trade secrets (KPMG, 2008).

The financial reporting of Malaysian public-listed companies is in accordance with the International Financial Reporting Standards (IFRS) but cognizance must be taken as several standards have yet to be implemented such as IFRS 7 – Financial Instruments: Disclosures and IFRS 139 – Financial Instruments: Recognition and Measurement.[13] Nevertheless, the majority of the companies in Malaysia, whether listed or unlisted, have been reporting the average credit period granted/received to/from trade debtors/trade creditors in accordance with approved accounting standards issued or adopted by the Malaysian Accounting Standards Board (MASB). As trade credit is a sensitive subject matter, it is expected that there would be some implementation issues on such disclosure requirements (KPMG, 2008).

[13] IFRS 7 and IFRS 139 are known as FRS 7 and FRS 139 in Malaysia (IAS 39 in UK). In Malaysia, these two financial reporting standards will only be effective on 1 January 2010 onwards, as announced by the Malaysian Accounting Standards Board (MASB).

2.11.4 Combating Late Payment

Many argue that the problem of overdue accounts can be addressed by improving credit management (Institute of Directors, 1993; Wilson *et al.*, 1996; Wilson and Summers, 2002). Christie *et al.* (1991) argue that credit management should generate consistent credit decisions while Wilson *et al.* (1995) see credit management as a core part of corporate strategy. Peel and Wilson (1996) suggest that proactive trade credit management from the outset could prevent late payment problems. Others stress the role of credit policy formulation and application.

According to Wilson (2008), to improve the late payment arising from the dominant bargaining positions of customers, several measures could be implemented: education and training in credit and financial management and improvements in the flow of finance to SMEs would help, as would macro-economic policies that avoid boom and bust and consequent high levels of business failure and financial distress. In developed countries such as the UK and EU, late payment legislations have been implemented to tackle late payment issues and these are discussed in the following sub-sections.

2.11.5 Late Payment Legislation and Other Measures in Other Countries

A literature review of late payment legislation and other measures to combat late payment in other countries, such as the UK and EU, is discussed in this section before reviewing the current position in the Malaysian environment in Section 2.12 to facilitate the identification of the gaps between developed countries and developing countries such as Malaysia.

2.11.5.1 Late Payment of Commercial Debts (Interest) Act, 1998, UK

The Green Paper (1997) set out the government's aim to improve the payment culture amongst UK businesses and, subsequently, the UK government introduced the Late Payment of Commercial Debts (Interest) Act 1998 entitling firms to claim a statutory right to interest on late payment of trade debts. This was to be phased in over four years from 1998 to 2002 starting with SMEs eligibility to charge interest to large companies. By August 2002 the late payment legislation provided all businesses and the public sector with four entitlements: 1) The right to claim interest for late payment; 2) The right to claim reasonable debt recovery costs, unless the supplier has acted unreasonably; 3) The right to challenge contractual terms that do not provide a substantial remedy against late payment, and 4) The right for representative bodies to challenge contractual terms that are grossly unfair on behalf of SMEs. The Legislation was revised to bring it into line with the EU directive (See section 2.11.5.2 below).

2.11.5.2 The UK Companies Act 1985 (as amended)

The Companies Act 1985 requires a statement by large companies in their directors' report on the company's policy and practice on payment to its suppliers under the 1997 Regulation.[14] PLCs (and PLC subsidiaries which qualify as large companies) are required to disclose their policy on the payment of trade creditors in the United Kingdom by the 1997 Regulation, which establishes that companies should settle the terms of payment with suppliers when agreeing the terms of each transaction, ensuring that those suppliers

[14] The 1997 Regulation under Part VI Section 12 of the Companies Act 1985 (Directors' Report) (Statement Payment Practice) Regulations 1997 requires firms to disclose their payment policy in their Annual Report. (Director's Report).

are made aware of the terms of payment, and abiding by those terms (Cowton and Leire, 2009).

The problem was that although many large companies did comply, others complied only with the requirement to state their policy and did not state their actual performance (Wilson, 2008). Specifically, the 1997 Regulation describes some aspects of disclosure to explain the relationship with suppliers, whether they have signed a Payment Code[15] and disclose the days that they use to pay suppliers (Cowton and Leire, 2009). Using UK data from 2007, Cowton and Leire (2009) find that the theoretical view that signing a payment code and being a FTSE4Good[16] firm are linked to being better payers is not supported by statistical evidence.

By exposing late payers through self-disclosure in the financial statements and if all companies complied with it, this would help to transform the culture of payment among large businesses. Another proposal put forward for change included the introduction of a requirement for holding companies to produce a statement about the policy and practice on payment of suppliers of all the companies within the holding group as it is argued that many holding companies use this loophole to avoid reporting such a statement in the Directors Report (Wilson, 2008).

[15] The Prompt Payment Code is sponsored, hosted and administered by the Institute of Credit Management (ICM) on behalf of BERR and is supported by the RBS (Royal Bank of Scotland) and NatWest. (12 December 2008), Recently, it has been supported by Barclays and HSBC as well.

[16] FTSE4Good was launched in July 2001 and was designed to identify companies that meet a range of corporate social responsibility criteria. A committee of independent practitioners review the indices periodically to ensure that the index accurately reflects the best practices. The inclusion of firms in the index is based on five criteria – environmental, social-stakeholder, human rights, supply chain labour standards and countering bribery.

Finally, the results of a study in the UK by Paul (2007) show that despite the introduction of the late payment legislation, payment periods continued to lengthen and payment times worsen despite economic recovery. Cowton and Leire (2009) concluded that membership of FTSE4Good or Signing a Payment Code is enough to meet the requirements of the 1997 Regulation but not for being a better payer and paying suppliers quickly. These findings raise doubts related to the use of payment codes or the use of the inclusion in FTSE4Good of the firms as indicators to identify quick payers.

2.11.5.3 Other Measures in the UK

The Better Payment Practice Group (BPPG) was set-up in 1997, as a partnership between the public and private sectors with the aim of improving the payment culture of the UK business community and reducing the incidence of late payment of commercial debt. BBPG is a consortium of small business support and representative organisations, the Government and other interested bodies.[17]

BPPG research on late payment was incorporated into a guide to effective credit management – 'Better Payment Practice: a guide to credit management' published by the Department of Trade and Industry (DTI), UK on behalf of the Better Payment Practice Group. It provided straightforward guidance and advice on how to get paid on time.

2.11.5.4 EU Directive on Late Payment

On 8 August 2000, Directive 2000/35/EC of the European Parliament and of the Council on combating late payment in commercial transactions was published in the Official Journal L 200, and took effect on the 8 August 2002, after a two-year grace period for

[17] Source: http://www.payontime.co.uk

member countries to get prepared. This Directive aims to encourage enterprises and public authorities in the member states to comply with payment deadlines in commercial transactions in order to ensure the smooth functioning of the single market. The existence of this gap was confirmed by various surveys at that time, which found that 21% of businesses would export more if payment delays were shorter. Surveys by Grant Thornton[18] in 2000 showed that in six member states of the EU, more than 40% of invoices were still unpaid after 60 days. The Directive was designed to remedy this situation and to ensure that the sellers of goods and the providers of services would have a number of instruments at their disposal that permit them to obtain payment on time (Wilson, 2008).

It is interesting to note that this EU Directive stipulates the credit terms for their member states at 30 days (a maximum time limit is 60 days by those specifically determined by the member state's national legislation). The due date for payment is in principle 30 days from the receipt of the invoice or, in the absence of an invoice, 30 days from the receipt of the goods/services, unless the contracting parties make an express decision to the contrary. Nevertheless, any agreement on the date of payment must comply with the minimum requirements laid down by this Directive unless it is grossly unfair. The time limit can be a maximum of 60 days for certain contracts specifically determined by national legislation. Interest on late payment is payable from the day following the stipulated payment deadline.[19]

[18] Grant Thornton International European Business Survey, CIMA, (2000)
[19] http://europa.eu/legislation_summaries/internal_market/single_market_services/financial_services_banking/l24197_en.htm

2.12 THE MALAYSIAN POSITION ON LATE PAYMENT OF COMMERCIAL DEBTS

Malaysia provides an interesting case study. It is a developing country and a member of the Commonwealth countries. Most of its legislations are modelled on the British Law prior to the attainment of its independence in 1957. Over time, however, a significant part of the legislation has been carved out by local legislators taking into account the development in other countries, especially developed countries. Interestingly, however, in the area of late payment of commercial debts or trade credit management in general, there is no similar development in the regulation.

In the area of trade credit management and late payment, unlike more developed countries, there is no regulatory authority that provides the oversight. For trade financing provided by banks, the Central Bank of Malaysia (BNM) plays a pivotal role in the development of the financial services sector. Whereas, the capital market development under the purview of the Securities Commission (SC) has seen comprehensive legislation to encourage development and supervision of the capital market industry. As such, in the absence of legal and regulatory framework for late payment of commercial debts, this study on trade credit management in Malaysia provides useful insights into the determinants of trade credit. This situation could be similar in other emerging economies.

Unlike the UK and EU that introduced late payment legislation in 1998 and 2000, respectively, there is no legislation pertaining to late payment of commercial debts in

Malaysia to give the statutory rights to suppliers to charge late payment interest in the event of delays in payment of debts. However, suppliers do occasionally charge overdue interest or non-compounded financial charges of between 1.2% to 2% (most common at 1.5% as compared to 8% above the bank rate for the UK) per month on the principal sum due and outstanding under commercial business arrangement on a willing buyer and willing seller basis as part of commercial business terms.[20] If the debts owing are pursued in the Malaysian Court, the statutory default interest of 8% per annum applies on the judgment sum until full settlement.[21]

In sum, there is a gap in the Malaysian commercial trade, manufacturing sector in general and the business sector on the area of trade credit. It is plausible that trade credit information is not adequately compiled or monitored by the Malaysian authorities or regulators. This is evidenced by the unavailability of trade credit information in the Malaysian Balance of Payments.[22] With such inadequacy, no policy, regulation or legislation could be drawn up for implementation and compliance.

[20] This overdue interest charges levied on overdue debts have always been subject to legal contention when the matter was pursued into litigation. Under the Malaysian Banking and Financial Institutions Acts, the maximum interest charge (compounding) allowed is 18% per annum. Also, trade suppliers are not eligible to charge this statutory interest as they are not financial institutions governed under the Acts. The other body that could charge interest are moneylenders governed by the Moneylenders Acts.

[21] Order 42 rule 12 Rules of the High Court, 1980. Also refer to the Malaysian Civil Law Act, 1959 Section 11. "Power of Courts to award interest on debts and damages."

[22] According to Clause 413 of the Balance of Payments Manual published by IMF (available at http://www.imf.org/external/np/sta/bop/bopman.pdf, accessed on 24 January 2010), in the absence of actual data, trade credit may be measured by the difference between entries for the underlying transactions in goods and services, which are recorded as of the dates when ownership changes, and the entries for payments related to these transactions. This measurement is used till to-date (see Malaysian 2009 Quarter 3 Balance of Payments).

2.13 ASSOCIATION BETWEEN LATE PAYMENT AND PROFITABILITY

This study also aims to prove and highlight the issue of late payment and attempts to associate the impact of late payment on profitability using published financial data to obtain empirical findings in the Malaysian manufacturing sector. Nasruddin (2008) argued that profitability of a company is dependent on the frequency of reinvestment or turnover of its capital and frequent turnover is not possible if collections are slow (as late collections deny the company the use of its own capital). Accordingly, the DSO or credit collection period is an important factor that influences a company's overall performance (Nasruddin, 2008).

The final stage of this study investigates the association between late payment by debtors and companies' performance in the Malaysian public-listed manufacturing companies; 287 companies on the Main Board and Second Board of Bursa Malaysia are examined. This represents the large and medium-sized companies in Malaysia (as opposed to SMEs) studied by Nasruddin (2008). For this the study published financial statements released on the bourse website that are mostly prepared in accordance with the Malaysian approved accounting standards that are closely aligned with the International Financial Reporting Standards (IFRS). In general, companies would want to collect receivables sooner rather than later as this will enable them to increase their frequency of reinvestment or turnover of capital (Nasruddin, 2008). Late payment is not only reflected in the inefficiency of the credit department but also in the increased collection costs, which increases the risk that payment will never occur (Nasruddin, 2008).

2.14 IMPACT OF LATE PAYMENT ON SUPPLIERS AND THE IMPORTANCE OF DSO ON PROFITABILITY

Chittenden and Bragg (1997) suggest that late payment by customers requires an increase in working capital for the supplying company. 'To finance the working capital requirement (if delays in payments occurred), companies could raise financing from one of the main sources below:

- Increased debt: higher interest payments reduce profits and borrowing capacity;
- Increased equity: dilutes and devalues existing investors' stakes if stockholders returns are unchanged;
- Reduced capital investment in the future: limiting sellers' long-term business performance;
- Increase in the length (and therefore the amount) of trade credit taken from suppliers' (Chittenden and Bragg, 1997, p. 28).

Accordingly, if the working capital could not be increased using equity or debts owing to financial constraints, increased payment delays from customers must be balanced by delaying payments to suppliers. Owing to the late payment multiplier and the fact that accounts payable are normally less than accounts receivable, in such circumstances, keeping working capital constant is only possible to a certain extent as the sanction point for suppliers is sooner that the point at which sanctions are applied to debtors (Chittenden and Bragg, 1997).

In a situation where the increase in debts or equity is a constraint and reduces investment (such as inventory) in the future and constraints the long-term performance, the only way out is to improve the DSO or the collection period from accounts receivable. The collection period is, therefore, an important factor that may influence a company's overall performance (Nasruddin, 2008). This study contributes to the extant literature by investigating the association between late payment from customers and the profitability of Malaysian manufacturing companies.

2.15 CONCLUSION

This chapter reviews the theoretical aspects of trade credit management and examines theories of credit supply (mainly), demand (trade credit use), credit terms and their variation. Extant reviews of the determinants of trade credit extension in other parts of the world are performed. As locally available literature is very limited, a synthesis of previous extant literature indicates the importance of the management of trade credit supply (extension) and identification of the determinants of the trade credit extension in Malaysia, in particular.

The chapter also reviews the theoretical aspects of late payment from debtors and its causes, which are of major concern for businesses today. A synthesis of prior literature indicates the importance of combating late payment and its impact on profitability, which requires urgent attention in Malaysia. This study identified the knowledge gap between

late payment and credit period disclosure of public-listed manufacturing companies in Malaysia.

The next chapter discusses the preliminary exploratory study research methodology and the findings on the trade credit management practices in Malaysia, as well as the issues facing the trade credit extension in the Malaysian manufacturing sector.

CHAPTER 3

PHASE ONE: PRELIMINARY EXPLORATORY STUDY ON TRADE CREDIT MANAGEMENT AND LATE PAYMENT IN MALAYSIA

3.1 INTRODUCTION

The overview of trade credit management locally and globally provides a fundamental background in developing the research framework for this study. After establishing the initial exploratory research questions on trade credit management practices and late payment in Malaysia, this chapter will identify the ways the exploratory study is conducted.

An exploratory sequential mixed method (Creswell and Clark, 2007) is employed in this study, which consists of two phases of investigation. The design is characterized by an initial phase of qualitative data collection and analysis, followed by a phase of quantitative data collection and analysis (Creswell, 2003). It begins with a qualitative approach[23], collecting and analysing the data obtained from survey questionnaires and interviews to gain understanding of the trade credit management issues and practices in Malaysia and, subsequently, empirical investigations are performed to provide empirical evidence to the exploratory findings.

[23] Some researcher use quantitative approach using surveys which involves collecting and analysing numerical data and applying statistical tests. This study uses the qualitative approach.

This chapter deals with the process and methodology and describes the research design used. It begins by discussing the approaches used in the data interpretation. It follows with a discussion on the data collection strategy. The rest of the discussion in this chapter is organised as follows: Section 3.2 describes the methodology of the preliminary exploratory research. Based on the methodology and methods discussed earlier, Section 3.3 presents the results of this initial exploratory study. Section 3.4 articulates the issues identified in Malaysian trade credit management. Section 3.5 explores the reasons for late payment of debts in Malaysia whilst section 3.6 discusses the factors influencing the granting of credit terms to customers and Section 3.7 concludes the chapter with a summary of findings.

3.2 EXPLORATORY STUDY RESEARCH METHODOLOGY

Preliminary exploratory research is conducted into a research problem or issue when there are very few or no earlier studies to which one can refer for information about the issue or problem. In exploratory research, the focus is on gaining insights and familiarity with the subject area for more rigorous investigation at a later stage (Hussey and Hussey, 1997).

Exploratory research is ‘an initial research conducted to clarify and define the nature of a problem’ (Zikmund, 1997 p.102). Usually exploratory research is conducted with the expectation that subsequent research will be required to provide conclusive research, i.e. conclusive evidence to determine a particular course of action is not the purpose of exploratory research (Zikmund, 1997 p.102). Exploratory studies tend towards loose

structures with the objective of discovering future research tasks. The immediate purpose of exploration is usually to develop hypotheses or questions for further research (Cooper and Schindler, 2003).

Whilst the purpose of the initial exploratory study is a phenomenological study, the subsequent study after the exploratory study is more of a positivist study, based on available facts and figures, as this topic is a relatively unexplored subject matter in Malaysia. Teh (2000) noted in his study concerning trade credit in Malaysia the difficulty in obtaining primary data through questionnaires owing to the sensitive subject matter.

3.2.1 Objectives of Exploratory Study

The purpose of this exploratory study is to explore the existing practices and applications of credit management in the Malaysian commercial environment, to understand the current issues concerning commercial credit management in Malaysia and provide insights into the reasons for late payment, the factors that influence the credit period granted and the late payment of debts in Malaysia.

This exploratory study is undertaken with the following aims:

a. To explore the existing practices and applications of credit management in the Malaysian commercial environment.

b. To understand the current issues of commercial credit management in Malaysia.

c. To provide insights into the reasons for late payment and the factors that influence the credit period granted and the late payment of debts in Malaysia.

This exploratory study aims to review credit management practices within a small sample of medium to large Malaysian companies and to identify current trade credit management issues in Malaysia.

3.2.2 Exploratory Study Methodology

Ten (10) large Malaysian companies were targeted as the sample for the preliminary exploratory study on trade credit management. Large Malaysian companies refer to those with a turnover of not less than RM25 million per annum. These companies can be publicly listed on the KLSE or non-listed entities in Malaysia.

As this study explores the subject of trade credit management in Malaysia, and with only 10 target samples, electronic mails were sent to members of the Association of Credit Management Malaysia (ACMM), which, based on its mailing list in September 2005, has close to 300 members. Members of the association were invited to participate in the exploratory study with an assurance that their identity would remain confidential. Participation in the study would require providing some insights of the credit management practices in their respective company, and their industry on common trade credit arrangements concerning selling and customer ordering practices, credit management policies and practices, current issues and the determinants of trade credit and late payment.

The following three questions were explored in the initial stage:

Q1) What are the common credit arrangements concerning selling and customer ordering practices in your company?

Q2) What are the current issues concerning credit management in your company?

Q3) Why is there late payment of debts and what influences the credit period granted to your customers?

As anticipated, the response was very low and slow. Accordingly, some of the large Malaysian corporations (public listed and non-public listed) were approached until the target response (5 public-listed companies and 5 non-listed companies) was achieved. For each response received, interviews were made in person and/or through telephone/emails in order to seek clarification and to obtain further information, particularly on current issues in credit management and factors influencing the credit terms granted to customers.

The respondents' qualitative responses were further analyzed and under a separate relevant caption to study the commonness, similarity or differences among the ten respondents in Malaysia, were compared to the European Payment Index (EPI) findings on European Union (EU) companies.

Searches were made with a local credit information agency and with Bursa Malaysia's website on listed companies' quarterly announcements and annual reports to verify the details of the company and financial figures provided by respondents to ensure that they

were consistent and free of error. Statistical computation and analysis on days sales outstanding (DSO) were performed and analysis in comparison to available information research. Further follow-ups with respondents were made if the DSO computed was much higher than that stated for the credit period allowed – evidence of occurrence of late payment in the Malaysian environment.

3.3 EXPLORATORY STUDY RESULTS

This section discusses the results from the exploratory study on ten corporations in Malaysia. The profile of the sample is provided first followed by a discussion on the common credit terms and the average collection period or DSO; then the significance of trade receivables compared to other assets in the balance sheet is deliberated upon with a brief discussion concerning the financing of the trade credit granted and working capital. The section concludes with the computation of days overdue to pave the way for further investigations into the late payment issue.

3.3.1 Profile of the Sample

As shown in Table 3.1 below, five out of the ten respondents are companies listed on the Main Board of Bursa Malaysia, the Kuala Lumpur Stock Exchange and the remaining respondents are small and medium-sized multinational corporations with operations in other countries.

Table 3.1: Statistics of Respondents by Type and Industry Sectors

Respondent's Type and Industry Sector	Local Public-listed Companies	Multi National Corporations (MNC)	Total Respondents per Sector
Manufacturing	2	3	5
Wholesale/Trading	3	1	4
Services	-	1	1
Total	5	5	10

(Source: Compiled by author)

Table 3.2 depicts the respondents' principal activities of their business out of which four respondents are related to building materials trade either as a manufacturer or as a wholesaler or trader. Two respondents are involved in pharmaceutical businesses, one as a manufacturer and the other a wholesaler, while the rest of the respondents are involved in a single line of business including manufacturer of confectionary, wholesaler of electrical home appliances, one respondent is in electronic manufacturing services and the last runs a courier delivery service.

3.3.2 Common Credit Terms and Average Day Sales Outstanding

Each respondent provided the following information for their financial year ended 2005: the common credit terms given to their debtors, the number of active debtors, the annual turnover and the accounts receivable outstanding as shown in columns (a) to (d) in Table 3.3.

Table 3.2: Principal Business Activity of Respondents

Respondents	Principal Activity	Local (PLC) Corporations	Multinational Corporations
	Food (FMCG)		
1. FoodMaCo	- Manufacturing	-	1
	Building Materials		
2. BuMaTraCo	- Trading	1	-
3. PipeTraCo	- Wholesale/Trading: Pipes	1	-
4. BuMaMaCo	- Manufacturer	-	1
5. PaintMaCo	- Manufacturer - Coatings	-	1
	Pharmaceuticals		
6. PharMaCo	- Manufacturing	1	-
7. PharTraCo	- Wholesale/Trading	-	1
	Home Appliances		
8. ElecTraCo	- Wholesale/Trading	1	-
9. MouldMaCo	**Electronic Manufacturing Services (EMS)**	1	-
10. CouSerCo	**Courier Services**	-	1
	Total	5	5

(Source: Complied by author)

Then the following indicators were computed based on the information provided by the respondents. The indicators are the commonly used key performance indicators (KPI) for accounts receivable[24] and are used in this study to make performance comparisons among the respondents for their operational efficiency:

(a) **Average revenue per debtor**, which is derived from the annual revenue over the year-end debtors' balance.

[24] Source: http://www.crfonline.org/KpiCalculator/CalculatorAndTools.htm

(b) **Average debts per debtor**, which is derived from the year end debtor balance over the number of active debtors.

(c) **Percentage of trade debtors over revenue,** which is derived from the year end debtors' balance over the annual turnover.

(d) **Days sales outstanding (DSO),** which is derived from the year end debtors' balance over the annual turnover times 365 days.

As depicted in Table 3.3, accounts receivable (AR) in relation to the revenue are significant and range between 11% and 30% of the annual revenue for the financial year ended 2005. Based on the 10 respondents, the results above show that the most common credit terms of 30 to 90 days are consistent with Table 1.1. Nevertheless, and as expected, the average computed days outstanding is slightly over the average credit period of 60 days, indicating the possibility of the late collection of payment from debtors in certain companies, especially when it is examined at company and sector level.

MouldMaCo has the lowest DSO of 41 days (as compared to their common credit terms of 60 days) with the lowest number of customers but with the highest turnover. This is due to the nature of their business in electronic manufacturing services (EMS) serving global electronic companies, which is of high value and high volume with a limited number of players and specializes in make-to-order components. Furthermore, the DSO is much lower than their common credit period granted as their overseas customers pay by banks' trade financing, for example using letter of credit (LC) instead of trade credit.

Table 3.3: Exploratory Results on Common Credit Terms and Average Days Outstanding

Company (Financial year ended 2005)	Most Common Credit Terms (days)	Number of Accounts Receivables (AR)	Annual Turnover in RM Million	Year-end AR in RM million	Average Revenue per Customer in RM	Average Debts Outstanding per Customer RM	Percentage of AR over Turnover %	Days Sales Outstanding ((DSO) [= Average Collection Period] (days)
	a	b	c	d	e = c / b	f = d / b	g = d / c	h = d / c x 365
1. FoodMaCo	45 – 60	1,000	260	34	260,000	340,000	13%	48 days
2. BuMaTraCo	30 – 90	1,200	200	60	166,667	500,000	30%	110 days
3. PipeTraCo	60 – 90	1,500	181	35	120,667	231,333	19%	70 days
4. BuMaMaCo	30 – 60	400	38	10	95,000	250,000	26%	96 days
5. PaintMaCo	60 - 90	180	40	10	222,222	555,556	25%	91 days
6. PharMaCo	60	4,000	94	25	23,500	62,500	27%	97 days
7. PharTraCo	60	200	60	13	300,000	625,000	21%	76 days
8. ElecTraCo	60	500	49	9	98,000	172,000	18%	64 days
9. MouldMaCo	60	100	672	75	672,000	748,000	11%	41 days
10. CouSerCo	30	3,000	50	8	16,667	25,000	15%	55 days
Average (all 10 samples)	30 - 90*	12,080	1,644	279	136,093	23,096	17%	62 days
Average (9 samples excluding MouldMaCo)	30 - 90*	11,980	972	204	81,135	17,028	21%	77 days

* 60 days on simple average.

(Source: Compiled by author)

The sales are mainly secured against LC and MouldMaCo's credit extensions are mainly to local customers and are only a minority portion of their revenue. As such, if MouldMaCo is excluded from the sample, the average collection period or DSO is 77 days, collection is 17 days late as compared to the simple average of common credit terms of 60 days.

As shown in Table 3.3, building materials and construction related manufacturers, wholesalers and traders are those respondents that have high days outstanding owing to the nature and slow payments in their sector during the period under review. All the respondents in this sector, except for the wholesaler, PipeTraCo, who has good credit management practices and is less exposed to the sub-contractors, as they are the intermediary (middleman) in the back-to-back supply-chain, have days outstanding higher than the common credit period granted. BuMaTraCo, the building materials suppliers with a DSO of 110 days suffered the worst collection days whilst BuMaMaCo and PaintMaCo, the manufacturers of construction materials and coatings, respectively, encountered long average collection period of 96 days and 90 days, respectively. The construction and building materials sectors are affected by a longer collection period as projects are of longer duration and involve many parties; problems in payment at the higher end of the hierarchy will lead to a serious knock-on cash flow problem down the chain of contracts.[25]

[25] Source: A Report on the Proposal for a Malaysian Construction Industry Payment and Adjudication Act, December 2008, Construction Industry Development Board Malaysia (http://www.cidb.gov.my/v6/ files/ cipaa08_0.pdf)

Both respondents from the pharmaceutical industry have also suffered from prolonged days outstanding. Surprisingly, contrary to the expectation that manufacturing companies have shorter DSO than trading companies, the pharmaceutical manufacturer suffered longer DSO (97 days) than the pharmaceutical trading company with a DSO of 76 days. Interviews with the two respondents divulged that the local manufacturer is more aggressive and adopts a credit risk-taking approach by extending higher credit for more revenue. It appears that PharMaCo is using longer credit terms to increase the overall profits by expanding sales volume and retaining customers as a way of price discrimination in kind. On the other hand, the MNC pharmaceutical trading company is more risk-adverse and as part of a global MNC, the company is subjected to stringent group credit control and management guidelines.

The same goes for the respondent from the courier service industry, which faces stiff competition in the overcrowded market that leaves them no choice but to use longer credit terms to attract customers and to remain competitive.

In conclusion, based on the simple average credit terms of 60 days in Malaysian businesses, the average collection period (ACP) or DSO has exceeded the credit terms, implying that Malaysian businesses suffer from late collection of payment from debtors. Different companies and different sectors have different DSO due to the inherent factors that are specific to the industry. It appears that Malaysian businesses give longer credit periods compared to the global standard and suffer from late payment, These two

negative effects, if neglected, will have a double impact on the bottom-line of the companies.

3.3.3 Accounts Receivable Compared to Other Assets

The significance of AR over the total current assets and total assets were not available for all the respondents as the required information for the computation of investment in accounts receivable are not shown in the company searches with the Companies Commission of Malaysia. The breakdown of the current assets and total assets of companies are not shown in the company searches and, thus, such information is not readily available for non-listed companies as only summarized financial information are provided, i.e., accounts receivable figures are included in the category of total current assets.

Accordingly, the significance of AR over the total current assets and total assets were computed in four public-listed companies in this study where the data is published and readily available. As shown in Table 3.4, trade debtors constitute a significant asset on the balance sheet, ranging from 11% to 38% of the total assets and 27% to 45% of the total current assets of the respondent.

As such, the trade debtors figure is one of the most important components of working capital management, followed by inventory. Late payment from trade debtors would increase the trade debtor's ratio and this implies that more cash is tied up in receivables and, therefore, their management is critical for the working capital cycle of companies.

Table 3.4: Accounts Receivable Compared to Other Assets

Public-listed Company	Debtors (AR) RM'000	Current Assets and ARCA RM'000	Fixed Assets and Investment RM'000	Total Assets and ARTA RM'000	Liabilities RM'000	Net Assets and ARNA RM'000	DSO** or Average Collection Period (ACP)
MouldMaCo	74,629	203,400 37%	322,034	525,434 14%	(211,435)	313,999 24%	41 days
ElecTraCo*	18,025	67,804 27%	102,046	169,850 11%	(49,073)	120,777 15%	64 days
PharMaCo	25,078	93,439 27%	58,134	151,573 17%	(7,980)	143,593 17%	97 days
BuildTraCo*	131,057	289,452 45%	54,135	343,587 38%	(181,225)	162,362 81%	110 days

Source: www.bursamalaysia.com
Notes:
* Respondents are part of the PLC. Figures shown are the PLC Consolidated figures based on the published annual reports for the year ended in 2005.
** The average Days Sales Outstanding (DSO) is derived from Table 3.4 above.

3.3.4 Financing Trade Credit Granted in the Context of Working Capital

Although this exploratory study concerns trade credit extension (or supply-side) and late payments, it is worth considering how the trade credit extended is being financed in order to understand the whole trade credit cycle in the context of working capital management. The financing of trade credit supply can be from internal (such as equity capital) or external sources such as accounts payable, loans and banks financing. The proportion of companies financing of the four public-listed companies in Malaysia was compared to the EU 25 countries small and medium-sized enterprises (EU25 SME) as documented by the EU25 SME 2005 report. The comparisons are shown in Table 3.5.

Table 3.5: Comparison of between EU25 SME Financing with Malaysian PLCs

Typical Company Financing	EU25 SME	MouldMaCo	ElecTraCo	PharMaCo	BuMaTraCo
1. Accounts Payable (Trade Credit used)	25%	16%	21%	2%	25%
2. Bank Financing	25%	27%	7%	0%	23%
3. Loans (other than banks)	10%	7%	1%	0%	0%
4. Other Liabilities	10%	3%	2%	7%	4%
5. Equity Capital	30%	47%	70%	91%	47%
Total Assets Financing	100%	100%	100%	100%	100%

(Source: Compiled by author based on collation of secondary information)

Table 3.5 shows that the accounts payable financing of ElecTraCo and BuMaTraCo are quite similar to EU25 SME except for PharMaCo, which has very low (2%) financing through accounts payable. The latter seems to rely heavily on its equity capital (91%) instead of external bank financing. With non-interest financing, PharMaCo could use trade credit as a marketing tool and offer more generous credit terms to increase sales volume and, thus, improve earnings. Other than PharMaCo, companies would prefer to match their trade credit extension with trade credit use in order to be 'self-financing' to minimize financing cost.

ElecTraCo seems to rely heavily (70%) on equity capital and has low bank borrowings of 7% as they have ample shareholders equity to fund their operations. A distinctive

difference between EU25 SME and the Malaysian public-listed companies in the sample is the ease of raising funds from the capital market by public-listed companies with interest rates lower than bank financing.

In the EU25 SME 2005 report, it was stated that 45% of accounts receivable were overdue in 2005 (as compared to the average credit period granted). Changes in the rules on the financial market from Basel I to Basel II have resulted in marginal customers finding it difficult to obtain financing. Payment duration increased again in 2005 with the trend of settling invoices even later, from 57.3 days in 2003 to 58.7 days in 2004, Pan-European's average rose to 59.2 days in 2005.

During the same year in Quarter 3, Infocredit D&B Malaysia conducted a survey on the credit situation in Malaysia (Credence by Infocredit, 2005). It used official sources and randomly selected 300 companies from their database with emphasis on payment terms and pattern experienced by respondents. The survey revealed a generally sluggish payment cycle among enterprises and the payment pattern remained slow with an average DSO of 86 days against the average credit terms of 60 days across all industries (Credence by Infocredit, 2005). These findings are consistent with those of the EU25 SME that experiencing more delays in collecting their trade debtors.

3.3.5 Computing the Days Overdue

In order to investigate the late payment as a whole, average days overdue were computed based on the longest credit terms allowed (so as to avoid any ambiguity as to the absolute

common credit terms for the computation of overdue days) and is shown in Table 3.6. The above results from the computation of days overdue, based on the longest credit period allowed, show that seven out of the ten respondents suffered from late payment. The respondents in the pharmaceutical businesses, PharMaCo and PharTraCO, the building materials businesses, BuMaMaCo and BuMaTraCo, and the respondent in the service industry, CourSerCo experience delays in payments that prolong their maximum credit terms by more than two weeks (16 days to 37 days) indicating that the late payment problem is likely to be prevalent in Malaysian companies.

Respondents in the construction and building materials, and the pharmaceutical sectors explain that the late payments are due to economics as well as external factors that are beyond their control (such as market competition, disease outbreak during the period under review) and, thus, their own debtors are not getting paid in a prompt manner. The exploratory evidence, thus far, indicates the need to uncover these credit mismanagement and late payment problems, and leads us to believe that further substantive empirical study is critical to explore the main determinants of trade credit extension and late payment in Malaysian non-financial companies. This is done in Phase 2.

In this exploratory study, our respondents have also identified several other issues relating to problems concerning credit management, reasons for late payments of debts and factors influencing the granting of credit terms to customers. These issues are now discussed in the following sections.

Table 3.6: Days Overdue based on the Longest Credit Period Granted

Respondent's Name (Financial year ended 2005)	Most Common Cr. Terms (days)	Average Days Sales Outstanding DSO (Days)	Average Days Overdue DOD (Days)	Remarks
1. FoodMaCo	45 – 60	48	-	As a whole on aggregate basis, based on the longest credit terms allowed: No apparent delay issues if compared to longest credit terms allowed of 60 days.
2. BuMaTraCo	30 – 90	110	20	Experiencing delays owing to delays of payments from their clients in subcontracting businesses.
3. PipeTraCo	60 – 90	70	-	DSO shorter than longest cr. Terms owing to prompt payment incentive and good control.
4. BuMaMaCo	30 – 60	96	36	Experiencing delays owing to delays of payments from sub-contractors.
5. PaintMaCo	60 -90	91	1	Slight delays
6. PharMaCo	60	97	37	Delays due to market competition and penetration using longer credit terms to increase sales volume.
7. PharTraCo	60	76	16	Delays owing to earlier SARS bird flu virus outbreak affecting their customers, etc.
8. ElecTraCo	60	64	4	Slight delays due to timing of clearance.
9. MouldMaCo	60	41	-	DSO shorter than credit terms as major customers are on LC term.
10. CouSerCo	30	55	25	Delays due to market competition and elasticity of demand.

(Source: Compiled by author)

3.4 ISSUES CONCERNING CREDIT MANAGEMENT

Four broad categories/themes emerge regarding trade credit management in Malaysia from the analysis of respondents' responses. These comprise: (1) lack of credit information, (2) lack of reliable information, (3) economic factors, and (4) legal/administrative factors.

3.4.1 Lack of Credit Information

Most respondents report that the lack of credit information is prevalent in the Malaysian business environment, especially when credit matters are sensitive in nature. There is concern that credit information may divulge adverse information about their company. This causes them to choose to minimise the dissemination of any credit information. Consequently, the research in the area is hampered. In such cases, additional transaction costs of getting the credit information through other corroborative means would be required by undertaking company searches, credit searches, etc.

PharTraCo, for instance, reports that there is a lack of adequate information made available for credit evaluation. It claims that their sales personnel face difficulty in obtaining financial statements from prospective clients. Apart from past audited accounts, PipeTraCo also finds it difficult to obtain corroborative evidence such as bank statements information and trade reference information as trade referees are reluctant to disclose information about their customers.

Similar difficulties are experienced by PharMaCo who find it impossible to get information from professional clients (such as doctors and pharmacists) who operate in an unincorporated business. With no audited financial statements and no other information made available, continuous credit evaluation is based on past collection patterns. In the same vein, ElecTraCo reports that one of the main issues in credit management is insufficient customer information that makes it impossible to properly manage credit and perform any sort of risk assessment.

3.4.2 Lack of Reliable Information

In addition to difficulty in obtaining credit information, CourSerCo reported that the little information that is made available is often inadequate and not reliable enough to allow screening of customers to assess their creditworthiness. Moreover, BuMaMaCo and PharTraCo claim that the financial data on customers and corporate filing information are not updated in the Companies Commission of Malaysia (CCM) on a timely basis. Furthermore, PharTraCo reports that the audited financial statements made available may not always reflect the true financial position of the client, especially in companies with a complex group structure with transfer pricing on cross-border transactions.[26]

The same reliability issues are observed when using private credit bureaus; PipeTraCo, for instance, claims that the information provided by the private credit bureau, such as

[26] Transfer pricing refers to the pricing of contributions transferred *within* an organization that affect the allocation of the total profit among the parts of the company. Multi-national entities may set transfer prices on cross-border transactions to reduce taxable profits in their jurisdiction. Cross-border transactions are transactions involving two or more countries with different jurisdictions, laws and regulations. From a practical point of view, a cross-border transaction is essentially a large-scale, global undertaking involving many moving variables. Source: Cross-Border Transactions Handbook, Baker and McKenzie (2006).

CTOS, is incomplete and not up-to-date in the same way as for unincorporated companies. Furthermore, BuMaMaCo claims that there is limited access to credit bureau to check on the creditworthiness of customers, especially for private corporations and sole proprietors.

PipeTraCo indicates that it is unable to obtain market intelligence or news on time concerning the adverse credit conditions of their existing or prospective customers for their credit decision making. Consequently, as in the case of PharMaCo, if there is no reliable credit information on some customers, the company manages and controls their sales on an ad-hoc basis, where credit terms are based on each amount of goods released, i.e. the payment for the last delivery must be paid before taking the next order.

3.4.3 Economic Factors

Economics or market factors are cited by many respondents as factors beyond the control of the respondents and are common issues in credit management. CourSerCo, for instance, indicates that their courier service industry in Malaysia is facing a decrease in customer numbers with too many players overcrowding the market. Their business environment is too competitive and as everyone is desperate to take a share of the market, they are willing to compromise credit risk to generate more sales. In addition, courier services are very dependent on economic conditions, therefore, factors such as supply and demand volatility result in customers dragging payments even further.

PharTraCo, on the other hand, reports that it encountered late payments by their feed mixers customers owing to the SARS (‘bird flu’ epidemic) outbreak; their livestock had

to be culled and their customers suffered massif losses and, thus, were unable to pay until the outbreak was over. Consequently, payment took a long time to come and, consequently, their days outstanding deteriorated.

PipeTraCo indicates that the main issue challenging their business of supplying infrastructure, building and construction sectors relates to the fact that they are unable to get their customers to pay promptly within their agreed credit terms. Although their common credit terms are 90 days, customers took advantage of adverse conditions in the construction sector to delay their payments even more. Similarly, PaintMaCo reports that long overdue outstanding amounts that remained unsettled are one of the main issues in their credit management. This is mainly due to the practice of last-in-first-out approach to clearing debts. This practically means that the customer is buying on more current terms and the earlier (old) outstanding balance will be set-off gradually. The long outstanding debts will be resolved if the customers' takings are growing and on an increasing trend as the old debts will taper off eventually.

3.4.4 Legal and Administration Factors

Legal and administrative issues are more of internal credit management issues facing Malaysian non-financial companies. ElecTraCo, for instance, reports that the problem with credit management results from the fact that the credit and collection department suffers from high staff turnover. This means that inexperienced credit personnel have not yet acquired the necessary skills that are required to enable them to collect promptly from customers.

Furthermore, ElecTraCo also experienced a shortage of payment by customers; despite late payment customers deduct the prompt payment discounts when making settlement of accounts. As the prompt payment discount is forfeited and yet the customer deducted the discount when making payment, there is a short-payment for the account. ElecTraCo's credit department would need to take steps to enforce the agreed terms, which would result in a dispute with the customers. Understandably, this would cause conflict with the sales department, which is more interested in sales, and, hence, the credit department behaves more leniently.

Conflict between the sales and credit control departments are apparent as both can have totally different objectives: the sales department's aim is sales maximization whilst the credit department focuses on minimizing bad debts and maximizing collections. As indicated by PaintMaCo there is always a conflict between the credit department and the sales department on credit issues. Similarly, BuMaMaCo reports the same problem and argues that the solution is to strike the right balance between enforcing credit terms and losing sales/customers. However, PaintMaCo posits that more flexibility is required as far as credit control management is concerned (on late payment) and losing business has to be avoided.

On the other hand, BuMaMaCo argues that the compromise or non-compliance of credit terms, credit limit and extended credit period is expected if the company is to achieve the sales target. Despite such compromises to sustain business, it is opined that the sales department is somewhat to be blamed (BuMaMaCo). Similarly, PipeTraCo reveals that in

the credit granting process, the feedback from sales personnel is usually slow. Some sales managers do not even pay a visit to the customer (common practice) to understand and assess their creditworthiness before opening an account. This usually results in late payments or even delinquency.

As far as the legal recovery is concerned, in Malaysia, even after legal actions have been taken and judgements executed, some debts will still not be recoverable, as experienced by ElecTraCo. By the time the legal action is enforced, the defaulters might have absconded or have nothing left, falling short of winding-up or bankruptcy proceedings. Moreover, BuMaMaCo explained that in Malaysia, legal recourse is very slow and costly when it comes to defaulted debt. As such, if the defaulted debts are not significant, it is pointless to seek legal recovery in terms of cost versus benefit justification. To qualify for tax deduction as an allowable expense for debts written-off, it is a common practice to engage solicitors to issue a legal demand letter as a proof of legal action taken and rest the case.

Furthermore, FoodMaCo points out that there is a flaw in the Malaysian companies' legislation in that there are many companies with only nominal RM2 paid-up capital in which it would be easy for the defaulters to just allow the nominal paid-up capital limited liability company to be wound up by their creditors in cases of default.

3.5 REASONS FOR LATE PAYMENT OF DEBTS

Having gained some understanding from the respondents concerning credit issues and based on the analysis, seven main common reasons for late payment by debtors emerge and are discussed in the next section. Based on the respondents views on the main reasons for the late payment by their customers, these can be summarized in the following captions: (1) economic and market factors, (2) internal administrative reasons, (3) unclear payment agreements, (4) inadequate working capital financing, (5) inadequate/too lax dunning system, (6) unsatisfactory customer service, and (8) culture of prolonging payments for undisclosed reasons. The next section elaborates on these reasons further.

3.5.1 Economic and Market Factors

FoodMaCo, the respondent in the fast moving consumer goods (FMCG) industry, states that late payment in their FMCG business depends, to a certain extent, on the demand elasticity of its products. If products are inelastic, customers tend to pay on time to avoid an out-of-stock situation that would impact on their business. However, if the product is elastic, customers may drag payment, especially with a lower inventory turnover period. This explains the reason for some MNCs FMCG companies, which give only 30 days credit as compared to some local FMCG companies. which grant between 60 and 120 days credit to the same customer. Hence, the demand elasticity of the product emerges as an important factor.

Two respondents indicated that economic factors are one of the main reasons for late payment. BuMaTraCo indicated that the slowdown and tight liquidity in the construction sectors resulted in late payments to contractors. Accordingly, the trade credit suppliers suffered the same fate as they are in the same sector and exposed to the same economic cycle. CourSerCo reports that due to overcrowding of the courier service providers in the Malaysian market (competing with large MNC courier providers such as FedEx, UPS, DHL and have referrals clientele worldwide), customers take the opportunity to drag payment on their services over and above the credit period granted. In addition, due to the situation/case where supply is greater than the demand, customers could easily switch to another supplier should the existing one enforce payment terms or interrupt their services owing to late payment. As such, owing to stiff competition, which is a result of an overcrowded market, these service providers are at the mercy of these customers.

Business failure, owing to economic factors, is also stated as one of the reasons for late payment by PipeTraCo due to a vicious cycle. The impact to trade credit provider is due to the disability of the debtors to pay on time as they themselves have not been paid as per the agreed due date (or at all) by their customers or sub-contractors that ran into difficulty regarding payments from their main contractors.

3.5.2 Internal Administrative Reasons

Internal administrative constraints are also one of the reasons for late payment by debtors. Customers that do not pay on time will always put forward reasons such as pending receipt of invoice/s or credit note/s (per FoodMaCo) or missing invoices and statement of accounts being lost in the mail (PipeTraCo).

Unless customers are having cash flow problems or they themselves are not getting paid, it is usually the common objective for all rational businesses to pay on time and replenish or repeat orders to generate more revenue. When a customer who usually pays promptly delays payments, due to reasons beyond the control of the supplier, internal reasons must be looked at seriously in order to find out the reason(s) behind such unusual late payment incidences. More often than not, it is the internal administration/management that impede the process of debt collection.

PipeTraCo explains that their debtors' payment policy is to ensure their invoices are supported with duly signed and acknowledged delivery orders before payment is settled. As for customers in remote/outstation delivery locations, third-party transporters are engaged and the duly acknowledged delivery orders are held by transporters pending submission to the consignors together with the transporters billings.

Timing delays are expected between the delivery of goods by the third-party transporters and the timing of billing if the seller issues an invoice based on duly acknowledged delivery orders like PipeTraCo. In this case, PipeTraCo faces billing delays, especially towards the month-end and when the duly acknowledged delivery orders were returned subsequent to month end for goods delivered towards the end of the preceding month (cut-off). As a result, PipeTraCo's customers receive late invoice for goods sold and delivered in the preceding month owing to late submission of documents by the third-party transporters. Per PipeTraCo, even late receipt of the monthly statement of accounts by customers for reconciliation purposes would be an excuse for late payment.

3.5.3 Unclear Payment Agreements

Wilson *et al.* (1995) identified poor credit management practices as one of the underlying causes of late payment, for example, many small businesses extend credit to customers without establishing the credit terms with the customer in advance or without even specifying a payment date. Unclear payment agreements or terms and conditions of sale give rise to possible disputes and become one of the excuses by customers to pay late. This was subsequently confirmed a decade later by Paul and Wilson (2006) who reported that some of their respondents communicated terms verbally.

This applies to some of the respondents in this preliminary study, for example, some of FoodMaCo's customers pay late owing to a dispute over price or quantity. The wholesale price of FoodMaCo's products may vary due to price level changes, seasonality or promotional periods, or sales volume. If the offer or promotional period and price are not communicated effectively, buyers may think that they are getting the promotional price. Subsequently, if the invoiced amount showed otherwise, due to the expiry of offer or whatsoever reasons, some affected customers would dispute the price and may contest owing to non-fulfilment of order volume to achieve promotional pricing. Lack of communication of credit terms and conditions or any temporary offers may end up with a dispute between the buyer and the seller.

Some delays are due to disputes concerning the amount owing to the supplier. This can be due to prompt payment rebates being forfeited. This is the case with ElecTraCo where it is common to have prompt payment rebates in order to encourage the debtors to pay up

promptly within the stated credit terms, and it is common to have two-tier or two-part credit terms.[27] However, despite non-fulfilment of the condition(s) for prompt payment, i.e. forfeited if they pay late, the customers still deduct the prompt payment discount for various given reasons. Thus, the seller's accounts receivables system would have recorded short payment with the forfeiture amount and if customers refuse to pay, this balance would be outstanding until or unless it has been resolved by both parties. It is, therefore, very important that disputes are identified and resolved quickly and 'excuses' for payment delays minimised or eliminated (Paul, 2004; Wilson, 2008). Unresolved credit issues could lead to disputes in future business transactions resulting in lost sales where the issue has not been resolved solved amicably. Good credit management practice ensures that credit terms, credit limits and credit periods are clearly established with the customer before any trade and that goods or services and invoices are supplied as pre-agreed (Paul, 2005; Wilson, 2008).

3.5.4. Inadequate Working Capital Financing

Inadequate working capital financing on the part of customers is commonly cited as one of the main reasons for late payment. Working capital financing is linked to the cash flow position of the company. Both FoodMaCo and ElecTraCo cited their customer's cash flow position as the reason for late payment.

[27] Two-tier or two-part credit terms, has three basic elements: (1) the discount percentage; (2) the discount period; and (3) the effective interest rate. For example, a two-part term of "2/10 net 30" means a combination of a 2% discount for payment within 10 days and a net period ending on day 30. The implicit interest rate in this example is 43.9% and is an opportunity cost to the buyer in forgoing the discount for 20 additional days financing, (See *Ng et al.,* 1999)

This is especially the case for SMEs' customers as their access to financial institutions' is hard to come by, especially for those with inadequate collateral (they have limited borrowing power). In addition, the customers might experience slow or delayed payments by their customers themselves down the supply-chain, which further compound the working capital financing problem.

Working capital financing is a mode of short-term credit, which includes all debt obligations that are repayable within 12 months. As discussed in Section 3.3.3, trade debtor is one of the most important components of working capital management. Getting paid is the primary focus of liquidity management, especially for credit sales where the money tied up in inventory could not be immediately turned into cash even after sales (on credit) as the working capital components are being transformed from inventory into trade receivables. Unless the company receives the payment on the amount due by debtors, there is no cash inflow after credit sales and any delays will affect the liquidity of the company.

The management of the cash conversion cycle (CCC) determines the short-term financing requirements of the business and enables the company to monitor its working capital performance against targets by identifying areas for improvement. CCC is the sum of the DSO and days of sales in inventory less the days of payables outstanding:

Delays in payment from trade debtors will affect the liquidity of the company and increase the receivables ratio (DSO). In terms of profitability, previous studies use the CCC measure to analyze whether shortening the CCC has a positive or an adverse impact

on the company's profitability. These studies find that the reduction in DSO would lead to higher corporate profitability (Pike *et al*, 1998; Shin and Soenen, 1998; Deloof, 2003).

A more serious implication of late payment is the concern of the mismanagement of customers' businesses that leads to circumstances such as 'overtrading' or over-commitment by these customers to their creditors as stated by both ElecTraCo and BuildTraCo, which compounded the late payment issue.[28] In some circumstances, as reported by BuMaMaCo, customers misuse the extended credit to finance their own operations or working capital. Similarly, PipeTraCo observes that, in some instances, customers are rolling on credit, i.e. they collect but the fund is channelled to other business ventures, leaving their debts unpaid.

In conclusion, late payment due to inadequacy of working capital has a consequential effect on the supplier cum trade credit provider, not only on credit management *per se* but wider ramifications on working capital and treasury management, which, in turn, will affect the profitability. This aspect is examined in Phase 2.

3.5.5 Inadequate Dunning System (too lax)

The dunning system refers to the process that helps to track debtors that are due and manage the collection procedure. Despite the fact that in some companies, the credit control functions are usually separated from the sales function, in Malaysia, as reported

[28] Overtrading is a condition of a business, which enters into commitments in excess of its available short-term resources. This can arise even if the company is trading profitably, and is typically caused by financing strains imposed by a lengthy operating cycle or production cycle.

by PipeTraCo and ElecTraCo, the sales personnel are normally assigned with the debts collection task as part of the duties that they perform. Hence, both the sales and the collection are performed by the sales department. The sales commission depends on sales value, volume as well as collection days. The credit department seldom has incentives for collection if the sales personnel are assigned with the collection task. One of the credit department's main roles is to assist the sales personnel in completing the last stage of the cycle – the collection.

As such, the credit department in most Malaysian companies would normally operate on a 'remote control' basis, via telephone calls, emails or faxes when dealing with customers. It is only when there is delinquency of debtors that the credit control team meets up with customers or makes site visits. Wilson (2008) argued that credit management is a neglected function in many businesses with a focus on 'back-end' collection rather than the 'front-end' activities of negotiating, risk screening, using credit information and establishing clear credit policies.

As there is inter-departmental interdependence between the sales department and the credit and collections department, FoodMaCo reports that some late payment is due to the lack of a close follow-up that should be undertaken by the sales staff. Similarly, in BuMaTraCo, some of the sales personnel are not persistent in collection. Others claim that the lack of follow-up could be due to the lack of expertise, especially those new recruits who just want to sell as much as possible to meet their sales target. On the other hand, CourSerCo claims that the credit control department is sometimes not persistent

enough in ‘chasing their debts’ because of the fear of loosing customers. PaintMaCo finds that their Credit Department overlooks the control, which has loosened and needs to be strengthened to regain control.

In summary, a good dunning system and proper management and supervision of sales and credit personnel would enable close follow-up and persistency on collections after sales and might reduce the incidence of overlooking or loosening control over credit release. More active involvement of credit management is required at the front-end rather than passive credit collection management, which comes after the event at the back-end by trying to collect after customers default. Therefore, front-end involvement may prevent late payment and reduce the incidence of bad debts.

3.5.6 Unsatisfactory Customer Service

Unsatisfied customers tend to drag payment resulting in late settlement. This act is usually deliberate, and is an attempt by the customer to get the attention of the supplier to demonstrate that there is something they are not satisfied with in the business relationship. A good example of this is highlighted by ElecTraCo who cites the unsatisfactory after-sales service as one of the reasons for their customers delaying the payment of invoices. As the respondent’s business is in home electrical appliances with a relatively important after-sales service (especially for goods that are under product warranty), any deficiency in such a service would result in their customers holding back the payments until the service is delivered.

Two other respondents (BuildTraCo and CourSerCo) cite customer dissatisfaction as one of the reasons for late payment. For courier services, incidences of lateness in service delivery have resulted in their customers holding back their payments in view of unsatisfactory service. If CourSerCo threatens to stop services for unpaid debts, the customers could opt for another courier provider as the supply market in the courier service is overcrowded. On the other hand, customers having an account with more than one courier service provider would tend to pay promptly in return for the service being provided to their satisfaction; a satisfied customer tends to pay on time (Pike and Cheng, 2001).

3.5.7 Culture of Prolonging Payments for Undisclosed Reasons

Several respondents indicate that the Malaysian business culture of prolonging payments is prevalent as longer credit terms mean financial cost savings to the customers. CourSerCo, for instance notes that there is an attitude compulsion of customers in dragging payments and it is customary for delaying payments in certain trades such as in ElecTraCo's trade. In the same vein, MouldMaCo finds that their SMEs customers pay later than larger (mainly multinational) corporations. This is often because SMEs lack the ability to secure adequate working capital financing or other undisclosed reasons.

In addition, two respondents indicate that some of their customers take advantage of the power position and competition in the market in delaying payments. In BuMaTraCo, some customers take advantage of the competitive market situation by delaying payment if the supplier is not the main one and the same is experienced by CourSerCo as the

services provided are considered as non-essential services with many competitors in the local market. The culture of prolonging payments has become a common practice facing the Malaysian commercial environment.

3.5.8 Reasons for Late Payment in EU Countries Compared to Malaysia

In this section, a comparison is made between the reasons for late payment stated by the respondents to our exploratory study in Malaysia and a survey of some 20 EU countries in 2005 to determine the common reasons for late payment by respondents to their suppliers. Based on the European Payment Index (EPI) survey,[29] the reasons for late payment, in descending order, are as follows:

1. Delayed payment by own customers
2. Margin pressure (inadequate cash flow financing)
3. Inadequate bank finance
4. Reasonably-priced form of financing
5. Own internal administrative reasons
6. Lack of financial incentives for prompt payment
7. Lack of other incentives (non-financial) for prompt payment
8. Inadequate suppliers' dunning system (too lax)
9. Unclear payment agreements
10. Others

From the above list, it is noted that the unsatisfactory customer service and culture of prolonging payments (which are the two reasons for late payment in Malaysia) are not an

[29] On a scale of 0 (no impact) to 5 (high impact) based on European Payment Index, Spring 2005 Survey.

issue in the EU nations. This could be because the culture in the EU is different from that of Malaysia. EU countries practice shorter or prompter common credit periods (30 days versus 60 days in Malaysia) with concerted efforts to combat late payment as opposed to finding reasons to prolong payments such as unsatisfactory customer service. In terms of compliance, more developed countries like those in the EU, have more established business practices and legislation on commercial payments. This demands fulfilment of contractual obligations expressed and implied by both suppliers and customers.

Based on the exploratory study, and the comparison of the reasons for late payment in Malaysia with the EU (though not in the order of sequence of its importance), it could be deduced that the main reasons for the late payment are common to both Malaysia and the 20 EU countries. This implies that late payment is more of an international/global phenomena and not particular to Malaysia.

3.5.9 Implications of Late Payment

According to the research commissioned by the Prompt Payer Payment Group, in the UK for instance, poor payment practice is costing businesses £20 billion a year. Accountancy Age (2007) reports that despite several revisions to the Late Payment Act,[30] little improvement has been made and late payment continues to remain the biggest threat to 35% of UK businesses today. Similarly, the Federation of Small Business statistics finds that one in four businesses go insolvent due to invoices being paid late.[31]

[30] Late Payment Act was introduced in UK in 1998 and was amended in 2000 and 2002
[31] Source: Accountants Today August 2007 – World News

In Malaysia, unlike the UK and EU, or neighbouring Singapore, there is no legislation on debtors and payment on time for non-financial companies. Unlike the financial institutions (governed by Banking and Financial Institutions Acts) that have the provision of default interest for late payment or non-performing loans, there is no protection to non-financial businesses. As such, overdue interest charges for late payment for non-financial companies is only enforceable pursuant to court judgement in the absence of explicitly written terms on commercial financial charges agreed by the customers before any transaction takes place.

In Malaysia, the legal recovery process for debts recovery is tedious, time-consuming and costly (Thomas, 2002). This is because debts recovery is a civil suit and is open to arguments or technical or commercial disputes over the subject matter and the claimant is required to prove the debt owing on a prima facie basis (i.e. beyond any reasonable doubt). More often than not (as reported by PipeTraCo), the legal recovery process would take at least half a year and commonly drags on for more than two years before obtaining court judgement. This is especially the case for SMEs where the long recovery process impedes their operating cash flow as there is no cash flow from these customers under suit pending the disposition of legal cases, and further court action is required for enforcing the judgement obtained. Accordingly, some SMEs might not be able to withstand the risk of non-collection for long and may be declared insolvent even before they obtained a court judgment in their favour.

However, owing to several corporate debacles in 2007, companies are coming under increasing scrutiny for high receivables (which may or may not be justifiable). The 'trick'

is to know the difference – it is not always easy to find the information from the published accounts and to substantiate this by looking at other figures (such as the receivables turnover ratios, days sales outstanding). Stakeholders not only want answers as to why receivables are high but they also demand insights into the credit terms of receivables, internal controls, monitoring standards as well as the company's bad debt provisioning policies.[32]

3.6 FACTORS INFLUENCING THE GRANTING OF CREDIT TERMS TO CUSTOMER

In determining the factors influencing the granting of credit terms to customers, a traditional approach to credit evaluation is the common use of the five Cs of credit analysis. The five key elements a supplier should evaluate concerning the customer prior to granting credit are: character (integrity), capacity (sufficient cash flow to service the obligation), capital (net worth), collateral (assets to secure the debt), and conditions (of the borrower and the overall economy).[33]

Based on the results from our respondents on the factors influencing their granting of credit term to their customers, the "5C" principles are adapted and extended to analyse the respondents' feedback as discussed in the following sections.

[32] The Edge Malaysia 23 July 2007, "When Alarm Bells Should Ring" – Evelyn Fernandez and Siow Chen Ming)
[33] www.investorwords.com/1/5_Cs_of_credit.html

3.6.1 Character of Customer

Trade credit providers, like lenders, are always concerned with the character of their credit applicants. In essence, it refers to the customer's integrity, as perceived by the supplier and is indeed a subjective assessment (MMAG 3, 1990). Credit is associated with trust and creditworthiness is attributable to the character of the customer. Some factors that should be taken into account when evaluating the character of a company include the educational background and experience levels of the sponsors and management staff in the business and the industry.

The assessment of character is based on both facts and on the rule-of-thumb (character is an intangible assessment). A review of credit report, such as the Credit Tip Off Search (CTOS) report in Malaysia on the company and its key personnel personal credit report, unveils some characteristics of the potential debtors.

The longer a company is established in the market, the longer their credit history is available and the creditworthiness can be ascertained more reliably. Communication with trade referees such as suppliers, customers or financiers on the business dealings with credit applicants also reveals some characteristics of the applicant in their business undertakings.

The qualitative part of character assessment would be more of the credit provider rule-of-thumb formation of opinion on the applicants. This is based on available information as to whether the credit applicants are sufficiently trustworthy to repay the debts owed.

Credit providers only deal with customers that can be trusted to act in good faith at all times. The character or the habit of the customer in business dealings, especially in payments to suppliers, will reflect the credit worthiness of the customer.

When providing the credit terms, customer's background, business acumen, creditworthiness, business habits and the credit risk are some of the factors cited by FoodMaCo, BuMaTraCo, PipeTraCo, BuMaMaCo and ElecTraCo. They all claim that the credit granting, terms and length are influenced by all these factors.

BuMaMaCo and PipeTraCo claim that when assessing the character concerning the business habits of customers, some negative habits are considered in the credit-granting evaluation, this includes channelling of funds to finance own operations or other business ventures, BuMaTraCo, PharMaCo, ElecTraCo and CouSerCo report that they examine the habitual pattern to pay late.

In this respect, what is essential relates to trade reference and character checks with other credit providers (trade and non-trade), sales and marketing personnel in the market, customer's background, number of years in business, length of business relationship and past payment pattern or record. The market feedback on trade and credit information can be used to corroborate the historical quantitative information obtained and analysis performed as discussed below.

3.6.2 Capacity

Capacity relates to the ability to repay the debts when they fall due (MMAG 3, 1990), i.e. the repayment capacity or the ability of the business to meet the repayment requirements of the trade credit taken and other obligations. The two main components of capacity are the liquidity of the company to meet short-term debt obligations and the profitability to meet long-term debt repayments.

A sale is not a sale until the cash is received. As such, customers' capability to pay is one of the major influences on the credit period granted. To assess a customer's financial status or their financial strength and performance, the historical results obtained from various sources are used and financial analysis is performed to interpret the capability of customers to honour their debts when they are due.

Analysis of audited past years' financial statements are usually performed. For listed companies, the analysis could be extended to the quarterly performance. This is because the quarterly results of listed entities on Bursa Malaysia (Kuala Lumpur Stock Exchange) are posted on the website of Bursa Malaysia within 60 days of the end of each quarter. For non-listed entities, past years audited financial statements can be obtained from several sources:

a) customers themselves furnishing copies of past financial statements;
b) Companies Commission of Malaysia (CCM) – the Registrar of Companies
c) credit bureaus such as CTOS Sdn Bhd, BRIS Sdn Bhd, Dun & Bradstreet (D&B)

Private exempt companies[34] are not required to file their accounts to CCM. Thus, if the customer refuses to furnish the past financial statements, no financial analysis can be performed at all except qualitatively through trade references.

As for the analysis of cash flow and level of business activities, it is a normal for Malaysian suppliers to request the past three months' bank statements for new customers requesting the opening of a credit account. Nevertheless, more often than not, customers decline to provide such information on the grounds of confidentiality and because of the competition in the supply of goods on credit in most industries, customers can go for less demanding suppliers who prefer not to lose a sale through stringent credit requirements.

In terms of capacity to repay, the respondents of this exploratory study reveal they watch out for customers in an overtrading position, with over-commitment financially, in weak cash flow position, with weak financial strength and performance and with weaknesses in credit collection and management processes, which would have a vicious adverse effect on the liquidity of the companies.

3.6.3 Capital

Capital is one of the major factors in assessing the creditworthiness of trade customers. According to MMAG 3 (1990),[35] capital represents the long-term financial resources available if additional liquidity is required. Capital is the money invested in the business

[34] Under the Malaysian Companies Act 1965, an exempt private company is a private limited company, the shares of which are not held directly or indirectly by any corporation and which has not more than 20 members. (Source: www.kpmg.com.my/kpmg/publications/tax/I_M/Chapter2.pdf, p. 7)
[35] The Malaysian Institute of Accountants (MIA) issued this Malaysian Management Accounting Guide No. 3 in 1990 on Accounts Receivables Management.

by the sponsors and is an indication of the risk of business failure that the sponsors are willing to bear.[36] Undercapitalised companies increase the credit default risk, particularly pertaining to inadequate working capital financing where they might not be able to meet their current liabilities when they are due. As reported by PharMaTraCo, local SMEs, for example, animal feed producers are not prompt paymasters because of their limited financial capability. They cannot withstand external negative impact on their finances, which will affect their cash flow position. As such, they tend to delay payments when they are faced with a liquidity issue.

There are two types of capital that need assessment in determining a customers' financial standing: working capital, which relates to liquidity and the firms ability to meet short term financial and operating obligations, and share capital or equity capital, which is the amount of shareholders/partners or owner capital invested in the business.

A low level of equity capital reduces the ability of the business to sustain itself over the period of losses or financial crisis and may impede future growth of the company. The paid-up capital and capital employed by the customer is a good indication of the commitment of the customer towards its business. It may indicate a lack of working capital (PharMaCo) or even an overtrading situation (ElecTraCo) when they are in a technically insolvent position and, also, reflects the financial management and business skills of the entrepreneurs.

[36] http://www.business.gov.vn/advice.aspx

In addition, by looking at the capital employed, it could also reduce the risk of a low paid-up capital company being given excessive credit. From the credit risk management point of view, credit limit should not be set too high for companies with small paid-up capital unless it is collateralized by at least the personal guarantees of the directors or for some more established customers, collateral or trade finance instruments issued by their banks on their behalf (such as bankers' guarantee or letter of credit). One respondent (PharMaCo) stated "there are too many RM2 companies in our industry with inadequate track record; I have no choice but to get directors personal guarantee in order to sell on credit".

Similar to financial institutions, gearing ratio is an essential guide, as the amount of borrowings, the smaller the paid-up capital and the shareholders fund, the lower the credit limit and the credit period given will be shorter to mitigate the credit risk. FoodMaCo report that a cash incentive scheme to reward prompt payment may serve as a 'tripwire' concerning whether the customer has adequate funds to take advantage of the prompt payment incentives.

3.6.4 Collateral

Collateral is the security against the credit granted. It is a safety net that is relied upon to recover the debts outstanding in the event of default in payment. In commercial credit, the most common fully secured collateral includes bank guarantees or letters of credit. PharMaCo usually requests security or collateral. However, in practice, this is not usually given, especially when the credit limit is huge. Nevertheless, as the most widely used

type of credit is open credit (where there is no involvement from the banking credit), in the case of PipeTraCo, the common collateral provided to suppliers in Malaysia is the personal guarantee from the sponsors of incorporated companies. PipeTraCo's personal continuing guarantee letter would make guarantors liable for the debts of the company in their unlimited liability personal capacity. This is vital as in Malaysia it is relatively easy to start up a limited liability incorporated businesses, with a minimum of RM2 paid-up capital with at least two shareholders and directors. The personal guarantee ensures that the guarantors are jointly and severally liable for the accounts receivable of the company in the event of default or winding-up.

In the Malaysian business environment, the provision of credit to customers is essential as small and medium enterprises have difficulty in obtaining finance from financial institutions since most of them are unable to provide bankable collateral. Also, unlike more developed countries, the factoring facility is not common, coupled with the fact that the business volume in Malaysia is not as high as that of the European Union for an example.

As such, trade credit by suppliers is the most common arrangement in commercial transactions in the case of Malaysia. Credit terms are normally stretched over more than 60 days; this means that the suppliers, in their effort to sell their products, have to take a credit risk over the credit period, for example, over the next 2 months until the amount due is paid for the goods supplied.

As the suppliers are taking the credit risk over the credit period and parting with their goods to the customer in exchange for a payment by the end of the credit period (ElecTraCo), it would be usual practice for Malaysian companies to require the customers to provide information to the seller by filling up a credit application form, to provide trade referees or collateral (commonly directors personal guarantee for unlisted companies or corporate guarantee from the listed holding company for public-listed companies, if given). This kind of security is the cheapest form of security in terms of transaction cost compared to collateral provided by financial institutions, as banks would charge facility fees and are likely to require the customer to provide collateral to the bank for facilities granted.

Furthermore, the provision of a personal guarantee has significant implications for the directors, i.e. they will be held liable for all debts due by the company to the suppliers. In essence, their liability flows through to their personal capacity and next-of-kin until debts are repaid. This liability is similar to that of the partners or sole proprietors in any unincorporated businesses.

The rational for the request of personal guarantee is to avert irresponsible, dubious or unreliable companies and to instil commitment of the guarantors to fulfil their credit commitment. Because legal recovery is an arduous process, as indicated by one respondent, their lawyers advised them to obtain directors' continuing guarantee in order to open credit trading account with incorporated companies as there are too many cases of credit default and the legal process for redress is time consuming and costly.

Therefore, the provision of personal guarantees by customers influence the credit period given. One respondent, PipeTraCo, sets a minimum guideline in which it offers credit limit up to a certain amount (e.g. RM30,000) and sets a credit period of 30 days to the maximum of 60 days for unsecured customers who have no adverse credit history and that are not willing to provide a personal guarantee. However, if the customers are willing to provide their directors' personal guarantee, the credit limit offered would be increased significantly. The credit period would be set for a longer period, say 90 days on the basis that the personal guarantees are given as the collateral.

3.6.5 Conditions

Conditions can be described from a micro and a macro perspective. At the micro level (company level), conditions describe the intended purpose of trade credit to be given. The purpose of granting trade credit is to allow customers to defer the payment of goods supplied to them for a stipulated time, which is referred to as the credit period or term. In granting trade credit, BuMaTraco reports that they go further and evaluate the risks involved in credit granting at the next level, assessing the trade credit chain: the risk would increase if the customers themselves supply to their own customers on credit (i.e. the examination of the next stage in the chain of credit). In addition, ElecTraCo indicates it considers the credit period given by other competing suppliers when determining its own credit terms. The whole credit chain needs to be assessed at the next stage by examining the customer base and their risk profile, competitors and economic factors.

At the macro level, BuMaTraCo, PharMaCo and CouSerCo report that the credit grantor will consider the general economic conditions and the overall climate, both within and with other industry sector risks that could impact on the business of the debtors: if business is not good, they could not generate cash to pay their debts (PharMaCo). For instance, BuMaTraCo argues that changes in the market trend and external factors such as the bird flu epidemic affected the whole industry chain resulting in delayed payments by its customers. Therefore, conditions refer to the overall evaluation of the economic conditions that exist for the business.

3.6.6 Other Factors Identified in the Exploratory Study

In addition to the commonly used 5Cs' in credit evaluation, the exploratory study identifies three other factors influencing the granting of credit terms, namely, corroborative information, connections in business relationship, credit policy and practices. These seem to be unique to this localized study and the additional factors are discussed below in the context of Malaysia.

3.6.6.1 Corroborative Information

Apart from obtaining information relevant for credit evaluation directly from the customers to determine the extension of trade credit, external or third party sources of information on the credit applicants is important for check and balance. Such corroborative information is often persuasive rather than conclusive information. Nevertheless, several respondents (ElecTraCo, PaintMaCo, and BuMaMaCo) indicate that such information is useful in influencing the credit period given to customers.

Reliable market information gained from various sources such as customers' reputation in the market, current market trends and market feedback on the customers and their industry are important corroborative information for management. Usually, such information is obtained by the sales personnel or the sales managers themselves from the market. For example, a more formal verification check would be using trade references provided by the customer when they apply for credit trading account opening. The credit control in-charge would personally call up such referees to gain third-party feedback on the customer and, also, to affirm the feedback received by the sales team. In sum, corroborative information on customers is a unique information gathering feature that distinguishes between banks as the trade credit financier and the supplier as the seller of the goods cum trade credit provider. Owing to the availability of corroborative information from market intelligence or other sources, suppliers can act faster than formal banking trade credit by financial institutions in credit related decision making (Petersen and Rajan, 1997).

Trade credit providers are closer to the market than those in the financial institutions and they can provide credit in a relatively faster timeframe with less collateral than the financial institutions. The short tenure nature of trade credit averts the risk of default and credit providers can trade-off between the credit limit and the collateral accorded regarding the length of credit period accorded to the customer.

3.6.6.2 Connections in Business Relationship

Three respondents indicated that the seller-buyer relationship and their past experience with customers play an important role in influencing the credit period given to customers. This is particularly true in the Asian environment where relationship (or 'quan xi' in Mandarin) is paramount in business dealings (Barton, 1977). Among others, business relationship takes into account the length of the customer-supplier relationships. The longer the relationship, the longer the credit period. This is supported by one respondent (PipeTraCo) who indicates that the request by customers often influences the credit period granted.

In Malaysia, there are usually several pricing tiers or a discount structure that varies with the credit risk and collateral offered: cash sales for instance attract the highest discount whereas an unsecured sale with longer credit terms has the least discount. Accordingly, secured credit sale price with bank guarantee as collateral (or via trade finance such as letter of credit, bankers' acceptance) would be lower than the secured credit sale price with only a directors' personal guarantee.

Also, in some industries, there are prompt payment discount incentives such as 3% cash discount; 2% prompt payment discount for payment within 30 days, 1% prompt payment discount for payment within 60 days and no prompt payment discount for payment received after 60 days. It is up to the customer to choose whether to offer collateral or not or to take up the cash discount or prompt payment incentive based on their payment

availability. One fast-moving consumer goods (FMCG) company offers cash incentives and other collection campaigns (non-cash incentives) or schemes for faster cash inflow.

Based on past experience, some respondents indicated that they are willing to tolerate late payment by valued customers and that they risk losing the customer should the credit control be too stringent. As a comfort to mitigate their credit risk and to stay competitive, the profits earned from the past dealings with customers are indicative of the amount of risk that the seller is going to take in the event of default. As such, the longer the customer relationship, the higher the past volume of business transactions, meaning the trade credit can be granted for a longer period.

3.6.6.3 Credit Policy and Practices

In trade credit management, the company's internal policies and practices are part of the factors that influence the credit period to be given to customers. Some respondents (which are part of MNC) have to abide by the group credit policy developed by head office in the home country, which at times would be too stringent in the Malaysian environment, as in the case of PharMaTraCo.

However, depending on the industry, MNC respondents indicated that local corporations are able to offer a longer credit period to the same customers than MNCs. Local corporation's credit policy takes cognizance of local practices and business environment and they are not governed by the holding company's global credit policy.

To ensure compliance with the credit policy, PharMaTraCo's regional business analyst, who covers Southeast Asia (based in Singapore), performs a weekly follow-up on overdue debts and vets all applications for credit accounts or extension of credit period to ensure adherence to the group's credit policy.

In PipeTraCo, a weekly or fortnightly meeting on credit control with the head of each business unit is conducted to follow-up overdue debtors and actions based on exception reporting system. Follow-up actions are often swift as the executive committee (EXCO) is directly involved and attends the meetings. Decisions can be reached for immediate action and unlike MNC, they do not need to revert to regional/head office for concurrence and approval. Other more typical local credit control practices are discussed on overdue debtors in the monthly management meeting of the head of each business unit with senior management. Follow-up actions are typically slow as meetings are only held monthly and are part of the business and results review.

3.7 CONCLUSION

In summary, some of the major issues identified in Malaysia from the initial exploratory study are:

(a) difficulty in assessing creditworthiness of companies due to lack of information made available for credit assessment;

(b) corroborative evidence available is not truly reliable, accurate or timely;

(c) the reluctance of companies in divulging information on trade credit that may be deemed to be sensitive, confidential, and detrimental to their business or reflects a

negative impression on the management of the company (especially if the information, such as late payment is an adverse information).

Having gained insights into the trade credit extension in Malaysia through this preliminary exploratory research and having identified the late payment issue as the major gap in the research in this area, the next chapter will discuss the methodology for Phase 2 of this study. It touches on the determinants of trade credit extension and the effects of late payment on profitability.

CHAPTER 4

PHASE 2: RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

After taking into account the methodology adopted in Phase 1 and the results of the preliminary exploratory research questions on trade credit practices and late payment by customers (as reported in Chapter 3 under the first phase of the exploratory sequential mixed method employed in this study), this chapter discusses how the subsequent empirical investigation is designed and conducted in the Phase 2 of the study to confirm empirically the insights from the exploratory findings in Phase 1.

The major constraints experienced in Malaysia, as evidenced from Phase 1 of the study, relate to the fact that the creditworthiness of companies is difficult to assess due to (1) lack of information for credit assessment purposes, (2) doubts concerning the reliability, accuracy and timeliness of the corroborative evidence available, and (3) reluctance of companies to disseminate information on trade credit, fearing reaction. With such limitations, especially on the part of disclosing credit information, which is considered as a top trade secret (KPMG, 2008) among Malaysian businesses, clearly research methods based on primary data sources and/or qualitative research will not be feasible as a follow up to the earlier preliminary exploratory research.

As such, this chapter discusses the mixed methodology adopted in the Phase 2 of this study: preliminary exploratory research with a quantitative study based on secondary data. The rest of the chapter is organised as follows: Section 4.2 provides details on the empirical research to be undertaken and Section 4.3 states the purpose of empirical research, while Section 4.4 discusses the theoretical framework for the determinants of trade credit and the effect of late payment on corporate profitability. Section 4.5 discusses the hypotheses development for both models. Section 4.6 and 4.7 deliberate on the dependent variables and independent variables for both models, respectively. Section 4.8 and Section 4.9 present the control variables for the late payment model and the dummy variables for both models, respectively and Section 4.10 reviews the research designs used.

The rest of the subsequent sections are related to the methodology adopted in the study and is organised as follows. Section 4.11 discusses the mixed-method research, which combines quantitative and qualitative research approaches. Section 4.12 reviews the rationale behind the methodology adopted in the present study. Section 4.13 discusses the unit of analysis. Section 4.14 discusses the source of the secondary data while Section 4.15 reviews the sampling design and data collection method. Content analysis is discussed in Section 4.16. Section 4.17 examines the issue of measurement used in the models, especially the proxy for late payment. Section 4.18 provides an explanation of the data analysis techniques for this study, which includes exploratory data analysis and ordinary least squares regression. Section 4.19 presents the regression models for both

determinant models and late payment and the chapter ends in Section 4.20 with concluding remarks.

4.2 PHASE 2: EMPIRICAL RESEARCH ON TRADE CREDIT MANAGEMENT

In the US, the 1970s saw an increasing interest in the use of empirical research methods, especially in capital markets research. As the decade progressed, these methods were applied to financial accounting issues. Such research methods typify the mainstream US financial accounting research tradition of the 1980s, with its emphasis on what came to be known as 'positive accounting research' (Ryan *et al*., 2002, p. 98).

Finance and accounting research have been predominantly influenced by mainstream finance and accounting research where Neo-classical economics take prominence. However, as an alternative, the interpretive finance and accounting research and the critical finance and accounting research have gained momentum in the 1980's (Chua, 1986).

Laughlin (1999) provided a good working definition of critical finance and accounting's proactive agenda as: a critical understanding of the role of finance and accounting processes and practices and the finance and accounting profession in the functioning of society and organizations with an intention to use that understanding to engage (where appropriate) in changing these processes, practices and the profession.

In relation to history specifically, Laughlin (1987) argued that the past provides critical research with insights that help forge the 'methodological tools' to change the future. One can immediately see in these descriptions the proactive orientation of critical finance and accounting research, whether or not it is realistic to expect that academicians can significantly influence change.

To classify the various social theories that have informed accounting research, Laughlin (1995) produced an alternative taxonomy with a three-dimensional framework labelled theory, methodology and change using Burrel and Morgan's (1979) framework to start off with but avoided the subjective-objective dimension, which was subject to a lot of debate. Although Laughlin (1995) presents the change dimension as a continuum, he uses three level measurements: high (H), medium (M) and low (L). For the change dimension, researchers who believe in a high level of change are of the view that society needs to be changed whilst those who believe in a low level of change are quite happy with the status quo.

For the other two dimensions, which are both concerned with the level of theorization – theory (level of theorization prior to research) and methodology (level of theorization in the research process itself) – high levels of prior theorizing are indicative of a world that the researcher assumes to be structured with a high level of generality and which has been well researched through previous studies. Low levels of theorization suggest a world where generalisations are difficult, or even impossible, and where it is

inappropriate to derive insights from previous studies as they could potentially corrupt the present study (Ryan *et al.,* 2002, p. 45).

The methodological dimension is concerned with the level of theorization in the research process itself, that is, in the methodology, and relates to the theoretical definition of how the researcher should 'see' the subject of the research. At the high end of the continuum, the nature of the research process is high and, as such, the observer has no substantive role other than the application of a predefined set of techniques. At the low end, however, the researcher is directly involved in the study and is encouraged to use his or her perceptual skills, uncluttered by a set of theoretical rules and procedures (Ryan *et al.,* 2002).

In terms of credit management in Malaysia, the most dominant school of thought for relatively unexplored subject matter, domestically versus research done elsewhere in other parts of the world, would be using mainstream research. The application of Laughlin's key characteristics of dominant schools of thought into this study is shown in Figure 4.1. It appears that this study is skewed towards mainstream research.

Having considered the arguments on the methodology and methods to be adopted in the second phase of this study, the following sections discuss the purpose of this empirical study, the theoretical frameworks for both the determinants of trade credit extension and the effect of late payment as identified from the literature review.

Figure 4.1: Taxonomy in the Research on Trade Credit Management in Malaysia

Mainstream Research	A. High(T)/ B. High(M)/ C. Low(C)	Research on Trade credit management in Malaysia
A. Theory (T) Characteristics:		
a) Ontological belief	Generaliseable world waiting to be discovered.	Trade credit management theories have been developed in other parts of the world (US, UK, EU, Japan) but yet to be discovered and explored in Malaysia.
b) Role of theory	Definable theory with hypotheses to test	Trade credit theories from supply perspective have been well defined with testable hypotheses/models in parts of the world. There is a need to test the hypotheses/ models in the Malaysian environment.
B. Methodologies (M) Characteristics		
a) Role of observer and human nature belief	Observer is independent and irrelevant	Observer role and belief would not be able to influence nor impact the methodologies in this fact-based research.
b) Nature of method	Structured, quantitative method	Methods such as ordinary least squares (OLS) regression method are used in this research.
c) Data sought	Cross-sectional data used usually at one point in time, selectively gathered & tied to hypotheses.	Bursa Malaysia-listed companies' cross-sectional financial data for the year 2007/2008 are used to test the hypotheses.
d) Conclusions derived	Tight conclusions about findings.	Conclusions are strictly based on the findings on the determinants of trade credit extension and late payment in Malaysia.
e) Validity criteria	Statistical inferences	The dependent variables are regressed with selected explanatory variables using relevant financial ratios as proxies.
C. Change (C) Characteristics	Low emphasis on changing status quo	The study of the determinants of trade credit extension and late payment in Malaysia has low emphasis on changing the status quo due to its confidentiality, but would provide some insights and knowledge as to the key drivers of trade credit extension in Malaysia and the ramifications and implications of late payment of accounts receivable to businesses.

(Source: Laughlin (1995) adapted.)

4.3 PHASE 2 - RESEARCH QUESTIONS

This chapter covers the methodology designed to answer the five research questions that were deduced from the empirical results.

Question 1. How significant is the accounts receivable asset compared to the total assets of the Malaysian manufacturing sector?

Question 2. What is the most common credit period granted and the average collection period (DSO) for manufacturing companies listed on Bursa Malaysia?

(a) Is there any difference in the credit period granted for large manufacturing companies (Main Board companies) and medium-sized manufacturing companies (Second Board companies)?

(b) Is there any difference in the credit period granted between consumer product manufacturers and industrial product manufacturers?

(c) Is there any difference between companies audited by Big4 or non-Big4 auditing firms?

Question 3: Do Malaysian manufacturing companies experience late payment of debts by their customers and how serious is this problem?

Two grand questions to be answered that require detailed empirical analysis and testing are laid down below:

Question 4: What are the determinants of trade credit extension for Malaysian large and medium-sized companies in the manufacturing sector?

Question 5: What is the association between late collection of payment from customers and profitability of Malaysian manufacturing companies?

Based on the constraints experienced in the initial exploratory study (Chapter 3), an empirical investigation method is chosen instead. Answers to research questions numbers one to three can be obtained from the descriptive statistics and content analysis but answers to research questions four and five require some hypothesis testing using statistical software after a proper detailed study and identification of the independent and dependent variables, and other control variables.

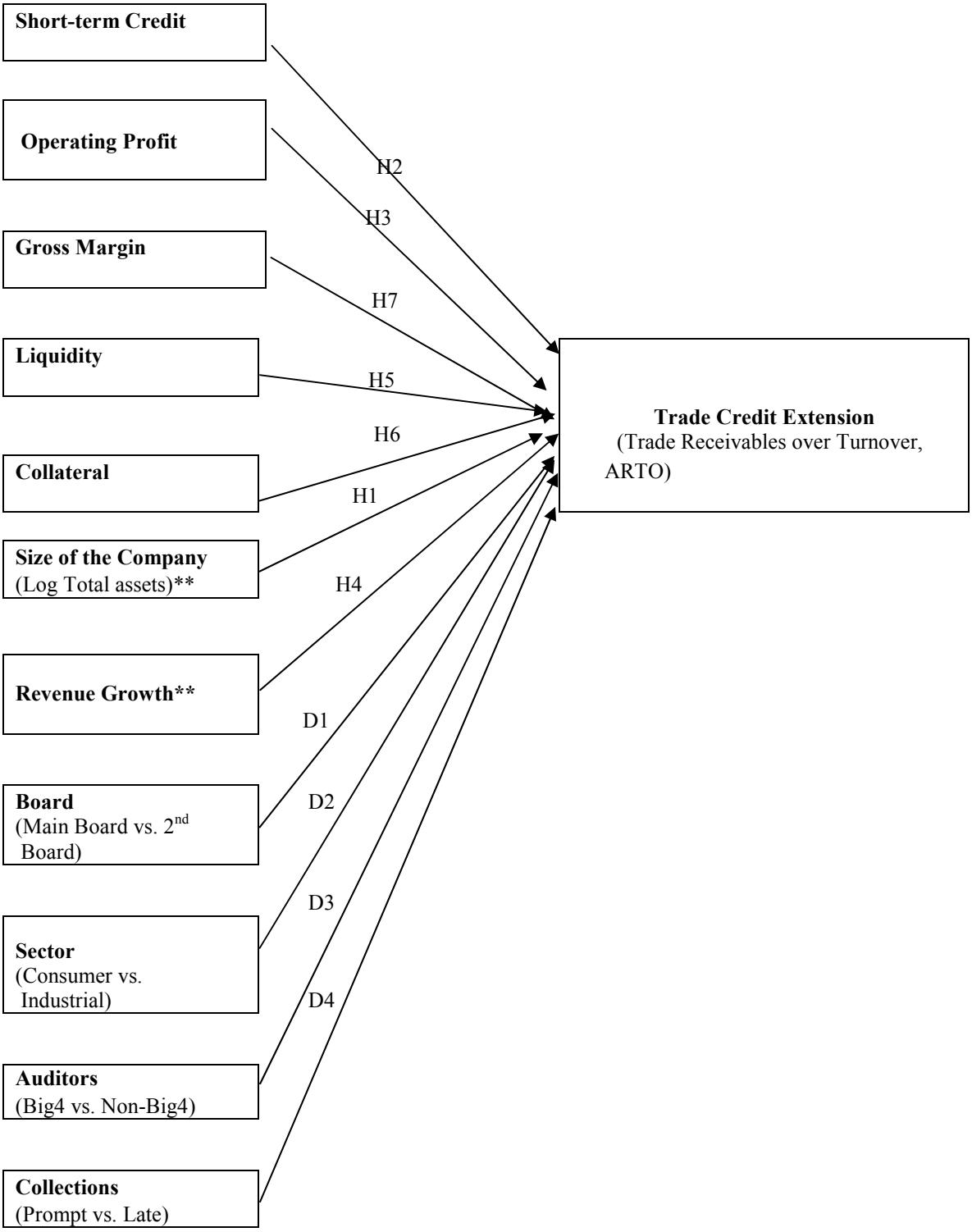
This is the hypothesis testing phase to establish the determinants of trade credit extension in the Malaysian manufacturing sector. Applying the theory of trade credit supply under several motives, the factors that determine trade credit extension are tested on the Malaysian manufacturing sector based on different theoretical aspects and the results of the hypothesis testing is interpreted to identify the factors that determine the supply of trade credit.

4.4 PHASE 2 - THEORETICAL FRAMEWORK

Based on the review of past literature in Chapter 2, the theoretical framework underlying Phase 2a of this study, on the determinants of trade credit extension, is shown in Figure 4.2, and revolves around the determinants of trade credit extension with several determinants identified from previous studies in other countries.

Based on the in-depth review of literature in the previous chapter, seven major factors have been identified that are the possible determinants of trade credit extension in the

Figure 4.2: Phase 2a – Theoretical Framework on the Determinants of Trade Credit Extension (Supply) in the Malaysian Manufacturing Sector

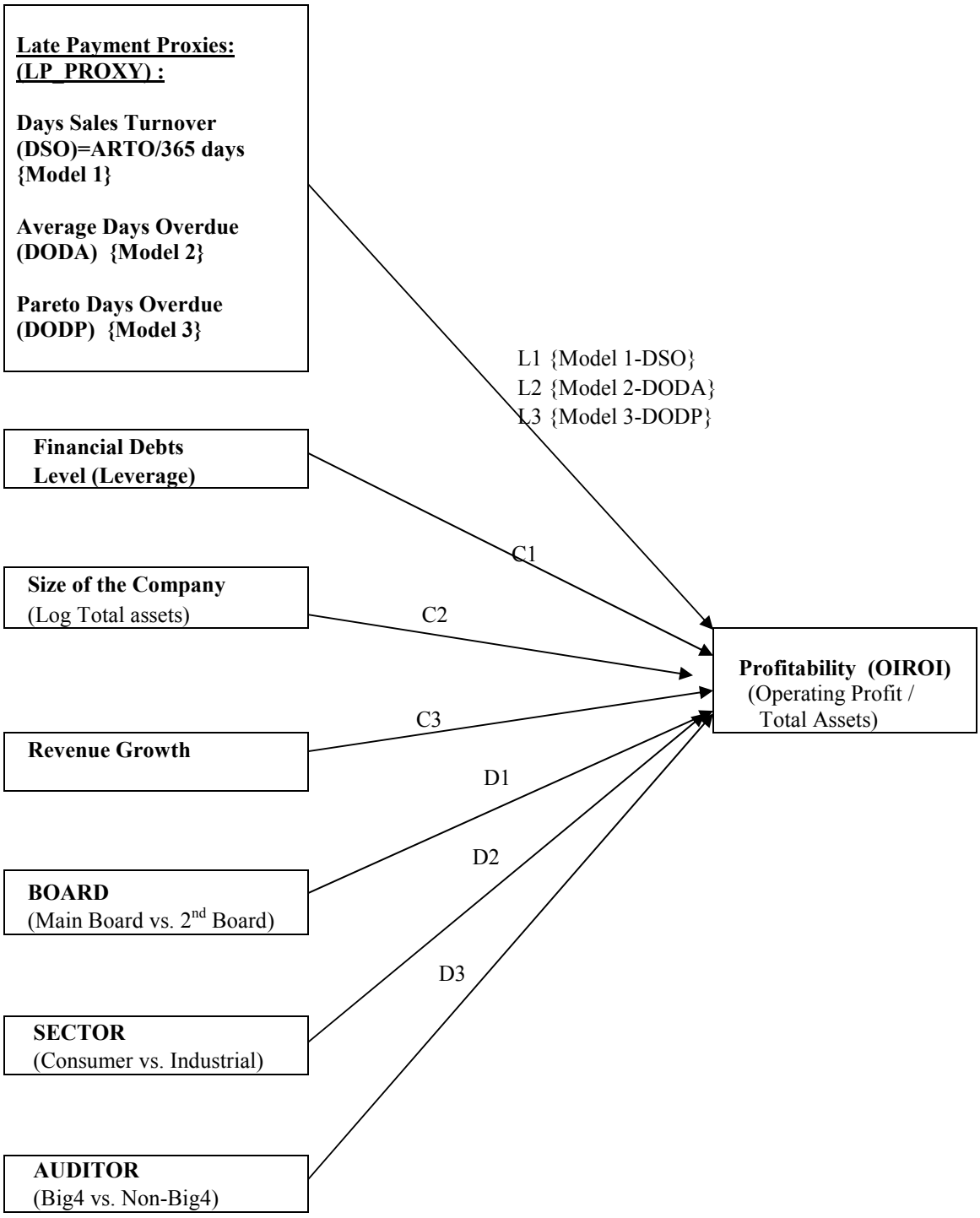


Malaysian manufacturing sector: company size, access to external financing via short-term line of credit, access to internal financing, sales revenue growth, incentive to price discriminate, liquidity and collateral to secure financing.

The second and final part of Phase 2 attempts to investigate the effect of late payment on corporate profitability/performance based on previous studies by Deloof (2003), Teruel and Solano (2007), and Nasruddin (2008). Figure 4.3 depicts the theoretical framework drawn from the literature review. The receivables turnover days (ARTO x 365 days) and overdue days (DODA and DODP), being the proxy/ies for late payment, are regressed against the proxy for performance, OIROI together with financing leverage. As accounts receivable are assets and the late payment proxies' are ratios and not in the number of days (days alone are noisy) whilst OIROI is revenue in nature, profit should not be affected. Similarly, no effect is expected if there is a chain of regressions on the late payment proxies (DSO, DODA and DODP) and profitability and will be discussed in detail in the multivariate analysis in Chapter 7.

The two factors that formed the first part of the theoretical framework (for determinants of trade credit extension), i.e. company size and revenue growth, will be used as the control variables for the late payment investigation while retaining the same dummy variables as per the earlier framework.

Figure 4.3: Phase 2b – Theoretical Framework on the Association between Late Payment and Profitability



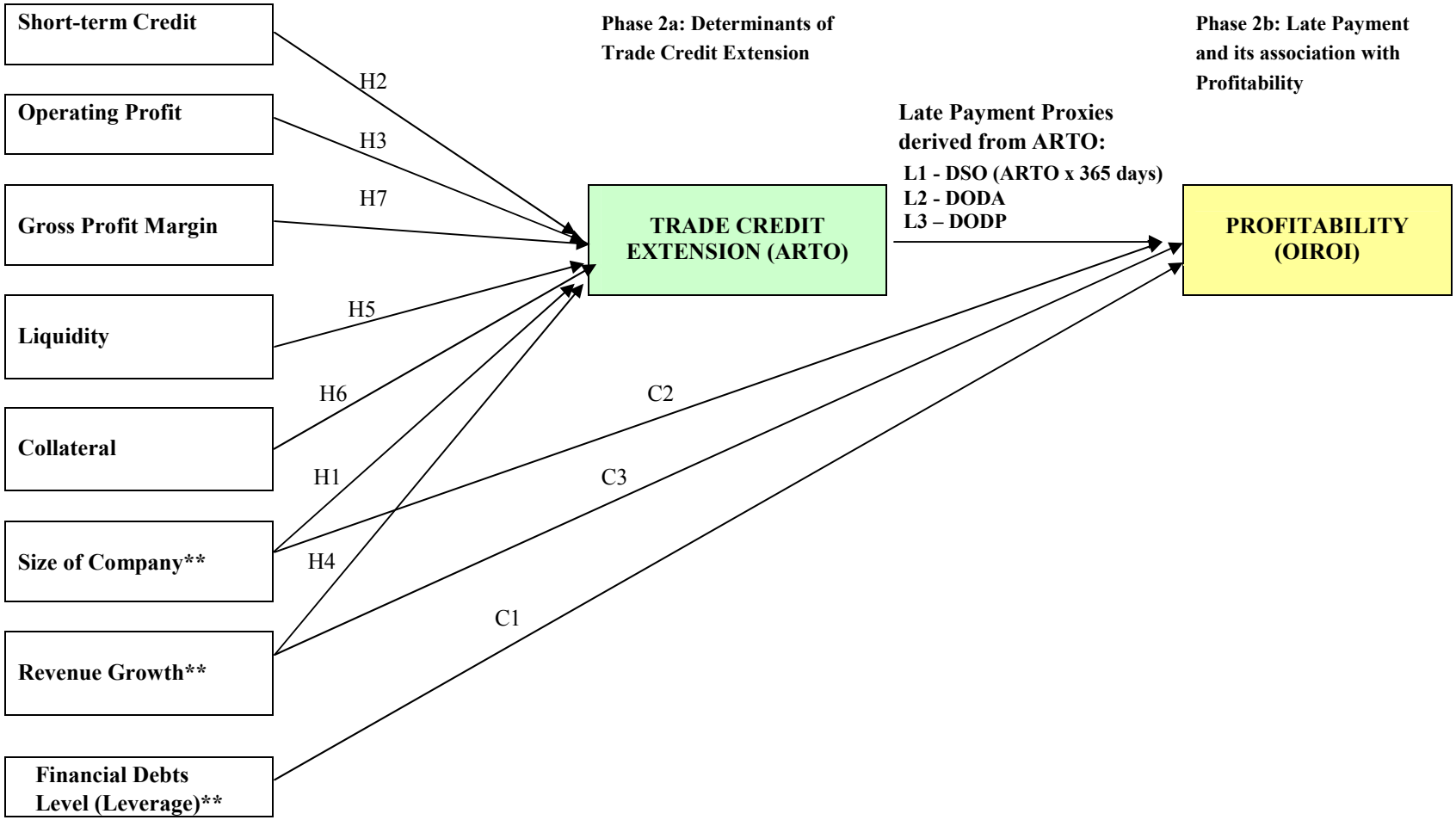
Lastly, in this theoretical framework development, a combined framework for determinants of trade credit extension and late payment of receivables is proposed in an attempt to provide an empirical link between determinants of trade credit extension to late payment and, ultimately, the effect on operating profitability of companies. It is important to investigate whether these determinants (as proposed by the theories of trade credit and how late payment affects corporate profitability) are being considered thoroughly by the Malaysian corporate sector.

Figure 4.4 presents the overall combined theoretical framework examined in this study. The diagram depicts all the variables (except dummy variables) to be investigated and the flow-through linkage from the determinants of trade credit extension to the effect of late payment on profitability.

Prior studies support company size as a positive determinant of trade credit extension (Angappan and Nasruddin, 2003; Nasruddin, 2008).[37] This creates a need to identify the determinants of trade credit and for closer attention concerning the impact of late payment. The past financial reporting scandals of large corporations in Malaysia hover around the escalation and manipulation of trade receivables. Therefore, this study argues that good credit management is likely to reduce the risk of corporate failures, and late payment will lead to lower profitability.

[37] Angappan and Nasruddin (2003) find that in manufacturing sector and construction sector in Malaysia, larger companies seemed prompter in collecting their trade debts.

Figure 4.4: Phase 2 - Theoretical Framework Integrating the Determinants of Trade Credit Extension (Supply) and the Association between Late Payment by Customers and Profitability in the Malaysian Manufacturing Sector



Note :

** Control variable for Phase 2b.

a. Dependent variable for determinants of trade credit extension and transform into number of days with promptness in collection to become one of the independent variables for the association between late payment and profitability.

b. Phase 2a - Determinants of Trade Credit Extension utilizing the Theories of Trade Credit Supply.

c. Phase 2b – Effect of late payment from customers on profitability (measured by Operating Income Return on Investment [OIROI]) utilizing theories of working capital management.

Accordingly, this study focuses on the main determinants of trade credit extension while holding other factors as controls and/or dummy variables, wherever possible or applicable. After investigating the determinants of trade credit extension, the next stage of this study covers the major issue of credit extension: the late payment of debts by customers after the credit granting, delays that will impact the cash conversion cycle and, ultimately, and the effect on profitability.

4.5 HYPOTHESES DEVELOPMENT

Based on the methodology and the development of the theoretical framework for this study discussed in earlier sections, this section discusses the development of hypotheses and models for the determinants of trade credit extension and the effect of late payment on profitability in the Malaysian manufacturing sector. This section also explains the justification for the selection of various explanatory variables and hypothesizes the expected relationship with the independent variables for each of the models specified.

4.5.1 Hypotheses Development for the Determinants of Trade Credit Extension

Seven determinants of trade credit extension have been identified from prior studies: company size, short-term line of credit, profit and internal cash, sales growth, collateral to secure financing, liquidity and incentive to price discriminate. The hypothesis development for each of the determinant is discussed in turn.

H1: Company's Size (SIZE)

Size can be proxied by the number of employees, total asset value, sales volume or index rank (Hackston and Milne, 1996). Previous studies find that even though different measurements are used the results show that they are highly correlated with each other (Hackston and Milne, 1996). It can influence trade receivables (AR) in two different directions in accordance with either the financial theory or market power theory (Delannay and Weill, 2004).

Under the financial theory and commercial motive, a positive relationship between size of the firm and trade credit extension is expected: larger companies are perceived to be more creditworthy and have more capacity to extend credit to their customers (Petersen and Rajan (1997), Mian & Smith (1982), Pike and Cheng (2001), Soufani and Poutziouris (2002), and Delannay and Weill (2004)).

In contrast, larger means a higher relative bargaining power in trade relationship between suppliers and clients. Larger companies are more reluctant to hold large amounts of costly trade debts (AR) and may impose stricter conditions for payment by their clients. Accordingly, an inverse or negative relationship between the size of the firm and trade credit extension is expected under the market power theory, i.e. a larger firm will extend less credit to its customers (Delannay and Weill, 2004).

As such, based on company's size, this study proposes the following hypothesis:

H1a: Larger companies will grant more trade credit to their customers under the financial theory, or.

H1b: Larger companies grant less trade credit under the market power theory.

This study expects a positive relation between the company size and the extension of credit, i.e. H1a to be true.

H2: Short-term Line of Credit (STCREDIT)

This proxy is included as a measure of companies' access to external financing to investigate the complementary hypothesis of bank financing (Petersen and Rajan, 1997) and the substitution effect on the part of the recipient of the credit extension.

Based on previous studies, under the helping hand theory, there is a positive relationship between STCredit and trade credit extension, as companies that have the ability to secure external financial institutions financing finance their customers in an effort to improve sales. Thus, this study proposes the following second hypothesis:

H2: Companies with greater access to external short-term financing will grant more trade credit under the helping hand theory.

H3. Profit and Internal Cash (OPEPROFIT)

Access to internal financing can be represented by the cash flow generated from the operating profit. The operating profit proxy is derived from the ratio of operating profit before tax to turnover. Unlike Petersen and Rajan (1997) where the net profit after tax

over turnover was the proxy for profit and internal cash, the operating profit to turnover is used as a profitability measure in this study, similar to Rodriguez (2006).

In order to avoid the offsetting effect between operating profit-making and loss-making companies, these companies are segregated and grouped separately for the econometric analysis. Based on past studies and in line with the theory of financial motive, there is a positive relationship between access to internal financing and trade credit extension and vice versa, a negative relationship should these companies incur operating losses (Petersen and Rajan, 1997).

For companies under distress,[38] and applying the distressed companies' theory, loss-making companies may extend more credit to their customers to sell more of their products to keep them afloat/survive (Petersen and Rajan, 1997). In such a situation (contrary to the financial motive theory), a positive relationship is expected between operating loss-making companies and trade credit extension. Based on the above, this study proposes the following two-part hypotheses:

H3a:	*Companies with greater access to internal financing (higher operating profitability) will extend more trade credit under the financing and helping hand theory holds true.*
H3b:	*Companies in distress (negative operating profitability) will also extend more trade credit to survive.*

[38] A company is defined as being under distress if it has negative sales growth and negative net income (Petersen and Rajan, 1997).

H4: Sales Growth (GROWTH)

Similar to STCredit as a proxy for access to external financing as discussed above; sales revenue growth measure, if positive growth, is another proxy for the access to external financing (Petersen and Rajan, 1997). Changes in the company's turnover may indicate shocks in the company's operations (Petersen and Rajan, 1997) and these shocks in the company's operations are represented by the changes in company's revenue when computed as a percentage over the changes in turnover over the past year, which can be positive or negative. The variable, percentage of sales growth, is split into positive growth (GrowthPos) and negative growth (GrowthNeg) to avoid the offsetting effect.

Petersen and Rajan (1997) found that companies that have had positive sales growth offer slightly more receivables, as when sales increase, the demand for trade credit increases. However, companies that have seen their sales decline, find that their ARTO ratio increases significantly, and if the ARTO denominator decreases coupled with an increase in the nominator, the net impact will be higher.

Distressed companies may use the extension of trade credit to attempt to maintain their sales. A negative link between growth and the trade receivable ratio is expected, and distressed companies may extend more credit in order to boost depressed sales to sustain their sales and their business survival (Delannay, 2004). A positive relationship may be observed as growing companies may implement a more aggressive commercial strategy. An increase in sales may be the result of more favourable conditions of payment

(Petersen and Rajan, 1997; Soufani and Poutziouris, 2002). Accordingly, this study proposes the following hypotheses:

H4a: Companies that have positive sales growth will extend more credit under the commercial motive of the financing theory.

H4b: Contrary to the commercial motive, distressed/loss-making companies offer more trade credit despite negative sales growth for business survival.

H5. Collateral to secure financing (COLLATERAL)

Levchuk (2002) defined the collateral variable as the ratio of net fixed assets to company's total assets, as a proxy to the company's ability to secure financing. In line with H1 concerning the financial motive theory in respect to access external financing, this collateral measure should be positively related to trade credit extension.

In the US, the largest firms on the basis of book assets are the manufacturing firms (Petersen and Rajan, 1997). Accordingly, this study expects a positive relationship between the collateral measure and trade credit extension in arriving at the determinants of trade credit extension in Malaysia:

H5: Companies with higher collateral (net fixed assets to total assets) have better ability to secure external borrowing to extend trade credit.

H6. Liquidity (LIQUID)

The liquidity position of a firm is proxied by the quick ratio (Levchuk, 2004), the ratio of liquid assets over current liabilities, net of commercial component. Marotta (2000) posits

a negative relationship between the quick ratio and trade credit extension. High quick ratio companies have 'less incentive to promote sales via low-return financial instrument such as trade credit' (Marotta, 2000, p. 15). However, Rodriguez (2006) posits that firms with liquidity (measured by current ratio, current assets/current liabilities ratio) problems will grant less trade credit to their customers as these firms face their own problems when paying suppliers. It is also an indication of working capital solvency. Based on the above, this study proposes the following hypotheses on liquidity:

H6a: Companies with high liquidity have less incentive to promote sales via trade credit under the market power theory.

H6b: Companies with liquidity problems will also grant less trade credit under the financing theory holds true.

H7. Incentive to Price Discriminate - Gross Margin (GROSS)

Companies with a higher gross profit margin have a greater incentive to sell, and, if necessary, finance an additional unit via trade credit extension (Petersen and Rajan, 1997). Higher gross margin is associated with higher accounts receivable, which is consistent with the price discrimination theory (Petersen & Rajan, 1997). Petersen & Rajan, (1997) predict that trade credit should be positively related to a company's gross profit margin as companies with a higher margin have more room to manoeuvre the credit period when there are market or regulatory restrictions on price discrimination. Accordingly, this study proposes the following hypothesis:

H7: Companies with a higher gross margin will extend more credit under the price discrimination theory.

Table 4.1 summarises the discussions on the hypotheses development and the expected relations between the explanatory variables and the trade credit extension on the determinants of trade credit extension in Malaysia, with cross-referencing to the literature review from other countries.

4.5.2 Hypothesis for the Association between Late Payment and Profitability

It is observed that a shorter DSO period will result in better financial performance in terms of profitability due to a shortening of the cash conversion cycle and an increase in the frequency of reinvestment, or turnover, of its capital (Nasruddin, 2008). Hence it is hypothesised that:

H8: The period of late payment is negatively associated with the profitability of a firm.

All three alternative independent variables (as proxy for late payment), L1, L2 and L3, are expected to have a negative association with profitability and are summarised in Table 4.2. The following section discusses the measurement of these explanatory variables.

Table 4.1: Summary of Hypotheses Development on the Determinants of Trade Credit Extension

Explanatory Variables	Proxies	Expected relationship with dependent variable-ARTO	Expected relationship with DV	Applicable Theory	Prior Studies
H1. Company's Size (SIZE)	Log (Book Value of Assets)	Large companies will be more in a position to grant trade credit to their customers.	Positive(+)	Financial Motive –credit worthiness & access to financing	Petersen and Rajan (1997), Delannay and Weill (2004)
H2 Short-term Line of Credit (STCREDIT)	Financial Institutions Debts in Current Liabilities / Turnover	Companies with higher short-term borrowings are likely to use the short-term borrowings to extend trade credit.	Positive (+)	Financial Motive – access to external financing "helping hand theory"	Petersen and Rajan (1997)
H3. Profit & Internal Cash (OPEPROFIT)	a. Operating Profit Before Tax (OP) / Revenue(REV) b. OPPOS = OP/REV, if positive, zero otherwise c. OPNEG = OP/REV, if negative, zero otherwise	Companies with higher internal cash and more profitable companies are expected to extend more trade credit.	Positive (+) Positive (+) Negative(-)	Financial Motive – access to internal financing and cash from profits	Petersen and Rajan (1997), Levchuk (2002), Delannay and Weill (2004)

Table 4.1: Summary of Hypotheses Development for the Determinants of Trade Credit Extension (continued…)

Explanatory Variables	Proxies	Expected relationship with dependent variable-ARTO	Expected relationship with DV	Applicable Theory	Prior Studies
H4. Sales Growth (GROWTH)	a. GROWTHPOS = Percent Sales Growth, if positive, zero otherwise b. GROWTHNEG = Percent Sales Growth, if negative, zero otherwise	Companies with positive sales growth will extend more trade credit.	Positive (+) Negative (-)	Financial/ Commercial Motive - economic shocks & financially distressed companies	Petersen and Rajan (1997)
H5. Liquidity (LIQUID)	Quick Ratio	High quick ratio companies have less incentive to promote sales via trade credit.	Negative (-)	Market Imperfection/ Market Power	Marotta (2000)
H6. Collateral to secure financing (COLLATERAL)	Net Fixed Assets (PPE) / Total Assets	Companies with higher net fixed assets to total assets have better ability to secure short-term borrowing to extend trade credit.	Positive (+)	Financial Motive -access to external financing	Levchuk (2002) Hammes (2003)
H7. Gross Margin (MARGIN)	a. Gross Profit Margin/Revenue b. (Gross Profit Margin/Revenue)^2	Companies with higher gross margin products will extend more credit	Positive (+)	Price Discrimination	Petersen and Rajan (1997)

(Source: Compiled by Author)

Where,

DSO = Days Sales Outstanding = Average Collection Period = actual credit period taken by customers to pay their debts due has two elements: the credit term granted plus days overdue, if payment is late (Wilson, 2008; Pike and Cheng, 2001).

ACT = Average Credit Term based on the normal credit period granted by the company as disclosed in the notes to the audited financial statements.

CT = Credit term granted = credit period given/allowed to customers and is the agreed/assumed/average credit period granted based on agreed-upon term prior to sales or company credit policies (Wilson, 2008). CT could be a standard or non-standard credit term agreed upon based on case to case.

DOD = Days overdue are the excess of debtor days over the normal credit period offered by firms (Pike and Cheng, 2001). Wilson (2007) terms the days overdue (DOD) as overdue period. In this study, two measurements are proposed, as discussed in Section 4.13.3 above, one based on average (DODA) and the other based on Pareto-rule (DODP).

4.6 DEPENDENT VARIABLES

Based on the literature review in Chapter 2 of this study, the accounts receivable to turnover (ARTO) ratio is used as the dependent variable for trade credit supply/extension, similar to studies by Petersen and Rajan (1997), Delannay and Weill (2004), and Soufani and Poutziouris (2002), for the first part of this empirical research on the determinants of trade credit extension in Malaysia. In sum, the DV is the trade credit extension or supply, which is proxied by the ratio of accounts receivable over turnover (ARTO). The IV are factors determining the extension of trade credit by Malaysian manufacturers to their customers, which use ratios and logarithms as their proxies to

Table 4.2: Definition and Measurement of Proxies for Late Payment Explanatory Variables

Variable (L1 – L3) -Acronym & Definition	Definition and Applications	Measurement/ Operationalisation	Expected relationship with dependent variable-OIROI	Applicable Theory/Conjecture	Previous studies/ Remarks
1. DSO (L1) = Days sales outstanding or average collection period	DSO is actual average collection period from the day of sale to the date of AR collection. DSO is used as a proxy/variable for late payment.	Accounts Receivables (AR) over Turnover x 365 days	Negative (-) - lower DSO will shorten the CCC and reduce the risk of bad debts and the financing cost and will increase ROA	Profitability (proxied by OIROI) can be improved by reducing DSO and reducing inventories (Deloof, 2003). Negative correlation between DSO and profitability (Nasruddin, 2008)	Long *et al*. (1993), Deloof and Jegers (1996), Deloof (2003), Angappan and Nasruddin (2003), Nasruddin (2008)
2. CT = Credit Terms/ Period. 2(a) ACT 2(b) Pareto CT	CT is the credit period granted to customers based on company's policies and practices, which may differ from company to company or case to case. If the DSO exceeds the CT, LP occurs. In this empirical study, the ACT and Pareto CT are used to compare with DSO as measurements of LP.	ACT is the simple average between the minimum CT and the maximum CT granted as disclosed. Pareto CT is the sum of 20% of the minimum CT and 80% of the maximum CT.	n/a	n/a	Note: CT granted is stated in the AR disclosure in the notes to the audited accounts. It is normally stated in a range of CT, e.g. between 30 – 90 days, meaning that ACT is 60 days and Pareto CT is 78 days.
3. DOD = Days overdue	DOD is the number of days the DSO exceeds the CT granted.	DOD = DSO - CT			Pike and Cheng, (2001),
3(a) DODA (L2) =Average Days overdue	DODA measures the average days of late payment – used as an explanatory variable for LP (Pike and Cheng, 2001)	(a) DODA = DSO – ACT, where DSO > ACT	Negative (-) - higher DODA leads to lower profitability	Late payment, proxy by DODA has a negative relationship with profitability (Pike and Cheng, 2001/2002).	Pike and Cheng (2002)
3(b) DODP (L3) =Pareto days Overdue	DODP is a modified measure of LP using days overdue based on Pareto rules instead of simple averaging.	(b) DODP = DSO – Pareto CT, where DSO >Pareto CT	Negative (-) - higher DODP leads to lower profitability	DOD measure modified using Pareto 80:20 rules on credit period in lieu of average credit period granted.	Similar to Pike and Cheng (2002) average days overdue but modified using Pareto rules

predict or explain the phenomena in trying to identify the important correlation that could explain the variance in the dependent variable.

For the second and last part of this study, which concerns the effect of late payment of receivables on profitability, instead of the usual return on assets (ROA) ratio, the operating income return on investment (OIROI) ratio (operating income over total assets ratio) adopted by Deloof (2003), Teruel and Solano (2007) and Nasruddin (2008) was used as the proxy for profitability in relation to trade credit collections or when dealing with the issues of late payment from debtors. The rationale for the selection of the dependent variables is discussed in Sections 4.6.1 and 4.6.2.

4.6.1 ARTO - Proxy for Trade Credit Extension in the Determinant Model

ARTO ratio is used to represent the trade credit supply or more commonly known as trade credit extension. The accounts receivable in this study refers to trade debtors in the consolidated balance sheet as at the end of the financial year end. As this study concerns listed manufacturing companies, instead of the usual firm-level data, the holding group level consolidated data is used. These listed companies are holding or flagship companies listed on Bursa Malaysia with their principal activities in the manufacturing sector.

Most of these companies have several subsidiaries in related and unrelated businesses, and the published figures are consolidated figures that report the company's results and

financial position on a group consolidated basis. Deloof and Jegers (1996), who used similar consolidated group figures in studying the determinants of accounts receivable, found trade credit to be an instrument of common financial management within Belgian corporate groups as implied by Petersen and Rajan (1997).

For the dependent variable, an alternative to ARTO is the accounts receivables to total assets (ARTA) ratio, an indication of the size of these companies as it is based on total assets employed and the proportion of trade debtors based on total assets. For dependent variable, Deloof and Jegers (1996) used ARTA instead of ARTO as the proxy for trade credit extension.

As all the samples are public-listed companies' and data are extracted based on consolidated figures. The ARTA ratio (as the proxy trade credit extension) may be misleading if there are several business activities apart from the manufacturing activities. Some business activities may require large investment in assets but with lower business volume. In such case, total assets may not be a good denominator for AR measurement especially for diversified group with other business activities. This may not be reflective of the credit extension situation. In the absence of detailed figures, ARTO which is proportionate to sales turnover would be a better proxy to the supply of trade credit. In sum, this study adopts the ARTO ratio as the dependent variable for the determinants of the trade credit extension model.

4.6.2 OIROI - Proxy for Corporate Profitability

For corporate profitability, many corporate performance indicators are used in theory and practice. For example, Reuters's performance indicators are divided into three facets or dimensions of performance indicators for corporations: profitability ratio, management efficiency and efficiency, which can be measured using several ratios or indicators as shown in Table 4.3.

As trade credit management and the late collection of debts from customers fall under management effectiveness, the relevant indicators are ROA, ROI or ROE. A closer look at the subject matter indicates that credit management and late payment by customers have nothing to do with the market value of companies, the market capitalization or investment value, apart from the effectiveness in managing its working capital, relative to the company's total assets. From previous studies on working capital efficiency, the most

Table 4.3 Corporate Performance Indicators

Dimensions	Indicators/Ratios
1. Profitability ratio	a. gross margin, b. earnings before interest, tax and depreciation (EBITD) margin, c. operating margin, d. pre-tax margin, e. net profit margin f. effective tax rate
2. Management effectiveness	a. return on assets (ROA) b. return on investment (ROI) c. return on equity (ROE)
3. Efficiency	a. receivables turnover b. inventory turnover c. asset turnover

Source: www.reuters.com

appropriate indicator or proxy for profitability is ROA (Shin and Soenen, 1998; Deloof, 2003).

According to Investopedia,[39] ROA gives an idea as to how efficient management is at using its assets to generate earnings. This is calculated by dividing a company's annual earnings by its total assets and ROA is displayed as a percentage. The formula for return on assets is net income over total assets. The ROA figure gives investors an idea of how effectively the company is converting the money it has to invest in net income (Investopedia). ROA represent the management effectiveness in utilizing their corporation assets to churn out profitability, i.e. companies with high ROA are better at translating assets into profits, thereby earning more income on lesser investment (Dorsey, 2004). ROA for public listed companies can vary substantially and will be highly dependent on the industry sector.

The use of net income as the numerator for the return on assets (ROA) ratio has been subject to a lot of debate, especially when this ratio is used for public-listed companies or investment holding companies where interest expenses and income taxes varies and are not reflective of the operations, and where these companies have diversified subsidiaries. Accordingly, several researchers modify ROA by replacing the net income numerator with operating income before tax and interest (EBIT) (Deloof, 2003; Teruel and Solano, 2007; Nasruddin, 2008). The most recent Malaysian study on collection period used the

[39] http://www.investopedia.com/terms/r/returnonassets.asp

same measurement, operating profit to total assets, as the proxy for profitability (Nasruddin, 2008).

A further review of literature on ROA and other management effectiveness ratios indicates that the operating income to total assets is a common indicator in the operations and the running of businesses, and is often defined as the operating income return on investment (OIROI) (Keown *et al.,* 1994). It indicates the earning power of a company in terms of a bundle of assets.

Furthermore, OIROI is defined by others as the ratio of earnings before interest and tax (EBIT) to assets, where EBIT equals operating income (Keown *et al.*, 2004). Longenecker *et al.*, (2008) define OIROI as the percentage ratio of operating income over total assets of the manufacturing company, and is one of the operating efficiency ratios that measures the efficiency of firms' assets in generating operating profits. The OIROI also reflects product pricing and firms' ability to keep costs down as it measures the level of profit relative to the total assets; in other words, income generated per one unit of currency of assets. In addition, OIROI is sometimes used interchangeably with operating profit over total assets. It can be stated in ways that integrate the use of DuPont analysis[40] with financial ratios:

(1) OIROI = Operating Income/Total Assets, or

(2) OIROI = Operating Profit Margin x Total Asset Turnover, or

[40] A method of performance measurement that was started by the DuPont Corporation in the 1920s, and has been used by them ever since. With this method, assets are measured at their gross book value rather than at net book value in order to produce a higher return on investment (ROI). (Source: http://dictionary.reference.com)

(3) OIROI = Operating Income/Sales x Sales/Total Assets

Similar to OIROI, the key success to trade credit management is the effectiveness of the management of credit extension, the management and collection of debts in order to maximise profitability and revenues but minimizing costs such as bad debts and recovery costs. Late collection of payment indicates management ineffectiveness in corporations. There is an inverse relationship between this late payment and management effectiveness, i.e. companies suffering late payment are expected to have a lower OIROI.

Consistent with previous related works, OIROI is the most suitable proxy that measures trade credit collection performance and late payment (Deloof, 2003; Teruel and Solano, 2007; Nasruddin, 2008). Accordingly, this study uses OLS regression to examine the association between late payment and profitability.

In summary, in the second part of this phase of the research, ARTO and OIROI are the dependent variable for the determination of trade credit extension and the association between late payment and profitability, respectively.

4.7 INDEPENDENT VARIABLES

In this section, the measurement and sources of independent variables are discussed. Table 4.4 presents the list of independent variables. Section 4.7.1 covers the independent variables for the determinants model whilst Section 4.7.2 discusses the independent variables of the late payment model.

Table 4.4: List of Independent (H1-H7), Control (C1) and Dummy (D1-D4) Variables

Theoretical Framework	**Explanatory Variables**
Financing & Commercial Motive	H1. Company's size (= C2)
	H2. Short-term line of credit
	H3. Profit and internal cash
	H4. Sales growth (= C3)
	H5. Collateral to secure financing
Market Power	H6. Liquidity
Price Discrimination	H7. Gross Margin
Late Payment	L1. Day Sales Outstanding (DSO), or L2. Average Days Overdue (DODA), or L3. Pareto Days Overdue (DODP)
Leverage	C1. Financial Debt Level (DEBTTL)
Dummy/Control variables (D1 – D4) :	D1. Board
	D2. Industry Sector
	D3. Auditors
	D4. Collections

4.7.1 Independent Variables for the Determinants of Trade Credit Extension Model

In this study, seven independent variables have been identified from prior studies in other parts of the world. To my knowledge, there is no such study in Malaysia to date. The

discussion on the use of appropriate proxy for each explanatory variable for this study is briefly discussed below:

Company's Size (SIZE)

In this study, the logarithm of total assets is used as the proxy for size based on group consolidated figures of the flagship entity listed on Bursa Malaysia. As the data is secondary data for companies listed on the Malaysian stock exchange, only the date of admission to the bourse is available, not the age of the companies. Size of the companies extending credit (Supplier firm), measured by log (TA), is defined as the logarithm of total assets which is the book value of the assets.

Short-term Line of Credit (STCREDIT)

The short-term line of credit is computed by the total short-term debts owing to financial institutions over the turnover of the companies. More specifically, it is the total of the portion of long term debt and capital leases due in the next twelve months and short-term notes payables (per Reuter's database) over turnover. This short-term line of credit over turnover (STCredit) is defined as total financial institutions debts over turnover, is the proxy to access to external financing in this study.

Profit and Internal Cash (OPEPROFIT)

The operating profit before tax was selected instead of other alternatives in this Malaysian study, as this is the most suitable considering that this study uses the group consolidated figures of Bursa Malaysia listed manufacturing companies. There are

smaller subsidiaries or associated companies other than the manufacturing concern and there are a number of non-operating items deductions, especially relating to financing operations before arriving at net profit after tax.

Accordingly, the final net profit after tax figure will be reflective of the profitability of the company unless company level figures are used. As such, the operating profit or loss will be the profitability measure in this study, which covers, primarily, the operating or commercial activity that is linked to the subject matter – trade credit. The ratio used in this study is operating profit before tax over revenue, segregated into positive and negative profitability.

Sales Growth (GROWTH)

The sales growth is computed as a percentage over changes in turnover over previous year) which can be segregated into positive growth or negative growth, In this cross-sectional study, the revenue figure for two comparative years are extracted (2008/2007 versus 2006/2007 revenue, depending on each company financial year-end and the percentage of sales growth, i.e. the changes in revenue is used as the proxy for sales growth,

Collateral to secure financing (COLLATERAL)

In this study the sample selection is Malaysian listed manufacturing companies, which have significant investment in their plant and machinery (capital goods): manufacturing plant and machinery for the production of goods. Less capital employed in fixed assets or capital enables companies to increase their working capital management and extend

credit to generate more sales turnover. This is especially so for wholesalers or trading companies where the bulk of their assets are not fixed assets, as they are merely "middlemen" between the manufacturers and customers with no competitive advantage in terms of collateral. The proxy for this collateral to secure financing, also known as Tangibility ratio is the net fixed assets over total assets.

Liquidity (LIQUID)

In this study, the proxy for liquidity is the quick ratio, i.e. the ratio of current assets (excluding inventories) over current liabilities as commonly used in financial ratio analysis. As the samples in this study are all public-listed manufacturing companies with easy access to the capital and debt market, it is generally expected that these companies would extend more trade credit under helping hand theory. However, as manufacturing companies are tied up with inventories and work-in-progress costs until the conversion into sales and into cash upon collection, the long cash conversion cycle and huge working capital financing may hinder manufacturers to extend more or longer credit. If their products are inelastic in demand or sought after products, based on the preliminary exploratory study in phase 1, shorter credit term is given by manufacturers as compared to those given by trading companies.

Incentive to Price Discriminate - Gross Margin (GROSS)

Supplying companies can enhance their market standing by using credit extension as a tool to practice price discrimination. A higher gross margin allows these companies to sacrifice some margins to cover the cost of trade credit in return for higher sales, albeit

with a higher credit risk. Gross profit margin ratio, i.e. gross profit margin over revenue is used as the proxy for price discrimination in thus study and the gross profit margin squared is used as the correction specification for linearity and, if included, will increase the coefficient of the linear term.

Possible Explanatory Variable for Future Research

As all samples are public listed companies with access to capital, financial institutions and bond market, companies with private debts security (PDS) financing and with financial institutions may have debt covenant[41] with the lenders. Commonly used covenant in Malaysia are gearing ratio, interest cover and debt service cover, and in extant literature of debt covenant outside Malaysia, working capital ratio (and variation thereof) is also a commonly used covenant in US debts contracts (see Dichev and Skinner, 2002).

As trade credit is part of working capital cycle, this debt covenant variable in the form of working capital covenant may have significant impact on the determinants of trade credit demand (which is not scope of this study) but from the trade supply perspective, by extending more trade credit to boost sales (whether genuine transaction with exchange of goods or vice versa) would in fact improve the working capital ratio, if this ratio is one of the debt covenant. Perhaps, with data and time, future research linking trade credit to debt covenant could shed some lights on the financial reporting debacles and corporate failures in Malaysia.

[41] Debt covenant are agreements (as a condition of borrowing) between a company and its creditors that the company should operate within certain limits. In theory, breach of a debt covenant usually allows creditors to demand immediate repayment.(Source: http://moneyterms.co.uk/debt_covenants/)

Having considered the proxies for explanatory variables for the Phase 2a of this study which is on the determinants of trade credit extension in Malaysia, Section 4.7.2 covers the discussion on the independent variables for the last part of the study, Phase 2b on the late payment model.

4.7.2 Independent Variables for the Association between Late Payment and the Profitability Model

The information on credit period is available from the disclosures in the audited financial statements of the public-listed manufacturing companies in Malaysia (apart from some companies that omit the disclosure). This study extends the Malaysian trade credit management literature by quantifying late collection of debts empirically by extending the concept of average days overdue (DODA) used by Pike and Cheng (2001), but based on Pareto-rules (DODP) with empirical evidence.

L1. Days Sales Outstanding (DSO) - Model 1

The first independent variable is the actual collection period, known as DSO, which represents the average number of days that the firm takes to collect payments. The higher the DSO value, the higher the firm's investment in accounts receivable (Deloof, 2003; Teruel and Solano, 2006; Nasruddin, 2008).

L2. Average Days Overdue (DODA) – Model 2

The second independent variable is average days overdue (DODA). It is the explanatory variable for late payment used in a previous study (Pike and Cheng, 2002); days overdue

occur when DSO exceeds the credit period granted. Accordingly, DODA is the difference between the average collection period (DSO) and the average credit period granted (ACT), i.e. when DSO is longer than the ACT.

L3. Pareto Days Overdue (DODP) – Model 3

The last independent variable in this study is days overdue based on the Pareto-rule (DODP). This variable is similar to Pike and Cheng (2002) DODA's except that the simple averaging of credit period is replaced with the use of Pareto 80:20 rules collection period. DODP is the difference between the actual collection period (DSO) and credit period granted based on Pareto 80:20 rules (Pareto CT), the aggregate of 20% of minimum CT and 80% of the maximum CT granted to customers (as disclosed in the notes to accounts receivable in the audited financial statements). DODA is the difference between DSO and Pareto CT, i.e. when DSO is longer than Pareto CT.

For example, if the credit period granted to customers is between 30 to 90 days, as disclosed in the audited financial statements, the credit period granted based on Pareto (Pareto CT) can be computed by multiplying 80% over the maximum credit period of 90 days and 20% over the minimum 20% of the minimum credit period granted. As such, the Pareto CT would be 78 days (80% x 90 days plus 20% x 30 days). If the actual collection period (DSO) computed is 93 days, then the difference of 15 days is termed as DODP. If the actual DSO is less than the Pareto CT, it is not considered as late payment by customers in this study.

After discussing at length the independent variables selected in the models of this study and the associated pertinent issues on some the variables, this study continues with the discussion concerning the control variables and dummy variables to be adopted in the \trade credit extension determinants models and the late payment models in Section 4.8 and Section 4.9, respectively.

4.8 CONTROL VARIABLES FOR THE ASSOCIATION BETWEEN LATE PAYMENT AND PROFITABILITY

Three control variables, company's size (SIZE), sales growth (GROWTH) and financial debt level (DEBTTL) are used to determine the association between late payment and profitability. These three control variables are summarised in Table 4.5. Two independent variables from the earlier determinants of trade credit extension, company's size (SIZE) and sales growth (GROWTH) will become control variables for the determination of the association between late payment and profitability.

The SIZE variable, as per the earlier part of this empirical study, is the log value of the total book value of assets. Based on the study of Teruel and Solano (2007), the log value of the total book value of assets is used to measure SIZE. Their study shows a positive association between corporate profitability and size.

Although the samples in this study are all public-listed manufacturing companies, where size could be proxied by market capitalisation (market value of the equity), the logarithm of total assets are used since this study covers only one financial year cross-sectional data

Table 4.5: Control Variables and Expected Relationship with Profitability

Control Variable (C1-C3)	Proxies/Dummies	Expected relationship with DV-OIROI	Applicable Theory/ Conjecture
C1. Company's Size (SIZE) (same as H1)	Log (Book Value of Assets)	Positive(+)	Corporate profitability is positively associated with size (Teruel and Solano, 2007).
C2. Sales Growth (GROWTH) -FYE 2006/07 versus FYE 2007/08 (same as H4)	a. GROWTHPOS = Percent Sales Growth, if positive, zero otherwise b. GROWTHNEG = Percent Sales Growth, if negative, zero otherwise	Positive (+) Negative (-)	Indicator of company's business opportunities, an important factor for improved profitability, is positively correlated with profitability (Teruel and Solano, 2007), and vice versa.
C3. Financial Debt Level (DEBTTL)	Short-term and long-term bank borrowings to total liabilities, proxy for leverage (gearing of the company)	Negative (-)	Company with lower leverage is positively associated with financial performance (Teruel and Solano, 2007).

with no comparisons over time. In addition, the market value is less stable in the current market condition and does reflect a proper representation of company's size (Nasruddin, 2008); hence, the common proxy based on total assets is used in this study.

Similarly, for sales revenue growth, the changes in sales growth, based on the changes in the turnover (of sample companies in FYE 2006/2007 versus FYE 2007/2008) are segregated into GROWTHPOS, which is the Percent Sales Growth if positive (turnover increased from the year before), zero otherwise; and GROWTHNEG as the Percent Sales Growth if negative (turnover decreased from the year before), zero otherwise (Petersen

and Rajan, 1997). The other variable DEBTTL is the proxy for the leverage of the company. DEBTTL is the short-term and long-term bank borrowings to total liabilities and it is conjectured that lower leverage is positively associated with financial performance (Teruel and Solano, 2007).

4.9 DUMMY VARIABLES

In this study, several dummy variables are selected where these variables are nonmetric and have one outcome out of two selections, i.e. listing board (BOARD) with either listing on the Main or Second Board of Bursa Malaysia; manufacturing sector (SECTOR) with either consumer products or industrial manufacturers in accordance with Bursa Malaysia's classification, auditing firms engaged (AUDITOR) with either Big4 or Non-Big4 auditing firms in Malaysia and lastly, Collection promptness (COLLECTION) with either prompt collection or late collection i.e. late payment of receivables. The dummy variables selected for the determinants of the trade extension model are discussed in Section 4.9.1 whilst those covered under the late payment model are discussed in Section 4.9.2.

4.9.1 Dummy Variables for Determinants of Trade Credit Extension Model

Four dichotomous or dummy variables are maintained in this study as summarised in Table 4.6 and each of the dummy variables is discussed next.

D1. Board Dummy

In this study, a listing board dummy is included in the regression to control for the well-known impact of the listing board structures – where the company is listed on the Main Board (large manufacture ring companies) or on the Second Board (medium-sized manufacturing companies) of the Malaysian bourse. Bursa Malaysia's classification for Main Board (Dummy 1) and Second Board (Dummy 0) serve as a proxy for large companies (Main) and medium-sized companies (Second) in terms of capitalisation.

Previous studies are mainly on small businesses (Petersen and Rajan, 1997), SME and large companies based on turnover, number of employees and total assets (Delannay and Weill, 2004), all sizes of companies and based on number of employees (Soufani and Poutziouris, 2002). In the context of this study, as the number of employees are not available and the definition of SME in Malaysia is identical to other countries albeit at a lower threshold, Main Board listed manufacturing companies is used as the proxy for large companies and those on the Second Board as medium-sized companies based on the listing criteria as discussed earlier.

Similar to Petersen and Rajan's (1997) findings on the size of the firm and trade credit extension, it is expected that larger manufacturers in Malaysia extend more trade credit compared to medium-sized manufacturing companies.

D2. Sector Dummy

A sector dummy is used in this study to control for the well-known impact of industry sectors and payment customs (Petersen and Rajan, 1997). The Bursa Malaysia classification for manufacturing sector is applied here in this study: consumer products (0) versus industrial products, which are equal to one (1) if the firm is in the industrial sector. Other sectors were not included in this study.

D3. Auditors Dummy

In the analysis of the content of the financial statements for the financial year ending 2007/2008, differences in the disclosure of the credit period granted for trade debtors are noted. Some companies do not disclose the credit period granted while the rest do. This study conjectures that perhaps the smaller audit companies would omit such disclosure for various reasons or simply because of a lack of technical expertise. Accordingly, to control for such impact, if any, by using the size of the audit firms, this study differentiates into two distinct groups: Big4 auditing firms (1) versus Non-Big4 auditing firms (0). This is probably one of the first studies in credit management in Malaysia using this control variable.

D4. Collection Dummy

By analyzing the disclosure of the credit period granted to customers and comparing with the average collection period or average days sales outstanding, companies experiencing late payment from their debtors can be identified. As such, the impact of late payment identified enables the segregation of sample companies into two distinct groupings:

prompt collection (0); and late collection (1), indicating late payment from debtors. In so doing, the number of the samples has to be reduced by those companies that do not disclose the credit period granted. Consequently, the days overdue against the average collection period can be determined. The sample size in this study was further reduced from 383 to 287 samples, omitting those companies that do not disclose the credit period granted to its customers.

4.9.2 Dummy Variables for the Association between Late Payment and Profitability Model

Consistent with the earlier part of this study on the determinants of trade credit, the first three (out of the four) dummy variables, board, sector and auditors dummy, are maintained in the final part of the empirical study as summarised in Table 4.7.

D1. Board Dummy

Profitability is positively associated with company size (Teruel and Solano, 2007). This study analyses the distinct differences in terms of profitability between large and medium-sized manufacturing companies (based on Listing Board category[42]) in Malaysia. Therefore, one expects Main Board companies, which are larger in size (measured by the book value of issued paid-up share capital), to be positively associated with profitability.

[42] The distinction between Main Board and Second Board listing requirements can be accessed via www.bursamalaysia.com. However, with effect from 3 August 2009, the Main Board and Second Board companies are merged as the Main Market. Main board companies are categorized as large corporations which have a minimum of RM60 million paid-up capital whilst medium-sized corporations are represented by Second Board companies which have a minimum paid-up capital of RM40 million.

Table 4.6: Summary of Dummy Variables for the Trade Credit Extension Model

Dummy Variables	Proxies	Expected relationship with dependent variable-ARTO	Expected relation-ship with DV	Applicable Theory	Prior Studies
D1. Listing Board (BOARD)	a. Second Board (SB) companies, proxy for medium-sized companies, SB = 0 b. Main Board (MB) companies, proxy for large companies, MB = 1	Larger companies have better credit worthiness and access to financing.	Positive (+)	Financial Motive – credit worthiness & access to financing	Angappan and Nasruddin, 2003; Teruel and Solano, 2007
D2. Industry Sector (SECTOR)	a. Consumer Products (CP), CP = 0 b. Industrial Products (IP), IP = 1	Consumer products are more fast-moving than industrial products and mainly for consumption whereas industrial products are mainly for capital goods.	Positive (+)	Commercial motive – elasticity of demand and economics of scale	Angappan and Nasruddin (2003); Nasruddin (2008)
D3. Auditing Firm (AUDITOR)	a. Non-Big Four (Non-Big4) auditing firms, Non-Big4 = 0 b. Big Four (Big4) auditing firms, Big4 = 1	Large auditing firms have more resources and technical expertise than non-Big Four firms.	Positive (+)	Auditors' reputation, Auditors' industry specialization	Eng and Mak (2003), Janssen et al. (2005); Gul *et al.* (2009)
D4. Collection Promptness (COLLECTION)	a. Prompt collection of payment (PP) of debts, PP = 0 b. Late collection of payment (LP) of debts, LP = 1	Prompt collection has positive impact on business performance.	Negative (-)	Credit period for debtors for commercial debts are skewed towards longer debtors days	Pike and Cheng, (2002), McClave and Sincich (2009)

D2. Sector Dummy

In terms of the industry sector, the industrial products sector's DSO is expected to be negatively correlated with profitability and the opposite is true for consumer products. Nasruddin (2008) finds that in the Malaysian SME manufacturing sector, the DSO appeared to be negatively correlated with financial performance in the industrial sector, (machinery and engineering, chemical and petrochemical products, transport equipment, metal products, and wood and wood products). In general, however, Nasruddin (2008) reports that DSO appeared to be independent of financial performance, but for the manufacturing sector, industrial product manufacturers' DSO is negatively correlated with financial performance and the opposite is true for consumer products. This empirical study shall further confirm or dispel these earlier findings on the listed manufacturing companies in Malaysia.

D3. Auditors Dummy

Eng and Mak (2003) use auditors reputation as a dummy variable (Big Four versus Non-Big Four) to test the relationship between the large and smaller audit firms on corporate disclosure and find no significant results. In this study, the same dummy variable is used to test whether there is an association between companies experiencing late payment and their auditors. Big4 firms with international and global networks have the resources and global knowledge especially in the area of accounts receivable management.

The collection promptness dummy in the trade credit extension determinants model is not included in the effect of late payment on profitability model as the late payment variable itself is the main independent variable in the late payment model.

Table 4.7: Dummy Variables and Expected Relationship with Profitability

Dummy (D1-D3) Variable	Proxies/Dummies	Expected relationship with DV-OIROI	Applicable Theory/ Conjecture
D1. Listing Board (BOARD)	a. Second Board (SB) companies, proxy for medium-sized companies, SB = 0 b. Main Board (MB) companies, proxy for large companies, MB = 1	Positive (+)	Corporate profitability is positively associated with size (Teruel and Solano, 2007). Main Board companies which are larger in size are positively associated with financial performance.
D2. Industry Sector (SECTOR)	a. Consumer Products (CP), CP companies = 0 b. Industrial Products (IP), IP companies = 1	Negative (-)	Industrial products sector's DSO/ACP is negatively correlated with financial performance (Nasruddin, 2008).
D3. Auditing Firm (AUDITOR)	c. Non-Big Four (Non-Big4) auditing firms, Non-Big4 = 0 d. Big Four (Big4) auditing firms, Big4 = 1	Positive (+)	Companies with better financial performance will engage more reputable auditing firms – Big4 (Eng & Mak, 2003).

4.10 RESEARCH DESIGN

This section discusses the detailed planning for data collection and analysis for this study. The types of design, the dependent and independent variables, control and dummy variables used in modelling the determinants of trade credit extension and the association between late payment by customers and profitability are explained next.

4.10.1 Types of Research Design Used

In finding the answers for the five research questions, this research uses both the descriptive and predictive correlational design (Belli, 2008). Each of the designs used is described separately in the following sub-sections.

4.10.1.1 Descriptive Design

This study employs a comparative descriptive design to find answers to questions one and two above through identifying differences by comparing two or more groups that occur naturally in a setting. As the data collected is cross-sectional data, a latitudinal descriptive design to study over a time horizon is not relevant. Content analysis is used to review the accounting disclosures in the audited accounts of each sample to identify the credit period granted to their customers and compare the computed days outstanding (DSO). Late payment from customers may then be derived based on the days exceeding the credit period granted in arriving at answers to the third research question.

4.10.1.2 Predictive Correlational Design

Moving on to the grand research questions (questions 4 and 5), this study employs a correlational study technique in order to examine the determinants of trade credit extension and the effect of late payment from customers on profitability. A predictive correlational design is used that explores causality and factors predicting or influencing the other variable. The term independent variable (IV) is used to describe the predictor variables that are thought to predict the outcome variables, often called the dependent variable (DV). In this study, based on secondary data and largely based on financial

ratios, certain ratios and logarithms are used as proxies to the predictor (IV) and outcome (DV) variables. This has been discussed in Sections 4.6 and 4.7.

By using the distinguished treatment groups described above, this study found further support concerning the determinant of trade credit extension in Malaysia and the association between late payment (from customers) and profitability (of which this study uses the operating income return on investment as proxy) in this study of trade credit supply and late payment in Malaysia.

4.11 MIXED-METHOD RESEARCH – COMBINING QUALITATIVE AND QUANTITATIVE RESEARCH APPROACHES

As trade credit management and late payment are elusive subjects with limited preceding studies (Nasruddin, 2008), the mixed method approach is more appropriate in the Malaysian environment. Qualitative exploratory research is performed initially to gauge the availability of credit information and the responsiveness of respondents before embarking on a qualitative investigation in the second phase of the study. Based on the conclusion of the exploratory study in Chapter 3, quantitative mainstream (Chua, 1986) research seems to be more appropriate.

Many writers draw attention to the merits of combining the quantitative and qualitative approaches (Denzin, 1978; Jick, 1979; Yin, 1984; Bryman, 1988; Hammersley, 1992; Qureshi, 1992; Creswell and Clark, 2007; Greene, 2008), leading to methodology triangulation. Triangulation is broadly defined by Denzin (1978) as the combination of

methodologies in the study of the same phenomenon (Jick, 1979). If both quantitative and qualitative data is used to answer the research questions, such a combination may be valuable in increasing the reliability and validity of studies (Bryman, 1992; Hammersley, 1992). Jick (1979) argues that different methods used in examining the same phenomenon should improve validity and reliability more than just a single method approach, i.e. if multiple and independent measures arrive at the same conclusions, it provides a more certain portrayal of the same phenomenon.

On the same subject matter, Easterby-Smith *et al.* (1991) identify four types of triangulation:

(a) triangulation of data to increase reliability: in this form data is collected at different points in time and/or in different contexts or from a range of sources in the study,

(b) investigator triangulation: where different researchers independently gather data on the same phenomenon and compare their results,

(c) methodological triangulation: where both quantitative and qualitative methods are used to collect data,

(d) triangulation of theories: where a theory from one discipline is used to explain a phenomenon in another.[43]

However, some researchers point out that quantitative and qualitative research are underpinned by divergent paradigms and, therefore, are incompatible and should not be mixed (Burrell and Morgan, 1979). Nevertheless, recent studies offered mixed method as the third research framework and paradigm (along with qualitative an quantitative

[43] Cited in Hussey and Hussey (1996), p.74

research) choice that often will provide most informative, complete, balanced and useful research results (Greene, 2006; Johnson *et al*., 2007). In this study of trade credit management and late payment in Malaysia, mixed method would be most appropriate as this study relies on qualitative and quantitative viewpoints, data collection, analysis, and inference techniques combined according to the logic of mixed methods research to generate important research questions and providing warranted answers to the questions (Johnson, 2007). The qualitative method is used in the first phase of the study which is exploratory in nature while quantitative methods are applied in the second phase, which is empirical in nature and the results of the empirical research are compared with the findings from the World Bank's enterprise survey on Malaysia. Johnson *et al.* (2007) suggests that mixed methods research is likely to provide superior research findings and outcomes.

Accordingly, this study proceeded with an exploratory study approach, which tends to use small samples to produce qualitative, subjective but rich data with high validity and low reliability (Hussey and Hussey, 1997) on fundamental trade credit practices and the issues concerning late payment. This is followed by an empirical study of the determinants of trade credit extension and the association between late payment and profitability in Malaysia. The empirical study on credit management is a quantitative research that uses approaches that include the collection and analysis of numerical data that utilizes statistical tests (Hussey and Hussey, 1997).

4.11.1 Arguments for Quantitative Content Analysis

Information on the credit period granted by Malaysian companies, if disclosed, will be stated in the notes to the audited financial statements. Especially in Malaysia, the common credit period granted would usually be disclosed in the range of DSO (e.g. between 30 to 90 days) and not an absolute average DSO together with some qualitative disclosure on trade credit risk. Content analysis is undertaken on each and every sample to obtain the information on DSO to collect this specific information.

May (1997, p. 55) points out that by going through this process, 'the analysis picks out what is relevant for analysis and pieces it together to create tendencies, sequences, patterns and orders'. The usual process under this research approach is a study of the literature so an appropriate theory or hypothesis can be established and then data is collected to test these hypotheses using statistical analysis.

The main feature of this methodology is the use of large samples and it produces quantitative 'hard' data, which is regarded by many as specific, precise and objective with high reliability from which generalisation is possible; these characteristics tend to make this approach more suitable for some disciplines than others and dominates areas such as economics and finance (Brannen, 1992). Furthermore, because of its capability for measuring and quantifying certain factors, this methodology is of great value in the context of disciplines that emphasise numerical data, such as accounting and finance (Easterby-Smith *et al.,* 1991); and, maybe, the disciplines are shaped by the methods and methodologies.

4.11.2 Research Process

Figure 4.5 gives an overall view of the different stages involved in each phase of the research process in this study. This facilitates a so-called "triangulation" approach as both quantitative and qualitative methods are combined in the investigation (Jick, 1979; Easterby-Smith *et al.,* 1991).

The research commences with the review of the literature to synthesize and integrate the theories behind trade credit, encompassing theories on trade credit extension, trade credit demand, credit terms and their variations and also the late payment of accounts receivable. On the local front, the initial review of available literature, especially on late payment, Angappan and Nasruddin (2003) indicates that research on this subject matter is very scarce in Malaysia.

Accordingly, the existing empirical and qualitative studies across the globe are being reviewed, specifically on the determinants of trade credit extension and the impact of late payment on companies in other countries. To fill the gap in Malaysia, and in order to get a feel of the subject matter on the ground, a preliminary exploratory study on the background understanding of trade credit practices in Malaysia is undertaken as well as some related pertinent issues such as late payment by customers. The results of this study are analysed and reported in this thesis.

Based on the findings of this exploratory study, knowledge gaps are identified, especially concerning the lack of empirical research based on secondary data in trade credit

extension and late payment on the pretext of unavailability of sufficient and appropriate information on trade credit and late payment in Malaysia (Nasruddin, 2008).

4.12 RATIONALE BEHIND THE METHODOLOGY ADOPTED IN THE PRESENT STUDY

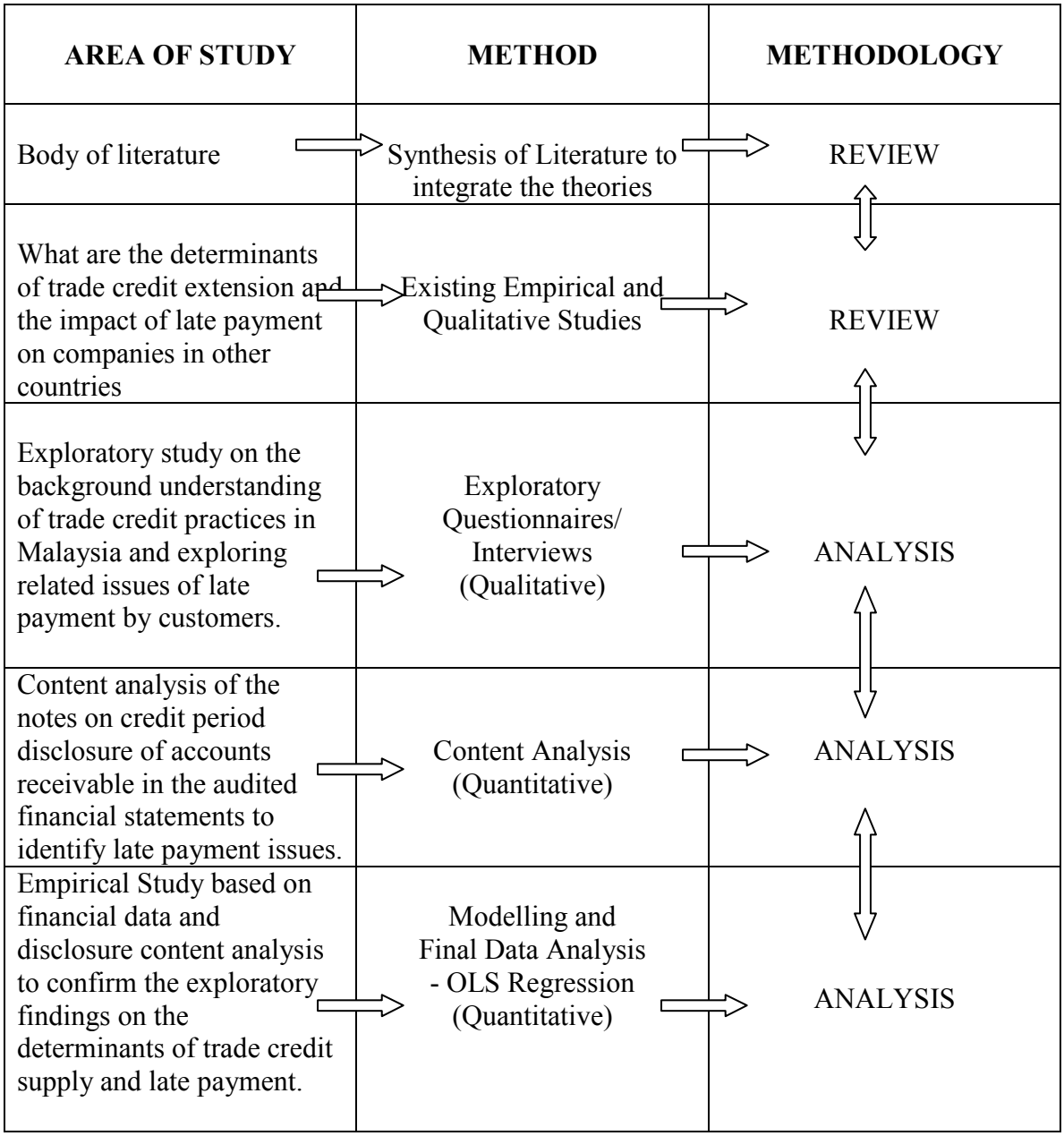
Quantitative researchers define a specific set of variables (from which hypotheses are deducted) first, by looking through a 'narrow lens' and then collecting data to test the hypotheses; while qualitative researchers, look through a 'wider lens', define some general concepts which, in the process of researching, may constitute their findings (Brannen, 1992). As all methods have their strengths and weaknesses one may try to match the strength of one to the weakness of the other to obtain more robust and reliable data for analysis.

Hussey and Hussey (1997) find that in business research it is quite common to take a mixture of approaches, especially in the way data is collected and analysed. They argue that a questionnaire survey providing quantitative data could be accompanied by a few in-depth interviews to provide qualitative insights and illustrations. Moreover, 'like theories, methodologies cannot be true or false, only more or less useful' (Silverman, 1994).[44] Furthermore, many argue that multi-methods can be used to enhance interpretability. Robson (1999) for instance, sees this as a benefit in cases where the interpretation of statistical analysis from a quantitative study may be enhanced

[44] Cited by Hussey and Hussey (1997, p. 54)

using qualitative narrative accounts and qualitative narrative accounts may be improved by supportive quantitative evidence.

Figure 4.5: Research Process for Determinants of Trade Credit Extension and Late Payment of Receivables



It can be argued that there is an advantage of having an exploratory study that utilises short and simple questionnaires and interviews to gain a preliminary understanding of the trade credit practices and the issue of late payment affecting Malaysian companies. Moreover, this study provides empirical evidence of the subject matter to confirm or dispel the preliminary exploratory findings.

While the argument here relates mainly to the different ways the data is treated, equally important is the way data is collected in the first place. With quantitative research, the tools used to collect data are generally set out in advance and, therefore, flexibility, interaction and reflexivity are limited while qualitative research, by definition, requires the interaction of the investigator to achieve an insight to the respondent's view.

Accordingly, through the combination of quantitative and qualitative methods in this study, data collection may, therefore, be seen as "methodology triangulation" (Easterby-Smith *et al.,* 1991). At the same time, this study uses the Pareto 80:20 principle to replace the normal averaging method in determining the "normal" credit period extended and in arriving at days overdue in the second part of this study, which relates to late payment by customers. This is consistent with triangulation where a theory from one discipline is used to explain a phenomenon in another (Easterby-Smith *et al.,* 1991).

Nevertheless, unlike the common triangulation, which prominently involves qualitative methods to generate 'holistic work' (Reiss, 1968), this study is more quantitative-oriented in nature but uses exploratory study in the preliminary stage to exploit 'the potentialities

of social observation' (Reiss, 1968, p. 360). As trade credit is a sensitive topic and gains little attention in Malaysian business (Angappan and Nasruddin, 2003), an exploratory study on credit management and challenges in Malaysia (using exploratory questionnaires and interviews) would provide a 'gauge' on the likely findings using quantitative methods. If both methods are pointing to the same results, then this improves the internal consistency and reliability of this study, albeit the quantitative methods would tend to be more prominent owing to the empirical nature and the lack of research in many aspects of trade credit in Malaysia (Angappan and Nasruddin, 2003).

Accordingly, this study is divided into two phases. Qualitative study is used to explore the trade credit practices in Malaysia and the quantitative study in the second phase provides empirical findings to support the phenomenon uncovered in Phase I of this study.

4.13 UNIT OF ANALYSIS

The appropriate sample unit of analysis is the manufacturing companies listed on Bursa Malaysia. This covers the manufacturing companies listed on the Main Board and Second Board that are categorized under the Consumer Products and Industrial Products sectors. This study excludes companies listed under MESDAQ, which is meant for high growth companies with no division into manufacturing and non-manufacturing sectors. Accordingly, these companies are not within the scope of this study, which is confined to manufacturing companies listed on the Main and Second Board of Bursa Malaysia.

As such, the population of interest includes all the companies listed under the Consumer Products and Industrial Products sector on Bursa Malaysia as at 31 December 2007. Based on Bursa Malaysia's official statistics of listed companies in Malaysia, the target population is 409 companies out of 867 companies listed on Bursa Malaysia as at 31 December 2007.[45]

Based on the last five years statistics up to the latest financial year ending 31 December 2008, the total number of listed companies is shown in Table 4.8 below. The population of our sample is based on year ending 31 December 2007 statistics. As shown in Table 4.8, the total number of companies listed on the Main and Second Board of Bursa Malaysia is 863 comprising 636 (74%) Main Board companies, and 227 (26%) Second Board companies as at 31 December 2007.

Table 4.8 Total Number of Listed Companies in Malaysia

Year	Main Board	Second Board	MESDAQ	Total
2009	630	219	120	969
2008	634	221	122	977
2007	**636**	**227**	**124**	**987**
2006	649	250	128	1027
2005	646	268	107	1021
2004	622	278	63	963

Source: http://www.bursamalaysia.com

[45] www.bursamalaysia.com

The manufacturing sector companies (409 in total) listed on the Main and Second Board of Bursa Malaysia covers 47.39% of the Main and Second Board population or 39.31% of the entire population of listed companies (including those listed on the MESDAQ) as depicted in Table 4.9.

The sample selected in this study is 388 out of 409 companies in the manufacturing sector, a coverage of approximately 95% of the companies listed under the manufacturing sector of Bursa Malaysia (Consumer Products and Industrial Products), which is 45% of Bursa Malaysia's Main and Second Board population. Such coverage is adequate considering the specific focus on the manufacturing sector; generalization can be made from this sample selection.

Table 4.9: The Population of Listed Manufacturing Companies in Malaysia at 31 December 2007

No. of Companies listed in the Sector	Main Board	%	Second Board	%	Combined Total	%
Consumer Products	86	35.39%	46	27.71%	132	32.27%
Industrial Products	157	64.61%	120	72.29%	277	67.73%
Manufacturing – Total	243	100.00%	166	100.00%	409	100.00%
Manufacturing companies as % Main & 2nd Board companies	636	38.21%	227	73.13%	863	47.39%
MESDAQ Companies	na		na		124	12.56%
% Total Bursa Malaysia Listed companies	24.62%		16.82%		987	41.44%
Total % of coverage	64.44%		23.00%		39.31%	

(Source: Bursa Malaysia)

4.14 SOURCES OF DATA

As there is no known prior study in the area of determinants of trade credit in Malaysia, selected published secondary data on Malaysia from databases is used in this empirical study and the coverage is limited to listed companies on the Main and Second Board of Bursa Malaysia, under the Consumer Products and Industrial Products sector, which collectively represent listed manufacturing companies in Malaysia. Being listed companies, disclosures are available to the members of the public unlike unlisted companies.

The data is obtained from Reuter's official website[46] by extracting the financial data comprising balance sheet items and profit and loss accounts, for the financial year ended 2007/2008, for all listed manufacturing companies. The most recent annual report or the audited accounts of the samples available at the time of this study were downloaded one-by-one from Bursa Malaysia's official website at www.bursamalaysia.com. A comparative preceding financial year-end data was also extracted to enable the computation of sales growth ratio. As such, all data and financial figures and ratios in this study are generated or computed from published secondary data.

4.15 SAMPLING DESIGN AND DATA COLLECTION

This section discusses the sampling design for data collection of Phase 2 of this study. As Phase 1 of this study concluded that primary data and methods used are not so appropriate owing to the sensitivity of the subject of the study, Phase 2 data collection is associated with secondary data obtained from the public domain. The section

[46] www.reuters.com/finance

arrangement is as follows: Section 4.15.1 discusses the sampling frame of this study followed by a selection of samples from Bursa Malaysia listed companies in Section 4.15.2. Sample omission criteria and procedures are illustrated in Section 4.15.3 and Section 4.15.4 deliberates on the sample selection for late payment by customers' reduction where the sample size is reduced due to inadequate disclosure of accounts receivable for some of the samples. The data collection process is discussed in Section 4.15.5.

4.15.1 Sampling Frame

Sampling frame is the list of elements from which the sample is actually drawn. A sampling frame is a 'list or other record of the population from which all the sampling unit are drawn' (Vogt, 1993, p.202). For this study to be of both academic and commercial value all published financial data is made available in the time horizon of this study, the sampling frame will be Bursa Malaysia's Main Board and Second Board's manufacturing companies. Manufacturing companies in these two listing boards are classified into two distinctive sectors: consumer products and industrial products.

As this research pertains to credit management, specifically in the manufacturing sector in Malaysia, all non-manufacturing listed companies are excluded, including those companies listed in the trading/services sector. Without doubt trade credit will also play a vital role in the day-to-day business of the trading sector. As the classification of companies involved in trading is mixed with companies involved in services, and owing to the myriad of principal activities of this widely diversified Trading/Services sector, the

usage of the samples in this sector does not represent an equitable view on trade credit management. In order to be objective and confine our study to a less disputable sample selection, all sectors that are listed on Bursa Malaysia, but do not fall into the manufacturing category, are excluded from our study and 388 samples are used in this study.

Accordingly, the most appropriate sampling frame from the procedure above are those companies listed on the Main Board and Second Board of Bursa Malaysia, which are involved in commercial or trade related credit management, and that give credit terms for payments by their debtors.

To make the database representative of the publicly-listed Malaysian manufacturing sector; all listed Main Board and Second Board manufacturing companies form the sample population, representing large manufacturing companies and medium-sized manufacturing companies in Malaysia, respectively.[47]

Accordingly, non-probability sampling is used as the above study is to specifically cover the manufacturing sector's companies that are listed on the Main Board and Second Board of Bursa Malaysia. As such, judgment sampling type is the most appropriate way that conforms to the above criterion.

[47] Main Board companies must have a minimum paid-up capital of RM60m and RM40m for Second Board companies. We use this indication of size to proxy the large and medium-sized manufacturers. Unlike in the EU, there is no official definition of large and medium-sized companies in Malaysia.

The use of non-probability sampling meets the sampling objectives of choosing samples that practiced the extension of trade credit to their customers. It is feasible, cost effective and less time consuming to select purposive samples based on large and medium-sized corporations listed on Bursa Malaysia, which are specific and fairly represent the large and medium-sized population as a whole. As such, this study excludes unlisted manufacturing companies where secondary data on credit period disclosure is only available via official searches of the audited financial statements with the Companies Commission of Malaysia.

4.15.2 Selection of Samples

Based on the above, samples are selected from the secondary data on Bursa Malaysia companies from Reuters. Initially, all manufacturing companies under the category of consumer products and industrial products sector, totalling 409 companies, are selected, i.e. 100% coverage based on the chosen parameters. As this study on Malaysian companies on trade credit is intended to shed some light on the determinants of trade credit extension for the manufacturing sector, taking a cue from the model of Petersen and Rajan (1997), this study is a cross-sectional study and the financial data selected is based on the latest available financial statements from Reuters and the Bursa Malaysia website.

Based on available data at the point of data collection, these companies' financial year end falls between 30 June 2007 and 31 August 2008, which coincides with the financial year ended 2007 to 2008. As companies in Malaysia, unlike Japan, are free to choose

their financial year end, there is no similar or standardized twelve months homogeneous financial period.[48] Based on the number of listed companies as at 31 December 2007, the latest available financial data in the Reuters database and also the latest available audited accounts are extracted from the stock exchange's official website. In Malaysia, all listed companies must submit their audited accounts to Bursa Malaysia within four months of their financial year end.

Out of the identified sample of 409 public-listed companies involved in manufacturing businesses in Malaysia, several companies with inconsistencies were excluded from the sample, for example, change of accounting year end that leads to an incomparable financial period of more than 12 months in the period under review; companies that are not active or without principal businesses with some awaiting for delisting proceedings by Bursa Malaysia and those companies whose financial data is not available due to subsequent delisting from Bursa Malaysia. After omitting non-conforming samples, the final sample shall be used for our data analysis.

4.15.3 Sample Selection for Late Payment Issues

Phase 2b of this study empirically analyses the issue of late payment by customers using sample data of listed manufacturing companies that disclose the credit granting period, which is used to compute the days overdue by comparing with the computed DSO. From the 388 samples, companies that do not disclose the credit period granted to their customers were identified and singled out, as it is not possible to determine the debtors

[48] In Japan (see Ono, 2001), all companies financial year end is 31 March of each year, all sample financial periods are from 1 April to the following year 31 March

overdue days for these companies. The sample selection was reduced accordingly to 287 of the 383 samples for the study on late payment.

Using a dummy variable for the Big Four audit firm versus the others, the difference in the level of disclosure of credit period extended, if any, between the big and smaller audit firms, can be identified. Non-Big Four audit firms are somewhat expected to have a lower level of disclosure in such compliance due to the lack of international technical support and economy of scale. The computed DSO is compared to the credit period granted to determine days overdue.

4.15.4 Derivation of Sample

Table 4.10 shows the derivation of samples for both Phase 2a and 2b of this study. This section discusses further the exclusion of certain companies owing to the reasons or justifications stated herein. Out of the identified sample of 409 companies, a total of 21 companies were excluded for various reasons. The reasons for exclusion are as follows:

(a) there was a change in accounting year end resulting in the data under review being longer or shorter than the standard twelve months interval, rendering misleading comparisons among the samples;

(b) some companies went through restructuring by consolidating their listed companies into one operating group, rendering the absorbed listed companies with single dealing with the merged listed companies. Accordingly, this single dealing data would not be comparable to other samples;

(c) delinquent companies that were unable to submit their audited accounts to Bursa Malaysia within the stipulated period and continued delaying the submission and those companies that were in the process of being delisted were excluded.

(d) companies that were not active or without principal businesses with some awaiting for delisting proceedings by Bursa Malaysia and those companies whose financial data were not available due to subsequent delisting from Bursa Malaysia were excluded.

(e) Some of the data that was extracted from Reuters finance with typography errors was checked against the respective audited report or annual report and rectified accordingly.

As a result of this, this study ended up with a pre-final sample of 388 companies. A further cleaning of the data on samples was made to take out extreme data samples. Five extreme samples with days sales outstanding of more than 18 months (one year and a half) were identified in Table 4.11 below and excluded as the inclusion of such samples may distort the findings. Finally, a total sample of 383 manufacturing companies was selected for Phase 2a.

As shown in Table 4.11, the discrepancies between DSO and the credit period granted to customers as disclosed in the audited financial statements for Company A and Company B are somewhat puzzling. It appears that the disclosure of the normal credit period granted is based on the companies' credit policy, similar to those observed by Wilson (2008) on the disclosure of payment days in UK. Nevertheless, these samples were

excluded in arriving at the final samples of 383 companies for the empirical testing on the determinants of trade credit extension in the Malaysian manufacturing sector and 287 samples for the empirical testing on the association between late payment and profitability of the Malaysian manufacturing sector in Phase 2b.

Table 4.10: Derivation of Sample

Sample Selection from the Population of the Manufacturing Companies listed in the Consumer and Industrial Products Sector	Main Board	Second Board	Total Manufacturing Sector
Total number of companies listed on the Consumer and Industrial Sector of Bursa Malaysia as at 31 December 2007	243	166	409
Less:			
(a) Companies with change in accounting year end during the 2007/2008, shorter or longer than the standard 12 months interval, delinquent companies and those companies under financial regularization plans.	(10)	(11)	(16)
(b) Companies with accounts receivable DSO of more than 18 months or one and half years. (See Table 4.4)	0	(5)	(5)
Samples selected for Phase 2a: Determinants of trade credit	233	150	383
Sample coverage for Phase 2a (in percentage)	95.9%	90.4%	93.6%
Less: Companies which do not disclose the normal credit period granted to their customers in their audited financial statements for FYE 2007/2008	(62)	(34)	(96)
Samples selected for Phase 2b: The association between late payment and profitability	171	116	287
Sample coverage for Phase 2b (in percentage)	70.4%	77.3%	74.9%

Table 4.11: Excluded Samples

Omitted Samples	Listing Board	Industrial Sector	Days Sales Outstanding (more than 1 ½ years)	Disclosed Credit Period Granted	Financial Year End
Company A	2nd. Board	Industrial Products	608 days	30 – 90 days	31.12.2007
Company B	2nd. Board	Consumer Products	849 days	30 – 60 days	31.12.2007
Company C	2nd. Board	Industrial Products	869 days	Not disclosed	31.12.2007
Company D	2nd. Board	Consumer Products	811 days	Not disclosed	30.9.2007
Company E	2nd. Board	Consumer Products	579 days	Not disclosed	31.3.2008

4.15.5 Data Collection

Data was obtained from Reuters' financial website at www.reuters.com/finance and the recent annual report or the audited accounts of the samples were downloaded one-by-one from the Bursa Malaysia official website, www.bursamalaysia.com. The Reuters data was obtained by extracting the latest available (at the point of data collection) financial data comprising balance sheet items and profit and loss accounts for the financial year ended 2007/2008 for all listed manufacturing companies in Malaysia under the consumer products and industrial products sector on the Main Board and Second Board of Bursa Malaysia. Comparative preceding financial year end data was also extracted to enable the computation of sales growth ratio. As such, all data and financial figures and ratios in this study were generated or computed from published secondary data.

As different companies adopt different financial year ends, 30 June 2008 was adopted as the last cut-off, being the latest practical date for this study to ensure that all the 12

months data is comparable, resembling the financial performance position during the period 2007 to 2008.

Cross-sectional study was chosen in this study, similar to previous studies undertaken in other countries by Petersen and Rajan (1997), Ono (2001), and Delannay and Weill (2004). The final part attempts to perform an empirical study on whether there is a significant association between late payment (by trade debtors) and the performance of Malaysian companies. It is widely expected that better performing companies have a lower late collection of debts issue. The computed day sales outstanding will be compared to the accounts receivables credit period disclosed in the financial statements, and to group the samples into two groups: late versus prompt group, to study the distinct differences in terms of profitability between large and medium-sized manufacturing companies in Malaysia.

4.16 CONTENT ANALYSIS

For each and every sample, the recent annual report was downloaded and in the event the current annual report was not available at the point of data collection, the latest available audited accounts available on the Bursa Malaysia website were downloaded. A review of the disclosures in the notes to the accounts accompanying the financial statements was performed to extract the following:

a. The credit period granted by the listed companies to their trade debtors, which are disclosed in the notes to the accounts.
b. The name of the external auditors and classifying these auditors into two groups:

(i) Big Four auditing firms (Big4)

(ii) Others or non-Big Four auditing firms (Non-Big4)

c. The disclosure on credit risk management in the annual report or the audited accounts was also reviewed to identify any anomalies concerning the disclosure of the credit period granted and other factors that require mention, in order to understand the respondents and the relationship between the performance of the respondents versus their credit management and practices.

Based on past studies, the approach taken adopted stratified random sampling. Stratified sampling involves a process of stratification or segregation and then a random selection from each stratum is conducted (Sekaran, 2003). In this study, stratified random sampling is based on the sectors of the listed company on Bursa Malaysia. Each sector has its representative and is selected randomly. This method was chosen in order to include the parameter on the industrial membership. This increases the sample's statistical efficiency and provides adequate data for analyzing the various subpopulations (Cooper and Schindler, 2003).

Each sample disclosure on credit period was compared against our computation of the average debtor days, based on the audited financial statements of each sample for the financial year ending in 2007/2008, to determine the days overdue, which is the key performance indicator for late payment from customers.

4.17 MEASUREMENT

The independent variables used in this study are mainly derived from previous studies outside Malaysia. In the framework developed in this thesis, the variables can be categorized according to three levels, namely: Inter-firm level, firm level and individual. Some of the variables are tested in prior studies but explained through various theoretical perspectives. The measurements of the variables are discussed next.

The issue of measurement will occur in the AR credit period. Whilst some companies disclose absolute figure, quite a number provide a range of credit period, i.e. between 30 – 90 days. The median or other measures are applied to compute late payment, as the Pareto rules apply where the majority of AR is skewed to the longest credit period. As this part of study is on late payment, the longest credit period given is taken in the range to be compared against the computed DSO to determine the category of the sample.

4.17.1 Appropriateness of the Measurement and Shortcomings

The two indicators that are to be used are Debtors Days and Days Overdue (Summers and Wilson, 2000; Pike and Cheng, 2001/2002; Paul and Wilson, 2006):

(i) the length of credit outstanding is measured by debtor days (or days sales outstanding);

(ii) the excess of debtor days over the normal credit period offered by companies is measured by days overdue.

Debtor days and Days Overdue are appropriate measures for the above concepts, as both can be quantified mathematically and are comparable across all the respondents, and have

been used and tested by others. However, different industries have different average debtors days and days overdue. At the same time, computation of days outstanding and days overdue might not be based on the same basis as different respondents might have different specific definitions of days outstanding or days overdue.

Some respondent companies might give some days of grace period (based on the findings of some company's practices in the exploratory study in Chapter 3) after the credit term expiry owing to geographic reasons for banking-in the payments. This study assumes that all samples use the stated formula for calculating the debtor days and days overdue definition so as to avoid ambiguity in terms of measurement. The independent or explanatory variables' definitions shall also be clearly stated to ensure that key concepts are correctly inferred.

4.17.2 Assumptions Relating to the Measurements

As such, this study assumes that all respondents use the usual stated formula of calculating debtor days and days overdue definition as stated above to avoid ambiguity in terms of measurement. The independent/contextual variables' definitions shall also be stated clearly including the definition of large and medium-sized corporations (Main board companies are categorized as large corporations that have a minimum of RM60 million paid-up capital whilst medium-sized corporations are represented by Second

Board companies, which have a minimum paid-up capital of RM40 million) so that the key concepts of this study will be inferred correctly.[49]

4.17.3 Interpreting Credit Period Granted, Average Collection Period and Late Payments by Customers

The main sources of data on actual payment times are company accounts, sales ledger data and one-off or regular surveys of businesses. The relevant data, taken from the company accounts is generated from accounts receivable and accounts payable figures on the balance sheet of the financial statements. This is used to calculate the financial ratios, debtor days (popularly known as Days Sales Outstanding (DSO), which, in essence, is the Average Collection Period (ACP) and creditor days (Wilson, 2008).

From the company-level perspective, debtor days (DSO or ACP) proxies the average time (in days) that customers take to pay the business and creditor days proxies the average time (in days) that the business takes to pay its suppliers. This study concentrates on the debtor days, and DSO and ACP are used interchangeably and have the same interpretation.

DSO is the proxy for the average payment time a customer takes to pay from the receipt of an invoice and does not isolate the 'number of days overdue', i.e. late payment. As such, DSO is the total payment time, which includes the agreed or assumed credit period (commonly known as credit term) plus, if late, the number of days overdue. In short,

[49] The distinction between Main Board and Second Board listing requirements can be found at www.bursamalaysia.com. However with effect from 3 August 2009, the Main Board and Second Board companies are merged into the Main Market.

DSO	=	CT	+	DOD
i.e. Days Sales Outstanding (DSO)/ Average Collection Period (ACP)/ Debtors day	=	Credit term (CT) Agreed/assumed/ granted credit period	+	Days Overdue (DOD), if late payment

4.17.4 The Myopia of DSO as Performance Indicator

Based on past works, two indicators are used as performance of slow or late payment indicators, DSO measuring the length of credit outstanding and DOD measuring the excess of debtor days over the normal credit period offered by companies.

The length of credit outstanding is measured by debtor days or days' sales outstanding (Pike and Cheng, 2001), also termed as average collection period (Nasruddin, 2008). Most previous studies (Long *et al.*, 1993; Deloof and Jegers, 1996; Deloof, 2003) use DSO as the standard measure of slow payment and credit management performance (Pike and Cheng, 2002). There seems to be DSO 'myopia' when it is used as a performance indicator and this is described in the next section.

Wilson (2008) presents an example of two debtor days figures of 38 days and 48 days. The first can be broken down into 30 days credit period given and the customer pays 8 days late. The second figure of 48 days reflects a 45 day credit period given to the customer who then pays 3 days late. In Wilson's example, although the standard credit period granted is 30 days, some customers could be accorded a longer credit period (in

this example is 45 days, i.e. 50% higher than the standard credit period) owing to various reasons such as bargaining power or perhaps collateral given to secure the trade credit facility. As such the DSO, proxy for late payment from debtors, will not be comparable between the first customer and the second as both customers' credit terms are based on a different baseline – the first being a 30 day period whilst the second is 45 days.

The first customer with a DSO of 38 days is not considered a prompt payer compared to the second customer with a DSO of 48 days if the credit periods granted to the first and second customer are different, even though the first customer has a shorter DSO. Therefore, despite having a longer DSO, the second customer is a prompt payer compared to that of the first customer as the latter delayed payment by only 3 days (as opposed to 8 days for the former[50]).

Unlike in the UK, US and EU, where debtor days and creditor days are stated in one absolute average figure, in Malaysia, companies tend to disclose a range of days as their average credit period granted to customers or received from suppliers. For example, the average credit period granted to customers is within 30 to 90 days. As such, there are several baseline credit terms in the credit period granted and, accordingly, DSO is probably not the most appropriate indicator of slow or late payment from trade debtors.

[50] Based on financial cost, it may be argued that longer DSO would result in longer cash conversion cycle in the working capital management of the company Deloof (2003) found that shorter DSO improves profitability, which is in line with the financing theory but this does not explain the impact from the late payment by debtors.

Pike and Cheng's (2001/2002) studies on late payment are based on the responses from the surveys carried out in their study, where respondents suffering from slow or late payment from debtors state in their response the average number of days in excess of debtor days over the normal credit period offered by their firms, hereinafter referred to in this study as the average days overdue (DODA). Wilson (2008) cautions on the interpretation of variations in payment periods as poor payment practice as an increasing/decreasing trend in payment times may reflect changes and flexibility in credit periods rather than increase/decreases in overdue periods.

In previous empirical studies, Deloof (2003), Teruel and Solano (2007) find that companies with lower DSO have higher profitability (and vice versa). However, these studies disregard the variation in the credit terms granted as illustrated above.

In his empirical study of a sample of 279 SME companies in Malaysia, Nasruddin (2008) relates late payment to DSO (the average collection period) to company financial performance. This thesis is more in line with Nasruddin's (2008) study that relates the DSO to company financial performance, measured by operating profit on total assets and investigates the relationship between collection period and company size and industry sub-sector. He finds a negative correlation between collection period (DSO) and financial performance. This study will relate the late payment issue to corporate profitability, taking into account, unlike DSO, the different credit term each customer may enjoy.

Nasruddin (2008) acknowledges that his study on the impact of DSO on corporate performance is not conclusive as 'issues on late payment, which need more urgent

attention, were not considered' (p. 82). He claims that the non-consideration of late payment issues are due to unavailability of information on the credit period and, thus, further work needs to be done to include more variables (such as late payment) to better portray the situation of credit collection in Malaysia (Nasruddin, 2008). This study aims to fill this gap between DSO and late payment in relation to corporate performance/ profitability (Deloof, 2003, Nasruddin, 2008).

This study complements Nasruddin's (2008) work in two ways: information on credit period is extracted from the notes to the financial statement and compared to DSO using the Pareto rule to arrive at days overdue (DOD) as a proxy for the measurement of late payment (instead of using DSO to avoid the DSO myopia as discussed above). Second, the sample in this study are Malaysian large and medium-sized listed manufacturing companies.

The findings of this study contribute significantly to the body of knowledge in this scarcely researched area of trade credit management in Malaysia, in terms of empirical evidence based on published audited financial statements information (and not from survey responses which may have some elements of biasness, especially when information on trade credit is adverse).

4.17.5 Working Capital Management, Cash Conversion Cycle and Late Payment

Accounts receivables are a significant part of working capital management; they are important because of their effects on the corporate performance and risk, and,

consequently, its value (Smith, 1980). Manufacturing companies that invest heavily in accounts receivable tend to encounter reduced profitability due to the higher investment in accounts receivable. Decisions about how much to invest in the credit extension (and other current assets such as inventory are reflected in the companies' cash conversion cycle (CCC)[51], which is the sum of the days of sales outstanding (average collection period) and days of sales in inventory less the days of payables outstanding:

Cash Conversion Cycle (CCC)	=	Days of Sales Outstanding	+	Days of Sales in Inventory	-	Days of Payables Outstanding

Unlike previous studies (Shin and Soenen, 1998; Deloof, 2003) which focus on firms that use CCC to measure and analyze the length of CCC and its impact on firms' profitability, our study focuses mainly on one element of CCC: the late collection period or in short, late payment. Thus, we examine these using different measures, namely, DSO, average days overdue (DODA) and Pareto days overdue (DODP).[52] Nasruddin (2008) finds a negative correlation between the collection period and financial performance using DSO, but states that it is the late payment issue that needs urgent investigation, as, to date, it has been ignored due to the unavailability of information relating to the actual credit period.

[51] Cash conversion cycle represents the average number of days between the date when the firm must start paying its suppliers and the date when it begins to collect payments from its customers

[52] Average days overdue (DODA) is the average number of days of payment beyond the agreed credit period, terms, which is based on simple average. Pareto days overdue (DODP) is a modified version of measurement of days overdue where instead of simple averaging, Pareto 80:20 rules are applied.

4.17.6 Days Overdue based on Pareto (DODP) – a New Measurement for Late Payment

This study introduces the third measurement for late payment using the Pareto principle on days overdue in lieu of simple averaging. This simple averaging assumes that the trade debtors' credit terms are spread evenly. This is in contrast to the study of sales generation where 'most companies will find the pattern of their sales ledger follows, to a greater or lesser degree, the Pareto principle. This means that 20 per cent of customers account for 80 per cent of sales. Frequently the proportion of high-volume accounts is even smaller.' (Bass, 1991, p.101).

By applying the Pareto principle to trade credit extension, this paper attempts to present a more objective measurement of late payment of trade receivables. DODP is the difference between the DSO and the credit period granted based on Pareto 80:20 rules. So the late payment variable is based on Pike and Cheng (2001/2002) but modified using Pareto 80:20 rules on the credit period in lieu of the usual simple method.

4.18 DATA ANALYSIS TECHNIQUES

An exploratory data analysis (also known as descriptive statistics) and econometric analysis are applied to get a comprehensive picture of the trade credit supply or extension in Malaysian manufacturing sector as well as to test for the association between late payment (from customers) and profitability. EViews statistical software is used to generate the analysis and testing results. Prior studies also relied heavily on the

exploratory data analysis and econometric analysis in the area of trade credit (Petersen and Rajan, 1997; Marotta, 2000).

4.18.1 Exploratory Data Analysis

In this study, exploratory data analysis, as an explanatory technique, can provide an insight into the trade credit management of the Malaysian manufacturing sector. In addition, the descriptive analysis serves as a check before the use of econometric techniques.

The descriptive analysis includes a univariate test in which an independent sample t-test is used to test the mean difference between two groups in relation to the prompt collection and late collection due to late payment by customers (trade debtors). This test is employed on the independent variables that are measured using dichotomous variables. This technique has been utilized in several credit management studies (Petersen and Rajan, 1997). The purpose of having this test is to support the multivariate findings. It does not really influence in determining the hypotheses but seeks the explanatory effect without any multivariate effect.

4.18.2 Inferential Statistics Using Ordinary Least Squares

As this study is a positivistic study on the determinants of trade credit extension in Malaysia, Inferential statistics or more commonly known as confirmatory data analysis, will be conducted in this study. Inferential statistics, involves using quantitative data collected from a sample to draw conclusions about a complete population (Hussey and

Hussey, 1997). It is most relevant in this study as all the variables use quantitative data and the ordinal data is translated into quantifiable data by introducing dummy variables, by assigning the value of zero(0) and one(1). Based on the above dependent variables and independent variables measurement, hypotheses have been developed. A review of the prior literature is undertaken to identify the most appropriate statistical technique to be employed.

As the primary objective of this research is to find the association between the predictors concluded in the earlier study on the trade credit supply/extension, the ordinary least squares (OLS) regression technique appears suitable for this purpose. This test has been widely used in previous studies (Petersen and Rajan, 1997; Pike and Cheng, 2001/2002; Delannay and Weill, 2004; Paul and Wilson, 2006). Overall, OLS regression analysis is used to examine the effects of the independent variables on the trade credit variable.

4.19 REGRESSION MODELS

Based on the discussion on the methods and methodology in this study, ordinary least squares (OLS) regression, a linear multiple regression analysis will be employed to:

1. find the determinants of trade credit extension (supply) in Malaysian manufacturing companies, and
2. test the association between late payment and profitability of Malaysian manufacturing companies.

The model specification, the operationalisation of the variables and the final models for empirical testing are discussed in Section 4.19.1 and Section 4.19.2 for the determinants of the trade credit extension model and the late payment model, respectively.

4.19.1 Determinants of the Trade Credit Extension Model

The following functional equation using the ordinary least squares (OLS) regression model is proposed based on the foregoing discussions:

TC Extension = f (Company Size, Short-term Line of Credit, Profit & Internal Cash, Sales Growth, Gross margin, Liquidity, Collateral, Listing Board, Industry Sector, Auditing Firm, Collection Promptness)

The dependent variable is the ratio of the accounts receivable over turnover (ARTO) and is used as the proxy for trade credit extension or supply (TC Extension) in this study of the determinants of trade credit extension in Malaysia. A similar proxy was used in Petersen and Rajan (1997) in the US and the summary of the operationalisation of independent variables or explanatory variables are explained in Table 4.12. The following multiple regression models are used to test the determinants of trade credit extension in Malaysian manufacturing companies:

Trade Credit Extension (TC) [Dependent Var = ARTO] :

$$TC = a + B1\,SIZE + B2\,STCREDIT + B3OPEPROFIT + B4a\,GROWTHPOS + B4b\,GROWTHNEG + B5\,MARGIN + B6\,LIQUIDITY + B7\,COLLATERAL + D1\,BOARD + D2\,SECTOR + D3\,AUDITOR + e \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.1)$$

Table 4.12: Summary of the Operationalisation of the Dependent, Explanatory and Controlled/Dummy Variables for the Determinants of Trade Credit Extension

Dependent Variables	**For Equation 4.1, 4.2, 4.3**	**Operationalisation**
TC Extension	= Trade Credit Extension or TC Supply (ARTO)	Accounts receivable/Turnover
Independent Variables		**Operationalisation**
SIZE	= Company's Size (SIZE)	Log (Book Value of Assets)
STCREDIT	= Short-term line of Credit	Financial Institutions Debts in Current Liabilities / Turnover
OPEPROFIT OPPOS if profit (+), OPNEG if loss (-)	= Profit and Internal Cash	a. Operating Profit Before Tax(OP) /Revenue(REV) b. OP/REV, if positive, zero otherwise c. OP/REV, if negative, zero otherwise
GROWTH GROWTHPOS if +, GROWTHNEG if -	= Sales Revenue Growth (2007/2008 vs. 2006/2007) segregated into positive & negative revenue growth	a. Percent Sales Growth if positive, zero otherwise Percent Sales Growth, if negative, zero otherwise
MARGIN & MARGIN^2	= Gross Margin	a. Gross Profit Margin/Revenue b. (Gross Profit Margin/ Revenue) ^2 [53]
LIQUID	= Liquidity	Quick Ratio, i.e. the ratio of current assets (excluding inventories) over current liabilities
COLLATERAL	= Collateral to secure Financing	Net Fixed Assets /Total Assets, also known as Tangibility ratio.
Control Variables		Operationalisation
BOARD	= Listing Board Dummy Variable	a. Second Board Listed Companies, proxy for medium-sized companies = 0 b. Main Board Listed Companies proxy for large companies = 1
SECTOR	= Industry Sector Dummy Variable	a. Consumer Products = 0 b. Industrial Products =1
AUDITOR	= Auditing firm Dummy Variable	a. Non-Big4 audit firms = 0 b. Big4 audit firms = 1
COLLECTION	= Collection Promptness Dummy Variable	a. Prompt collection of debts = 0 b. Late collection of debts = 1

[53] The gross profit margin squared is used as the correction specification for linearity and, if included, will increase the coefficient of the linear term.

$$TC = a + B1\ SIZE + B2\ STCREDIT + B3a\ OPPOS + B3b\ OPNEG + B4a\ GROWTHPOS + B4b\ GROWTHNEG + B5a\ MARGIN + B5b\ MARGIN^2 + B6\ LIQUIDITY + B7\ COLLATERAL + D1\ BOARD + D2\ SECTOR + D3\ AUDITOR + e \quad \ldots\ldots (4.2)$$

$$TC = a + B1\ SIZE + B2\ STCREDIT + B3a\ OPPOS + B3b\ OPNEG + B4a\ GROWTHPOS + B4b\ GROWTHNEG + B5a\ MARGIN + B5b\ MARGIN^2 + B6\ LIQUIDITY + B7\ COLLATERAL + D1\ BOARD + D2\ SECTOR + D3\ AUDITOR + D4\ COLLECTION + e \quad \ldots\ldots\ldots\ldots\ldots\ldots (4.3)$$

where,

TC Extension	=	Trade credit extension or TC Supply (ARTO)
SIZE	=	Company's size (SIZE)
STCREDIT	=	Short-term line of credit
OPEPROFIT	=	Profit and internal cash
OPPOS	=	Profit and internal cash, if positive, else zero.
OPNEG	=	Profit and internal cash, if negative, else zero.
GROWTH	=	Sales revenue growth (2007/2008 vs. 2006/2007) segregated into,
GROWTHPOS	=	Sales revenue growth if positive growth, zero otherwise.
GROWTHNEG	=	Sales revenue growth if positive growth, zero otherwise.
GPMARGIN	=	Gross margin
GPMARGIN^2	=	Gross margin squared
LIQUIDITY	=	Liquidity
COLLATERAL	=	Collateral to secure financing
BOARD	=	Dummy variable for listing board, coded as 1 for Main Board companies and 0 for Second Board companies
SECTOR	=	Dummy variable for industry sector, coded as 1 for industrial products and 0 for consumer products
AUDITOR	=	Dummy variable for auditing firms, coded 1 for Big4 firms, 0 otherwise
COLLECTION	=	Dummy variable for collection promptness, coded 1 for late payment from debtors, 0 otherwise
e	=	Error term

Note: The dependent variable used is the accounts receivable over total revenue (ARTO) which is used as the proxy of the determinant of trade credit extension (trade credit supply).

4.19.2 Association between Late Payment of Receivables and Profitability Model

This study uses the Ordinary Least Squares regression analysis to test the association between the dependent variable (OIROI) of profitability and the independent variable of late payment. The OLS regression model is as follows:

$$OIROI = a + B1\ LP\_PROXY + B2\ SIZE + B3a\ GROWTHPOS + B3b\ GROWTHNEG + B4\ DEBTTL + B5\ BOARD + B6\ SECTOR + B7\ AUDITOR + e \quad \text{.....(4.4)}$$

Table 4.13 summarizes the operationalisation of the variables for the association between late payment and profitability model. Three different measurements of late payment as the proxy for late payment (LP_PROXY) are used in this study. Model 1 uses days sales outstanding, DSO, Model 2 uses average days overdue, DODA and Model 3 uses Pareto days overdue, DODP. The equations for all the three models are as follows:

Model 1:

$$OIROI = a + B1\ DSO + B2\ SIZE + B3a\ GROWTHPOS + B3b\ GROWTHNEG + B4\ DEBTTL + B5\ BOARD + B6\ SECTOR + B7\ AUDITOR + e \quad \text{.....(4.4.1)}$$

Model 2:

$$OIROI = a + B1\ DODA + B2\ SIZE + B3a\ GROWTHPOS + B3b\ GROWTHNEG + B4\ DEBTTL + B5\ BOARD + B6\ SECTOR + B7\ AUDITOR + e \quad \text{.....(4.4.2)}$$

Model 3:

$$OIROI = a + B1\ DODP + B2\ SIZE + B3a\ GROWTHPOS + B3b\ GROWTHNEG + B4\ DEBTTL + B5\ BOARD + B6\ SECTOR + B7\ AUDITOR + e \quad \text{.....(4.4.3)}$$

Table 4.13: Summary of the Operationalisation of the Dependent, Explanatory and Controlled/Dummy Variables for between Late Payment and Profitability

Dependent Variable	**for Equation 4.4.1, 4.4.2 and 4.4.3**	**Operationalisation**
Operating Income Return on Investment (OIROI)	= Operating Income/ Total Assets (OPTA) as proxy for corporate performance, is the level of profits relative to the assets or Income generated per RM1 of assets	The ratio of operating income to total assets, or Operating Profit Margin x Total Asset Turnover. or Operating Income/Sales x Sales /Total Assets
Independent Variables Payment and Profitability	**for association between Late Payment**	**Operationalisation**
DSO	= Days Sales Outstanding or Average Collection Period (ACP)	Accounts Receivable over Turnover times 365 days. DSO as variable for late payment (Long et al., 1993; Deloof and Jegers, 1996)
DODA	= Days Overdue (based on Average), i.e. average days overdue from average credit period(DSO) granted	DODA= Actual DSO (credit days) less the average DSO (DSOA) granted. Late payment of debts by customers is DODA, the variable for late payment (Pike and Cheng, 2001/2002).
DODP	= Days Overdue (based on Pareto Rule)	DODP = Actual DSO less DSO based on Pareto 80:20 rule (DSOP). Late payment variable based on Pike and Cheng (2001/2002) modified using the Pareto 80:20 rule on collection period in lieu of average DSO/ACP.
DEBTTL	= Leverage or Gearing of the company	Short-term and long-term bank borrowings to total liabilities. Company with lower leverage is positively associated with financial performance (Teruel and Solano, 2007).

Note: The other independent variables – size, revenue growth, availability of short-term line of credit and the control variables are identical to those discussed in Table 4.12.

where,

OIROI	=	operating income return on investment or operating income to total assets, proxy for profitability
DSO	=	days sales outstanding or average collection period (ACP) over 365 days
DODA	=	average days overdue, i.e. average days overdue from average credit period (DSO) granted over 365 days
DODP	=	Pareto days overdue (based on Pareto Rules) over 365 days
SIZE	=	company's size (SIZE), represented by the log of total assets (LOGTA)
GROWTHPOS	=	sales revenue growth (2007/2008 vs. 2006/2007) if positive growth
GROWTHNEG	=	sales revenue growth (2007/2008 vs. 2006/2007) if negative growth
DEBTTL	=	short-term and long-term bank borrowings to total liabilities
SECTOR	=	dummy variable for industry sector, coded as 1 for industrial products and 0 for consumer products
BOARD	=	dummy variable for listing board, coded as 1 for Main Board companies and 0 for Second Board companies
AUDITOR	=	dummy variable for auditing firms, coded 1 for Big-Four firms, 0 otherwise
e	=	error term

Note: The dependent variable used is the operating return on assets derived from the operating income over total assets (OIROI) instead of the commonly used return on assets derived from net income over total assets (ROA). Because the data is in group consolidated form and to minimise the effect of non-trade related business activities, operating profits or losses are the most appropriate proxies for profitability or returns (Deloof and Jegers, 1996; Deloof, 2003)

4.20 CONCLUSION

This chapter provides the research design and methodology of how the second phase of this research will be carried out and explains the theoretical framework underlying the subjects of this study. The empirical research on and the main theories behind trade credit management are interpreted critically with the development of a theoretical framework, hypotheses development to the modelling that sees a flow-through between the determinants of trade credit extension and the association between late payment and profitability. All variables that are to be used in the regression models including the control and dummy variables for the determinant of trade credit extension and the association between late payment and profitability model are properly identified and justified. The appropriateness of the measurement of the variables and issues identified are discussed.

A brief review on the data analysis techniques based on exploratory data analysis and OLS is discussed. The feasibility and the importance of this study on trade credit management and late payment is explained, followed by the presentation of both regression models. Previous studies methodologies are used as the key reference apart from the results of the preliminary exploratory research undertaken at the inception of this study. This study adopts a multi-methodology research method, combining qualitative and quantitative research approaches based on review and analysis of data gathered from the preliminary exploratory study and secondary data sources. The following chapter focuses on the findings and interpretation of the data analysis.

CHAPTER 5

RESULTS AND INTERPRETATION FOR PHASE 2:

EXPLORATORY DATA ANALYSIS AND UNIVARIATE ANALYSIS

5.1 INTRODUCTION

This chapter deliberates on the empirical findings of the study using the methodology and statistical techniques developed in the previous chapter to test the hypotheses developed in Chapter 5. It elaborates on data validation, exploratory data analysis (more commonly known as descriptive statistics) and inferential statistics using the ordinary least squares regression (OLS) method.

The explanation of the analysis can be divided into univariate test results and the OLS regressions results on the determinants of trade credit extension in the Malaysian manufacturing sector and the association between late payment (by debtors) and profitability. The relationship between the independent and independent variables is examined and the results from this data analysis provide empirical evidence on the hypotheses developed in this study prior to multivariate analysis in Chapters 7 and 8.

The chapter is organised as follows: Section 5.2 discusses the data validation process in this study prior to exploratory data analysis or descriptive statistics discussion in Section 5.3. The results of the content analysis are reported in Section 5.4 followed by the descriptive analysis on the independent and dependent variables in Section 5.5. The

results of the testing of the regression assumptions are discussed in Section 5.6 and the Chapter concludes with Section 5.7.

5.2 DATA VALIDATION

One of the key components of data analysis is validation by checking for any errors. It is the process of ensuring the data conforms to specification and is usually the first process undertaken on raw data (Daintith, 2004).

The erroneous data is then identified, corrected or omitted (with justifications) before further data analysis is undertaken. Out of the total of 409 manufacturing companies listed on the Main and Second Boards of Bursa Malaysia, a total of 21 companies were omitted as explained in Section 4.15.4, Chapter 4. In addition, 5 companies were removed due to outliers.

Eviews and SPSS statistical software were used in this cross sectional empirical study where all variables are categorical variables. Once satisfied with the validation of the data this study proceeds with a discussion on the exploratory data analysis (more commonly known as descriptive analysis) to summarise, describe or display quantitative data (Hussey and Hussey, 1999).

5.3 EXPLORATORY DATA ANALYSIS

Exploratory data analysis (EDA) can be defined as the examination of data with minimal preconceptions about its structure through which it is hoped that relationships and

patterns, at least some of which are unanticipated, will be uncovered (Tukey, 1977). 'EDA is an attitude, a flexibility, and a reliance on display, not a bundle of techniques, and should be so taught' (Tukey, 1980, p. 23). Hussey and Hussey (1999) prefer the term EDA to descriptive statistics as they consider the latter term misleading. This implies that this group of techniques is only concerned with describing data. In addition, it is also useful for summarising and presenting the data in tables, charts, graphs and other diagrammatic forms, in which patterns and relationships are discerned that are not otherwise apparent in the raw data. In EDA, techniques are applied to data as part of a preliminary analysis or even a full analysis, especially when great statistical rigour is not required and/or the data does not justify it (Hussey and Hussey, 1999).

The study of trade credit management is not common in Malaysia due to its sensitivity and confidentiality in the business culture as explained in the exploratory study in Chapter 3. EDA based on secondary data is perhaps much more important and unbiased as audited financial figures are more reliable compared to qualitative exploratory study methods (such as survey and questionnaire responses) where respondents may respond in a subtle manner to portray a non-adverse impression of their companies to the extent possible in relation to trade credit management. A simple EDA such as the computation of average collection period (e.g. day sales outstanding) will indicate how serious the problem of late payment is.

In fact, in this study, the answer to three out of the five research questions can be found by a simple examination of EDA without even the need of great statistical rigour. Only

the answers to the last two grand research questions require more advanced statistical analysis than EDA. The classic multiple regression method and ordinary least squares are applied.

Continuing from the discussion on the selection of samples from the population (in Section 4.15.2), a description of the characteristics of the 383 companies comprising manufacturing companies from the consumer products sector and industrial products sector on the Main and Second Board of Bursa Malaysia are discussed.

This section depicts the unit of analysis and the number of listed manufacturing companies in Malaysia. Table 5.1 further shows the details of the samples based on the industry sectors and listing boards in relation to the total population for Bursa Malaysia combined listings board and the percentage of companies taken in the sample.

Based on Table 5.1, out of the 383 companies under study, 61% of them are from the Main Board manufacturing. The rest belong to the Second Board manufacturing. The 150 companies from the Second Board covers more than 66% of the Second Board's population whilst the 233 samples from Main Board covers approximately 37% of the Main Board population, which is almost three times the size of the Second Board.

In terms of the manufacturing sector, this study covers almost 96% and 90% of the manufacturing companies listed on the Main and Second Boards of Bursa Malaysia, respectively. The coverage of above 90% on average (in terms of listing board and

industry sector for listed manufacturing companies) is deemed to be a good representation of the Malaysian manufacturing sector.

Table 5.1: Number of Companies Selected in the Sample Based on the Sector/Industry Categories

	Main Board			Second Board			Combined - All Boards		
Industry sector	Listed	Sample	%	Listed	Sample	%	Listed Total	Samples Selected	%
Consumer	86	84	97.67%	46	40	86.96%	132	124	93.94%
Industrial	157	149	94.90%	120	110	91.67%	277	259	93.50%
Sub-total Manufacturing	243	233	95.88%	166	150	90.36%	409	383	93.64%
Others-non manufacturing sectors	393	0	0%	61	0	0.00%	454	0	0.00%
Total Main & 2nd Board	636	233	36.64%	227	150	66.08%	863	383	44.38%
MESDAQ	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	124	0	0.00%
Grand Total Bursa Malaysia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	987	383	38.80%

Note: n.a. denotes not applicable as the MESDAQ listing board has no official sector classification.
(Source: Bursa Malaysia and compiled by Author)

Finally, as for the population as a whole, the 383 companies chosen represent approximately 45% of the entire Main and Second Board's multi-sectors' population, close to 40% of the entire listed companies in Malaysia, which are listed on the Main Board, Second Board and MESDAQ. This percentage of coverage is deemed highly acceptable, especially as this study concentrates on the manufacturing sector only, i.e. the manufacturing sector comprises 40% of the listed entities on the Malaysian bourse.

From the sample of 383 manufacturing companies, a content analysis of the disclosure of credit period extended to debtors was undertaken using audited accounts as the most reliable source of information. The purpose of the content analysis is to examine the credit period or term disclosed to empirically enable the determination of days overdue, rather than through arbitrary survey responses, which may be biased or inaccurate. The analysis from the audited accounts may be the most reliable and appropriate information as the person primarily in-charge of the financial management of the companies signed the accounts under oath and with a certified audit opinion by the external auditors. From the content analysis, the final sample of 287 companies was derived and deemed appropriate for the final stage study.

Based on the methodology described in Chapter 5, the analysis on late payment versus prompt payment by customers is tabulated by assigning 0 for prompt payment and 1 for late payment from customers. The results are discussed in the following sections. As shown in Table 5.2, approximately 60% of listed manufacturing companies in Malaysia suffer from late payment from their debtors. Further in-depth analysis shows that large companies, to a certain extent, suffered less than medium-sized companies in the manufacturing sector. A total of 51% of the Main Board manufacturing companies suffered late payment from debtors as compared to 71% of the Second Board manufacturing companies. Therefore, in the manufacturing sector, larger companies suffered less late payments from their customers compared to medium-sized companies.

Table 5.2: Exploratory Data Analysis – Company Size and Late Payment from Customers

Listing Board: Main Board vs. Second Board (No. of companies)	Late Payment (LP) from Receivables	LP Percentage (%)	Prompt Payment (PP) from Receivables	PP Percentage (%)	Total Samples
Main Board					
Consumer Products	28	44.44%	35	55.56%	63
Industrial Products	60	55.56%	48	44.44%	108
Sub-total	**88**	51.46%	**83**	48.54%	**171**
2nd Board					
Consumer Products	19	55.88%	15	44.12%	34
Industrial Products	63	76.83%	19	23.17%	82
Sub-total	**82**	70.69%	**34**	29.31%	**116**
Total samples	170		117		287
Percentage (%)	59.23%		40.77%		100%

In terms of industry sector comparisons (as shown in Table 5.3), 65% of industrial products manufacturing companies (65%) suffer from the late payment of debts compared to their counterparts, consumer products manufacturers (48%). Medium-sized industrial products manufacturers suffered the most with 77% of companies experiencing late payments from their customers.

5.1 INTRODUCTION

The conclusion drawn here is that late payment by customers is a serious issue in the Malaysian manufacturing sector. More explanation of this phenomenon will be provided on this issue.

Table 5.3: Exploratory Data Analysis – Analysis by Sector – Industry Sector and Late Payment from Customers

Manufacturing Sector: Consumer versus Industrial Products (No. of companies)	Late Payment (LP) from Debtors	LP Percentage (%)	Prompt Payment (PP) from Debtors	PP Percentage (%)	Total Samples
Main Board	28	44.44%	35	55.56%	63
2nd Board	19	55.88%	15	44.12%	34
Sub-total-Consumer	**47**	**48.45%**	**50**	**51.55%**	**97**
% Consumer Products	27.65%		42.74%		33.80%
Industrial Products:					
Main Board	60	55.56%	48	44.44%	108
2nd Board	63	76.83%	19	23.17%	82
Sub-total-Industrial	**123**	**64.74%**	**67**	**35.26%**	**190**
% Industrial Products	72.35%		57.26%		66.20%
Total samples	**170**	**59.23%**	**117**	**40.77%**	**287**

5.4 CONTENT ANALYSIS

The audited financial statements of the companies were gathered by downloading data from the Bursa Malaysia official website[54] for content analysis focusing on the disclosure of accounts receivable credit period granted by the companies. The results of the content analysis of the company non-disclosure of credit period are shown in Table 5.4. A total of 95 companies (25.07%) were identified as not having the credit period disclosure that enables readers of financial statements to gauge the number of credit days.

[54] www.bursamalaysia.com

Some claim that their credit is extended on normal terms but there is no quantitative description of the normal terms, i.e. the number of credit days or the average collection period. The type of sample is excluded from the empirical study on late payment and

Table 5.4: Non-Disclosure of Credit Period Extension in the 2007/2008 Audited Financial Statements

Industry Sector	Non-disclosure by Big Four Audit Firms				Total Big Four Firms	Non-Big Four Firms	Total non-Disclosure	Total Samples	% of Non-Disclosure
	Big A	Big B	Big C	Big D					
Main Board Consumer Products	-	1	16	-	17	5	22	84	26.19%
Main Board Industrial Products	2	2	34	-	38	3	41	149	27.52%
2nd Board Consumer Products	-	1	6	-	7	1	8	43	18.60%
2nd Board Industrial Products	-	1	19	-	20	8	28	112	25.00%
Total	2	4	73	-	79	17	96	383	25.07%
%	2.53%	5.06%	92.41%	-	82.29%	17.71%	Samples =	287	

profitability. For those 96 companies, it was not possible to determine the debtors overdue days and, thus, the sample selection has been reduced to 287 companies from the original 383 companies.

As shown in Table 5.4, it is interesting to note that in the analysis of credit period disclosure, one of the Big4 accounting firm, named hereafter as Big C, has the majority of its accounts audited by it (Big C) and did not disclose the credit period granted. Outside the Big4 (Non-Big Four), non-disclosure is somewhat expected for some smaller

audit firms with a lack of technical support owing to the absence of economy of scale, however, for a Big4 giant, like Big C, such a departure is somewhat unexpected and requires further probing.

The initial explanation provided by some partners of Big C[55] is that if the disclosure does not reflect the true and fair view of the accounts receivables management of the companies, it is best left to the companies to omit the disclosure. For instance, the common credit period allowed in the policy of these companies is 60 days. However, a simple computation of DSO shows that this has exceeded 90 days. It makes no sense to disclose the normal period granted of 60 days when an informed reader of the financial statement would know the average collection period by a simple computation that would prove otherwise. The discrepancy, in essence, is a signal of late payment by their customers, which if disclosed, would reflect unfavourably on the company's management capability. Nonetheless, the responsibility of the accuracy and accountability of the financial statements is vested in the companies, not the auditors and some of these companies choose not to disclose the credit period granted.

In Malaysia, companies are likely to adopt the sample accounts or skeleton financial reporting formats provided by their auditors to ensure the drafted accounts comply with all laws, regulations and accounting standards applicable in Malaysia. A content analysis on the sample financial statements of listed company reveals that there is no number of days credit period disclosures in the 'standard format' of the Big C. There is a disclosure that the credit granted is based on normal terms of credit to the company but what is

[55] Based on verbal enquiries with two partners of the Big C firm.

meant by normal terms is not defined. Perhaps a further research on the financial reporting issues relating to credit period extension will shed light on this anomaly but this is beyond the scope of this research.

Based on content analysis of the annual reports or the audited accounts for the financial year ending 2007/2008 for the 383 samples and taking out the 96 samples that did not disclose the credit period to their customers, the following findings were noted:

a. The most common credit period granted to customers is between 30 to 90 days.
b. The most common disclosure on trade receivables credit terms or credit period in the notes to the financial statements of these companies is as follows:

   "The Group and the Company's normal trade credit terms range from 30 to 90 days. Other credit terms are assessed and approved on a case by case basis." (Source: Annual Report 2008 – HeveaBoard Berhad, p. 65).

The above disclosure, in respect of trade receivables collection period, will be useful in the subsequent part of this study on late payment where the actual days sales outstanding (DSO) or the average collection period (ACP) is compared against the disclosed credit period to provide empirical proof of late payments in Malaysia.

This chapter now looks at the association between late payment and profitability using the data collected. This part of the study empirically analyses the issue of late payment using the sample from manufacturing companies that disclosed the credit granting period, which is used to compute the days overdue by comparing it with the computed DSO. In

addition, with the impending implementation of IFRS 7 in Malaysia, with effect from 2010,[56] all companies are required to provide a detailed disclosure such as ageing analysis and provision for impairment of receivables that are past due, together with the existing disclosure of credit period granted.

5.5 DESCRIPTIVE ANALYSIS ON THE INDEPENDENT AND DEPENDENT VARIABLES

This section provides the descriptive analysis for the independent variables and the dependent variables. The earlier part of this study undertook some checking on these variables to eliminate data errors but did not look into the distribution scores in detail. As such, discussions on the descriptive statistics and analysis are carried out below before moving on to explain the normality and the outliers of the data and other issues.

A descriptive statistic on each of the variables or proxies is shown in Table 5.5 below, which depicts the minimum, mean, median, maximum, the standard deviation value, the skewness and kurtosis of each of the variables. The Jarque-Bera statistics and probability in relation to the determinants of trade credit extension are also calculated.

The discussion commences with the exploratory data analysis of the dependent variables. The descriptive statistics in Table 5.5 indicate that the mean value for the ratio of receivables to turnover, proxy for trade credit extension, is 0.224, meaning that accounts receivable is about 22.4% of the turnover of the listed manufacturing sector in Malaysia.

[56] Source: Malaysian Accounting Standard Board (MASB) announcement dated10 November 2008.

This explains the importance of trade receivables for these companies. For easier understanding, these statistics can be translated into measurement by the number of days by multiplying the results with 365 days. The mean average number of days' sales outstanding (DSO), which is also commonly known as the average collection period (ACP), is approximately 82 days (0.224 x 365 days), whilst the median DSO is 76 days (0.207 x 365 days). This means that late payment by trade debtors is apparent in the Malaysian manufacturing sector as both the average and median DSO is higher than the common credit period granted of 60 days, as discussed in Section 1.2 of Chapter 1.

The minimum DSO is slightly more than 1 day and the maximum DSO is 339 days, almost close to one-year credit term. This indicates that outliers may exist, as the maximum DSO is more than four times the mean despite the fact that five extreme companies with a DSO of more than 18 months have been omitted from the sample selection. It is also possible that the sample data is skewed.

The next section discusses the issues on normality and the consideration taken into account in this study concerning outliers for each of the variables. In the foregoing section, a descriptive exploratory analysis on the importance of trade credit as part of working capital management to Malaysian public-listed large and medium-sized manufacturing companies. Table 5.6 depicts several computations of working capital ratios and net fixed assets ratio.

Table 5.5: Descriptive Analysis on Independent and Dependent Variables

Independent Variable	Abbreviation	Mean	Median	Max	Min	Std Dev	Skew-ness	Kurtosis	Jarque-Bera	JB Prob.
Receivables turnover	ARTO	0.224	0.207	0.928	0.003	0.138	1.594	7.186	441.724	0.000
Receivables turnover days	DSO (ARTO x 365)	81.849	75.426	338.804	1.146	50.362	1.594	7.186	441.724	0.000
Dependent variable										
Size (Total assets)	LOGTA	2.376	2.281	4.079	1.356	0.489	0.954	3.966	73.027	0.000
Short-term bank credit	STCREDIT	0.310	0.150	9.497	-	0.795	8.158	82.806	105,887.6	0.000
Operating margin (OM)	OPMARGIN	0.051	0.063	3.650	-1.550	0.260	5.800	102.341	159,633.4	0.000
OM if positive, else 0	OPPOS	0.091	0.063	3.650	-0.024	0.201	14.604	256.080	1,035,734	0.000
OM if negative, else 0	OPNEG	-0.039	-	-	-1.550	0.141	-5.892	48.093	34,665.31	0.000
Operating cash flow (OC)	OPCASH	0.047	0.061	1.602	-4.707	0.306	-10.322	160.273	401,527.6	0.000
OC if positive, else 0	OPCASHPOS	0.084	0.061	1.602	-	0.120	6.265	70.785	75,830.66	0.000
OC if negative, else 0	OPCASHNEG	(0.037)	-	-	-4.707	0.270	-14.678	241.917	924,676.4	0.000
Revenue growth (RG)	GROWTH	0.197	0.105	15.564	-0.872	0.976	12.144	176.859	491,785.8	0.000
RG if positive, else 0	GROWTH POS	0.245	0.105	15.564	-	0.957	12.775	189.062	562,880.4	0.000
RG if negative, else 0	GROWTH NEG	-0.047	-	0.035	-0.872	0.119	-3.700	19.664	5,305.111	0.000
Gross Profit (GP) Margin	GPMARGIN	0.211	0.185	0.861	-0.362	0.163	0.835	5.666	157.97	0.000
GP Margin Squared	GPMSQ	0.071	0.036	0.741	-	0.105	3.346	16.529	3,635.687	0.000
Liquidity	[Quick ratio]	1.735	1.033	22.190	0.033	2.247	4.462	31.263	14,017.98	0.000
Collateral	[Net FA/Total assets]	0.355	0.345	0.924	0.002	0.174	0.374	2.931	8.995	0.011

It depicts the importance of trade credit (as measured by the percentage of accounts receivable over total assets) of the listed companies in the manufacturing sector in Malaysia. Trade credit represents approximately 18% of the total assets and in terms of the components of the current assets, accounts receivable is the most important asset, overtaking the importance of inventory as the most significant component in working capital assets of the listed manufacturing companies in Malaysia. Accounts receivable represent approximately half of the total net fixed assets of the manufacturing sector, reflecting its importance but often neglected.

Table 5.6: Significance of Each of the Main Components of the Current Assets over Total Assets of Manufacturing Sector

Component of current assets versus fixed assets	Abbreviation	Mean	Median
Accounts Receivable over total assets (ARTA)	ARTA	18.0%	17.5%
Inventories over total assets	INVTA	17.5%	15.6%
Accounts Payables over total assets	APTA	9.5%	7.5%
Fixed assets (net) over total assets (proxy for Collateral)	NFA/TA	35.5%	34.5%

From the above analysis, when comparing the net trade credit of the manufacturing sector in Malaysia, this study finds that manufacturing companies are net trade credit providers as the percentage of accounts payable is only 9.5% compared to 18% for accounts receivables over total assets. This implies that listed manufacturing companies require the use of both the cash generated from their operations and/or financial institutions to finance their working capital. The financial institutions' credit can be in the form of

short-term and long-term facilities such as trade financing, overdrafts or equivalent. The sample is made up of public-listed manufacturing companies, (unlike those small and medium-sized enterprises) who have better access to external financing and are able to take on the role as trade credit provider in selling their products in the supply chain.

5.6 RESULTS OF THE TESTING OF MULTIPLE REGRESSION ASSUMPTIONS

Since multivariate analysis is used to test the hypotheses in this study, assumptions of linearity, reliability of measurement, homoscedasticity and normality are tested as recommended by Osborne and Waters (2002). Therefore, this section discusses the results of the testing.

To test the multicollinearity assumption, the Pearson pairwise correlation matrix was computed to examine the correlation between the variables. All the regression results were reported using *t*-statistics with White adjustment to correct for the possibility of heteroscedasticity (Paul and Wilson, 2006; Deloof, 2003). The foregoing sub-sections discuss issues relating to the regression assumptions.

5.6.1 Normality

Table 5.5 presents information concerning skewness, Kurtosis and the Jarque-Bera (JB) statistics. Skewness is used to describe the balance of the distribution whilst Kurtosis compares the 'peakedness' or 'flatness' of the distribution compared to a normal distribution (Hair *et al*., 2005, p. 80). JB statistics compute the coefficient of the

skewness (S) and Kurtosis (K) to test the normality of the data. For normally distributed variables, S = 0 and K = 0, which is uncommon (Pallant, 2007) and for perfect normal distribution, JB test = 0. The JB test is a large sample test based on OLS residuals and variables are normally distributed when the JB test is smaller in value (Gujarati, 2006). The null hypothesis of the test is that the residuals are normally distributed – in which case the JB statistic should equal 0.

In addition, Table 5.5 shows that all the variables are positively skewed except for the negative operating margin (OPNEG), operating cash flow (OPCASH), negative operating cash flow (OPCASHNEG) and negative revenue growth (GROWTHNEG) variables. Positive skewness for the variables indicate that these are slightly skewed to the left indicating scores are 'clustered at the low values' whereas negative skewness for variables indicates that the skewness scores are 'clustering to the right at the high end value' (Pallant, 2007, p. 56). This means that the OPNEG, OPCASH, OPCASHNEG and GROWTHNEG data is not balanced and tends to be higher compared to normal distribution and vice versa for those variables with positive skewness. According to Tabachnick and Fidell, (2007, p. 80) with reasonably large samples, skewness will not 'make a substantive difference in the analysis.'

As shown in Table 5.5, all variables in this study are positive, indicating that the distribution is rather peaked (clustered in the centre), with long thin tails compared to a normal distribution. Kurtosis can result in an underestimate of the variance, but this risk

is also reduced with a large sample (200 or more cases, see Tabachnick and Fidell, 2007, p. 80).

The Jarque-Bera Test is a joint test where the Skewness = 0 and the Kurtosis = 0 (needed for a normally distributed variable). The null hypothesis of the test is that the residuals are normally distributed – in which case the JB statistic should equal 0. As these perfect statistics are rare and unlikely (according to Gujarati, 2006), the variables are considered normally distributed when the JB tests statistics are smaller in value. Based on Table 5.7, the Jarque-Bera (JB) test indicates that the Collateral (Net FA/Total Assets), Size (LOGTA) and Gross Profit Margin (GPMARGIN) variables are closer to normal distribution with a skewness of between 0 and 1 and kurtosis of between 2.9 to 5.7 with lower JB statistics of between 9 to 158, which means that these variables' distribution are quite close to the normal bell-shape distribution.

For the rest of the independent variables, the JB statistics of between 3,535 to 1,035,734 with a skewness value of between +/- 3 to slightly less than +/- 15 and a Kurtosis of more than 16 to 256, provides statistical evidence that these independent variables are not normally distributed and, therefore, the JB null hypothesis is rejected accordingly. This means that in this study, the overall data is not normally distributed and, as such, this study cannot assume normality of the data as the results of the JB test and the standard tests on skewness and kurtosis indicate a problem with the normality assumptions for several variables.

Nevertheless, it is quite common for larger samples to have non-normal data (Pallant, 2007). In addition, Hair *et al.* (2006) suggest that as the sample size becomes larger, researchers can be less concerned with non-normal variables. Larger sample sizes reduce the detrimental effects of non-normality and significant departure from normality may be negligible for sample sizes of 200 or more, as per Hair *et al.* (2006). For reasonably large samples (considered large if sample size above 200), skewness will not make a substantive difference in the analysis and for Kurtosis the risk of underestimation of variance is also reduced with a large sample (Tabachnick and Fidell, 2007).

An analysis of residuals, plots of the studentised residuals against predicted values as well as the Q-Q plot are conducted to test for homoscedasticity, linearity and normality. In this study, the cross-sectional sample size is 383 and 287 for the last part of the empirical study on late payment (the sample was reduced by 96 due to non-disclosure of credit period), the sample size is above 200 which is considered a large sample that could counter the detrimental effects of non-normality (Hair *et al.*, 2005; Tabacknick and Fidell, 2007). Accordingly, this study proceeds with parametric testing using ordinary least squares (OLS) regression.

5.6.2 Outliers

McClave and Sincich (2009) define an outlier as an observation (or measurement) that is unusually larger or smaller relative to the other values in a data set. Outliers typically are attributable to incorrect measurement, measurement comes from different population or the measurement represents a rare (chance) event. Two useful methods for detecting

outliers are proposed by McClave and Sincich (2009): one graphical and one numerical – box-plots and z-scores. For the box-plots method, observations falling between the inner and outer fences are deemed suspect outliers. Observations falling beyond the outer fence are deemed highly suspect outliers. On the other hand, observations with z-scores greater than 3 in absolute value are considered outliers. For some highly skewed data sets, observations with z-scores greater than 2 in absolute value may be outliers (McClave and Sincich, 2009).

On the other hand, Hair *et al.* (2006) propose a threshold level of 2.5 for small samples versus 3 or 4 in larger samples for multivariate methods. Hair *et al.* (2006, p. 73) define outliers as 'observations with a unique combination of characteristics identifiable as distinctly different from the other observations.' From a practical standpoint, outliers can have a marked effect on any type of empirical analysis and the researcher must assess whether the outlying value is retained or eliminated due to its undue influence on the results. In substantive terms, the outlier must be viewed in light of how representative it is of the population. If the researcher feels that it is a small but viable segment in the population, then perhaps the value should be retained, however, if it represents an extreme value, then it may be deleted.

Accordingly, outliers must be viewed within the context of analysis and should be evaluated by the types of information they may provide. Hair *et al.* (2006) explains that outliers could be due to the following:

a) Procedural error, for example, data entry error or mistake in coding.

b) Extraordinary event, which accounts for the uniqueness of the observation.

c) Extraordinary observations for which the researcher has no explanation.

d) Uniqueness in their combination of the values across the variables.

Hair *et al.* (2006) describe that the first type of outlier in (a) above should be eliminated but for the remaining types of outlier under (b) to (d), outliers can be retained depending on the objectives of the research and the data set representativeness.

Despite the possibility of the existence of some outliers, it appears that the study data is explainable and outliers may arise due to the inference of variables. For example, large manufacturing companies might have extreme values on the reporting compared to those medium-sized manufacturing companies. Trade credit management is still not well developed in Malaysia (Angappan and Nasruddin, 2003) and there is no mandatory requirement for public-listed companies to make the credit period granted and accounts receivable disclosures until the adoption of IFRS 7 in Malaysia in 2010. As such, not all listed manufacturing companies disclose such trade credit information.[57] The disclosure of information related trade receivables is still not mandatory in Malaysia as the IFRS 7 – Financial Instruments: Disclosure is only applicable to financial statements of annual periods beginning on or after 1 January 2010.

As evidenced in the above exploratory data analysis, close to 25% of the selected sample could not be used in the part of the study on late payment as there was no disclosure in

[57] As shown in the descriptive statistics on prompt payment and late payment from customers, 96 of the samples of the listed Malaysian manufacturers do not disclose the credit period granted, reducing the N for the study on the relationship between late payment and corporate profitability.

their accounts. As there is no mandatory requirement on the disclosure of accounts receivable, not all companies are willing to disclose the details. Therefore, there might be a gap between the companies disclosing the AR credit period and companies which do not. Based on the above gap, save for those 5 companies, which have been deleted due to their very long days outstanding (of more than one and half years), it was decided that any outliers in the dependent variables will be retained.

Accordingly, there is a disparity in the manufacturing companies' disclosures among the sample selected and the fact that all figures presented are audited figures. It was decided that any outliers in the dependent variables (except for those that are eliminated in the data cleaning stage) will be retained as it is anticipated that it could provide meaningful data for future analysis. Overall the above finding in the exploratory data analysis indicates that most of the information is not normally distributed. This could be due to the nature of the cross-sectional data for a 12 month period of the listed manufacturing companies used in this Malaysian study.

5.6.3 Correlation and Non-Normality Analysis

In the multiple regression model, one of the fundamental assumptions made is that the explanatory variables are determined independently of the values of the error term (and, thus, of the dependent variable) and the observations of the error term are uncorrelated with each other. To examine the correlation between the independent variables and to test for multicollinearity, the correlation coefficient between each pair of the independent variables and each independent variable and the dependent variable is computed using

Eviews and SPSS to obtain the pairwise correlation matrix.

Table 5.7 shows the Pearson Product Moment correlation coefficients of the various pair wise combinations in the matrix form for the determinants of the trade credit extension model. As shown in Table 5.7, size of the company (SIZE), collateral to secure financing (COLLATERAL) and collection promptness from debtors (COLLECTION) are significantly related to trade credit extension (ARTO), ($p < 0.01$). Short-term line of credit (STCREDIT) and negative sales growth (GROWTHNEG) are also significantly related to trade credit extension ($p < 0.05$). Other independent and dichotomous variables are not related to trade credit extension (ARTO). The coefficient of correlation for SIZE and COLLATERAL are negative, which are not as per the expected positive relationship.

These imply that large companies and, also, companies with higher collateral to secure financing do not make use of the advantages by virtue of their solid establishment to extend trade credit to their customers. This will be elaborated upon further with the results of the multivariate empirical testing in this chapter.

For two significant dichotomous variables, collection promptness (COLLECT), in terms of late payment from receivables is positively correlated to the trade credit extension (ARTO) at 0.528, while for listing board (BOARD), Main Board companies are positively correlated to size of companies (SIZE) at 0.565, both with $p < 0.01$. For late payment of receivables, the finding correlation suggests that slower or delayed collection of trade receivables will result in longer DSO and extended credit period is required to cover the

late payment from debtors and further working capital is required. For listing board, it is obvious that the Main Board companies with higher share capital requirements are larger in size.

In addition, size of companies is significantly correlated ($p < 0.01$) with short-term line of credit (STCREDIT), negative profit and internal cash (OPNEG) and negative sales growth (GROWTHNEG). In addition, the correlation analysis finds that positive operating profit is positively correlated with size of companies and this is significant at $p < 0.05$. The correlation with short-term line of credit indicates that contrary to the conjecture that larger companies are in the position to obtain higher short-term bank financing for working capital, instead, large companies are getting less short-term bank financing. This is possible as all these companies are public-listed companies and have ample public shareholders' funds to finance their operations and require less short-term funds. The positive correlation between company size and negative operating profits and negative revenue growth suggests that larger companies suffering from declining sales growth or profits could continue to sustain, owing to their size and, accordingly, their ability to continue to invest in boosting up revenue or profits despite setbacks. Because of their size, they are more resilient to overcome economic shocks (Petersen and Rajan, 1997).

STCREDIT is also negatively correlated with OPNEG, GROWTHNEG, GP MARGIN and LIQUIDITY at the 1% significance level whilst positively correlated with collateral to secure financing at $p < 0.05$. This suggests that companies with more fixed assets use these assets as collateral for higher working capital financing. Companies with declining

Table 5.7: Pairwise Correlation Matrix for the Determination of Trade Credit Extension Model (N = 383)

	ARTO	SIZE	ST CR	OPPOS	OPNEG	GROWTH POS	GROWTH NEG	GP MARGIN	LIQUI-DITY	COLLA-TERAL	BOARD	SECTOR	AUDITOR	COLLEC-TION
ARTO	1.000													
SIZE	-0.208**	1.000												
STCREDIT	0.129*	-0.135**	1.000											
OPPOS	0.024	0.108*	-0.060	1.000										
OPNEG	-0.089	0.259**	-0.556**	0.126*	1.000									
GROWTHPOS	-0.038	0.020	-0.057	0.092	0.065	1.000								
GROWTHNEG	-0.111*	0.202**	-0.482**	0.112*	0.637**	0.102*	1.000							
GPMARGIN	0.040	0.086	-0.214**	0.279**	0.329**	0.047	0.295**	1.000						
LIQUIDITY	-0.028	-0.065	-0.196**	0.061	0.074	0.045	-0.088	0.147**	1.000					
COLLATERAL	-0.185**	-0.040	0.109*	-0.100	-0.170**	-0.019	-0.052	-0.136**	-0.269**	1.000				
BOARD	-0.122**	0.565**	-0.135**	0.137**	0.114*	0.051	0.109*	0.161**	0.112*	-0.115*	1.000			
SECTOR	0.137**	0.018	0.079	0.029	-0.027	0.079	-0.020	-0.186**	0.050	0.017	-0.098*	1.000		
AUDITOR	-0.147**	0.219**	-0.052	0.084*	0.036	0.009	0.015	0.081	0.016	0.005	0.165**	0.096*	1.000	
COLLECTION	0.528**	-0.201**	-0.024	0.012	0.025	-0.013	0.030	0.060	-0.009	-0.109*	-0.184**	0.133*	-0.085	1.000

*, ** Correlation is significant at the 0.05 and 0.01 levels, respectively.

sales and operating profits find it harder to obtain short-term credit whilst companies enjoying improved profit margins and liquidity would not seek for a more short-term line of credit.

As for profit and internal cash (OPEPROFIT), which can be segregated into positive internal cash and profit (OPPOS) and negative internal cash and profit (OPNEG), both OPPOS and OPNEG are also positively correlated at the $p<0.05$ level and the same applies to the sales growth variables, GROWTHPOS and GROWTHNEG. Both OPPOS and OPNEG are found to be positively correlated to GROSS MARGIN ($p < 0.01$) (as OPEPROFIT is derived from gross margin after deducting related overheads expenses); and to declining sales growth (GROWTHNEG) with $p < 0.05$ for OPPOS and $p < 0.01$ for OPNEG.

This positive correlation between both OPPOS and OPNEG with declining sales growth suggests that despite declining sales, profit and internal cash can be improved if the operating margin is improving (OPPOS) and this flows down to improving gross margin (GROSS MARGIN), if overheads are not rising above the proportion. Otherwise, declining sales growth will lead to declining internal cash and profit (OPNEG). In the same vein, OPNEG is negatively correlated with the collateral to secure financing (COLLATERAL), as companies with declining profit and cash flow conserve their funds for shorter term working capital financing rather than asset acquisition.

Gross margin is positively correlated to liquidity at $p < 0.01$ and the inverse is true in relation to the collateral to secure financing. Similarly, LIQUIDITY is negatively

correlated to collateral to secure financing. A higher gross margin will generate more profit and internal cash (liquidity) and with higher liquidity, implying that companies need not seek more collateral to secure financing of their working capital.

5.6.3.1 Correlation between Dummy Variables and Other Variables

The results of the correlation computation reveal several interesting correlations between the dummy variables with other variables in the determinants of the trade credit extension model. First, the dependent variable, there is a significant correlation ($p < 0.01$ for all) between the accounts receivable to sales turnover ratio (ARTO) and all the dummy variables. This study finds that the Main Board (1, -0.122)[58] manufacturing companies have lower ARTO, i.e. offer less trade credit extension as compared to Second Board companies. This is somewhat surprising as Main Board companies are larger in size and have the ability to secure bank financing and own internal generated funds to extend trade credit to their customers. This will be investigated in the multivariate analysis in the next chapter.

Industrial products (1, 0.137) manufacturers have a higher ARTO, offering more credit extension to their customers than consumer product manufacturers. This suggests that industrial products are more inelastic in demand and not as fast moving as consumer products, therefore, the cash conversion cycle is slower from the management of working capital point of view.

[58] (1, -0.122) refers to the number 1 assigned to dummy variable discussed, i.e. Main Board and 0 for others followed by the correlation value, -0.122. The negative correlation value indicated dummy 1 has lower value than the others (0) and vice versa.

It is interesting to note that companies engaging Big4 audit firms as their auditors (1, -0.147) have a lower ARTO. This suggests that Big4 audit firms provide (explicitly or implicitly) additional expertise (Janssen *et al.,* 2005), relating to receivables management (in this study), which is transferred to their clients compared to non-Big4 audit firms.

In terms of promptness in the collection of receivables, companies suffering from late payment (1, 0.528) obviously have a higher ARTO ratio. This study finds similar significant correlation results ($p < 0.01$) between company's size (measured by log of total assets) and BOARD dummy (1, 0.565), AUDITOR dummy (1, 0.219) and COLLECTION dummy (1, -0.201) but no significance in terms of consumer or industrial products with firm size. This simply means that most large manufacturing companies are on the Main Board of Bursa Malaysia and engage Big4 as their auditors.

Large companies also suffer less from late payment of receivables compared to smaller-sized companies. Similarly, Second Board manufacturing companies suffer more late payment of receivables than those on the Main Board. In a more detailed correlation analysis, industrial products manufacturers suffer more late payment than consumer products manufacturers.

The findings of the correlation analysis also indicates that Main Board manufacturing companies – by virtue of their size, establishment and capitalisation – have lower short-term bank borrowings (STCREDIT), higher positive profit and internal cash (OPPOS) and higher gross profit margins (GP MARGIN) with $p < 0.01$. Main Board companies also have more liquidity with less collateral to secure financing (COLLATERAL) than Second

Board companies at $p<0.05$ significance level. Nevertheless, Main Board companies are also positively correlated to declining profit and internal cash (OPNEG) and negative sales growth (GROWTHNEG), i.e. there are more distressed (negative sales growth and negative income) manufacturing companies on the Main Board compared to the Second Board companies, as in this study, 233 samples are from the Main Board category compared to 150 samples from the Second Board manufacturing companies.

Other interesting findings noted are that more consumer products manufacturers are listed on the Main Board and have higher gross margins than industrial products manufacturers, this enables them to adopt price discrimination strategy more effectively. More consumer products manufacturers are engaging Big4 audit firms than their counterparts.

5.6.3.2 Multicollinearity

The correlation matrix analysis confirms that no multicollinearity exists between the variables as none of the variables correlates above 0.8 (Gujarati, 2006), which warrants the addressing of the multicollinearity issue. In this study, all variables have a correlation that is below the threshold. To further test multicollinearity, each of the independent variables is regressed on the other independent variables and the variance inflation factor (VIF) is computed. VIF is defined by Hair *et al.* (2006, p. 176) as 'the indicator of the effect that the other independent variables have on the standard error of a regression coefficient'. VIF [1 / (1- R-squared)] is directly related to the tolerance value and large VIF values (a common cut-off is a VIF value of 10, which is a tolerance value of 0.1) indicate a high degree of collinearity or multicollinearity among the independent variables (Hair *et al.,*

2006).

The results of this study confirmed that none of the independent variables have a VIF value exceeding 10. The highest registered VIF is for the incentive to price discriminate-GPMARGIN variable and the GP MARGIN squared (GPMSQ) variable with a VIF of 6.477 and 5.339, respectively. OPNEG and GROWTHNEG have a VIF value of 2.867 and 2.203, respectively, while the rest of the independent and dummy variables have a low VIF value of between 1 and 2. As such, this study concludes that multicollinearity is not an issue in this large sample one-period year cross-sectional study.

5.6.3.3 Heteroscedasticity

Heteroscedasticity is one of the usual problems in cross-sectional data since the variance tend not to be constant and often the error increasing with each observation. Further, one of the assumption of OLS (which is used in this study) is that the error term has a constant variance. Heteroscedastiscity may be a problem because the measurement of trade credit (or its proxy) may be affected by some firm characteristics. For example, smaller firms may have trade credit that are more volatile (or less precisely measured) than that of larger firms. Also, in this study, even after accounting for the differences in size of manufacturers by the listing board (through the BOARD dummy segregating large and medium-sized companies according to Bursa Malaysia listing board – Main Board and Second Board), it is expected to see greater variation in variance in sales growth with larger manufacturing companies than those in smaller manufacturers.

This study uses White-test (in Eviews) to detect heteroscedasticity on the three models in the determinants of trade credit extension. Similar to previous studies (e.g. Levchuk, 2002) and as expected, the results for all the models are significant at 5% level. A closer review of the results indicated that the assets collateral (COLLATERAL), negative operating profit (OPNEG) and negative growth (GROWTHNEG) explanatory variables together with audit firms engaged (AUDITOR), equity listing board (BOARD) and collection promptness (COLLECTION) dummy variables are not having constant variance. As this is an introductory study in the unexplored area of trade credit extension in Malaysia based on one-year cross-sectional financial data, this study acknowledges in Section 8.3 of Chapter 8 that this is a limitation in this OLS study. Nevertheless as the reported results are White-adjusted values, a heteroscedasticity-consistent standard errors, a common correction for heteroscedasticity to improve upon OLS estimates. In addition, heteroscedasticity can cause the variance of the coefficients to be underestimated but does not cause the OLS coefficient estimates to be biased (Gujarati, 2006).

Table 5.8: Results of White Heteroscedasticity Test

Mode1 1: DSO			
F-statistic	1.025	Probability	0.427
Obs*R-squared	13.359	Probability	0.420
Model: 2: DODA			
F-statistic	0.797	Probability	0.663
Obs*R-squared	10.496	Probability	0.653
Model 3: DODP			
F-statistic	0.846	Probability	0.611
Obs*R-squared	11.120	Probability	0.601

On the last part of this study, Phase 2b - pertaining to the association between late payment and profitability, the similar White-test was performed on the three late payment models and the results are shown in Table 5.8. All the three models reject the presence of heteroscedasticity.

The Breusch-Pagan-Godfrey's heteroscedasticity test was also performed on the three models to re-affirm the results obtained from White-test and the results of the test are not significant at 5% level for all three models, rejecting the null hypothesis of heteroscedasticity. As such, this study assumes that the variance of errors is the same across different values of the independent variables (Osborne and Waters, 2002) in the multivariate analysis of the association between late payment by accounts receivable and profitability of the manufacturers.

5.6.3.4 Endogeneity

The problem of endogeneity occurs when the independent variable is correlated with the error term on a regression model – implying that the regression coefficient in OLS regression is biased. In cross-sectional OLS regression such like in this study with one year data, endogeneity can be due to omitted variable, measurement error and simultaneity and if endogeneity is a possible issue, two-stage least square (2SLS) can be used to perform the test, utilising instrumental variables method. If there is endogeneity in cross-sectional data, OLS is inconsistent and 2SLS is the better regression method and if there is none, it is more efficient to use OLS (Wooldridge, 2002).

As all the explanatory variables in this study are financial ratios derived from the audited financial statements - comprising balance sheets and income statements of the manufacturing sector, the presence of endogeneity is probable (Rodriquez, 2008). In the determinants of trade credit extension model, the availability of short-term credit line may have possible endogeneity problem with the dependent variable (ARTO) based on the complementary hypothesis of bank financing (Levchuk, 2002). Several proxies that may be endogenous, e.g. firm's profitability, sales revenue growth, liquidity, leverage, etc. may affect trade credit extension and vice versa (Levchuk, 2002).

Unlike Lechuk (2002) study of Ukrainian manufacturing sector with two years data where Hausman tests were performed to affirm that the OLS regressions are appropriate in the study, the available instruments in this one-year cross sectional study's are limited as there are no lagged values available. In order to perform the Hausman test, one needs to estimate the model using OLS and then Instrumental Variable (IV) procedures. The problem with the IV is that there are no instruments available. This study can of course take one or two exogenous variables from the model and use them as instruments. However, this will introduce model misspecification which could be worse than the bias introduced by OLS. The trade off between bias and misspecification is a question that has not been resolved yet. With a richer set of data, instruments could become available and techniques like Generalised Method of Moments can then be easily applied to account for endogeneity. However, given the time constraint, I suggest this for future research.

5.7 CONCLUSION

In this chapter, the results of the findings from the exploratory data analysis, content analysis and correlation analysis are presented and interpreted. In terms of late payment, this study found that 60% of the public-listed companies in the Malaysian manufacturing sector suffered late payments from their customers. As such, late payment by customer is a serious issue that needs to be addressed.

The content analysis of the disclosure of credit period granted in the financial statements of the manufacturing companies revealed that 25% of the companies did not disclose the credit period in their financial statements. Accounts receivable represents 18% of the total assets of the manufacturing sector in Malaysia and despite its importance; this subject matter is often neglected.

CHAPTER 6

MULTIVARIATE ANALYSIS FOR PHASE 2a: DETERMINANTS OF TRADE CREDIT EXTENSION

6.1 INTRODUCTION

This chapter continues to deliberate on the empirical findings of the study using the multivariate analysis, specifically the inferential statistics using the ordinary least squares regression (OLS) method discussed in the methodology chapter to test the hypotheses developed in Chapter 4. This chapter discusses the OLS regressions results on the determinants of trade credit extension in the Malaysian manufacturing sector.

This chapter depicts and summarises the results of the multiple regression analysis on the determinants of trade credit extension. The results from this multivariate analysis provide empirical evidence to support or reject the hypotheses developed in this study. This chapter also includes an explanation of each of the explanatory variables tested and whether they are significant or otherwise.

The rest of the chapter is organised as follows: Section 6.2 depicts the results of the multiple regression analysis on the determinants of trade credit extension in the Malaysian manufacturing sector. The results of initial Model 1 are first discussed in Section 6.3, followed by the discussion on the results of the extended model, Model 2 in Section 6.4. Section 6.5 introduces the collection promptness variable in the final model. Further

analysis of the results of the multivariate analysis is discussed in Section 6.6 prior to the discussion on the final regression model in Section 6.7 and the Chapter concludes in Section 6.8.

6.2 DETERMINANTS OF TRADE CREDIT EXTENSION

Table 6.1 shows the results for the multiple regression analysis of the determinant of trade credit extension in the Malaysian manufacturing sector by regressing the dependent variable, the ratio of accounts receivables over turnover (ARTO) with selected explanatory variables; namely size of the manufacturers, short-term line of credit, profit and internal cash, sales revenue growth, gross profit margin, liquidity and collateral, and with several control variables such as listing board, industry sector, auditors' size and reputation and promptness of collection.

The analysis begins with the basic analysis in Model 1 based on OLS regression and the expected direction or sign (as discussed in the earlier chapter). Model 2 is the extension of Model 1 by improving the model via segregation of the explanatory variables into positive and negative. It segregates the operating margin variable into positive and negative operating margin to minimize the off-setting effect between operating profit making and loss making manufacturing companies, if any, and to make the non-linearity specification correction for the gross profit margin variable by the inclusion of the gross profit margin squared. In the final model, Model 3, the collection promptness control variable (COLLECTION) is added to the final analysis and a significant increase in the R-squared is noted. The findings of the results are reported in the following sub-sections.

6.3 MODEL 1 - BASIC MODEL OF THE DETERMINANTS OF TRADE CREDIT EXTENSION

The basic regression of the dependent variable against the proxies of trade credit determinations reveals several results with an adjusted R-squared of 12.4% during the period under review but with an F-value that is statistically significant at the 1% level. The results of the basic model explained 12.4 percent of the total variation in the extension of trade credit, which is on the low side. Unlike macroeconomic studies where high R-squared results are desirable, in financial economics, the normal achievable R-squared is often not higher than 0.15 (i.e. 15 percent of the total variation) due to the theory of efficient markets (Smant, 2003).

6.3.1 Hypotheses and Model 1 Regression Results

From Table 6.1, out of the seven hypotheses, it was found that four explanatory variables and two dummy variables are significant and shall be discussed one by one.

(a) H1. Size of manufacturers as the proxy for credit worthiness

Contrary to the expected positive relationship between company's size and trade credit extension, where larger companies are expected to extend more trade credit than smaller companies (Petersen and Rajan, 1997), this study finds that the larger the size of the manufacturer (in terms of total assets), the less trade credit they tend to extend. This inverse relationship is very significant at the 1% level (b = -0.054, t = 3.756). Previous studies show that larger firms (measured by log of total assets) are more likely to have a tendency to grant trade credit to their customers, which is mainly due to higher credit

Table 6.1: The Determinants of Trade Credit Extension – 3 Models

Independent	Model 1	(Basic)	Model 2	(Extended)	Model 3	(Final)
Variable	Coefficient	t-Stat	Coefficient	t-Stat	Coefficient	t-Stat
Intercept	0.380	9.658***	0.349	8.186***	0.261	6.559***
SIZE	**-0.054**	**-3.756*** **	**-0.054**	**-3.912*** **	**-0.048**	**-3.427*** **
STCREDIT	0.012	0.726	0.010	0.556	0.012	0.596
OPMARGIN	0.008	0.269				
OPPOS			0.014	0.913	-0.051	-0.503
OPNEG			-0.052	-0.516	0.024	0.220
GROWTHPOS	-0.006	-1.400	-0.006	-1.485	-0.004	-0.768
GROWTHNEG	-0.113	-1.190	-0.144	-1.412	-0.133	-1.400
GPMARGIN	**0.107**	**1.880***	**0.339**	**2.476** **	0.177	1.179
GPMARGIN^2			**-0.378**	**-1.874***	-0.171	-0.713
LIQUIDITY	**-0.007**	**-2.232** **	**-0.007**	**-2.298** **	**-0.006**	**-2.086** **
COLLATERAL	**-0.175**	**-3.671*** **	**-0.161**	**-3.331*** **	**-0.125**	**-2.719*** **
BOARD	0.004	0.209	0.004	0.230	0.026	1.510
SECTOR	**0.054**	**3.760*** **	**0.054**	**3.791*** **	**0.024**	**1.658***
AUDITOR	-0.036	**-2.477** **	**-0.035**	**-2.428** **	-0.019	-1.349
COLLECTION					**0.133**	**9.586*** **
Adjusted R-sq.	0.124		0.139		0.321	
F-statistic	6.401***		5.749***		10.656***	
N	383		383		287	

Notes:

The dependent variable is the accounts receivables over total revenue reported by the companies extracted from www.reuters.com/finance/stocks.

The coefficients are estimated using ordinary least squares (OLS) and the reported t-statistics are White-adjusted values to control for heteroscedasticity.

***, **, * Significant at 0.01, 0.05 and 0.10 level.

worthiness (Delannay and Weill, 2004) as higher cash flows, better access to capital market and fewer growth opportunities are accepted.

In this study, larger manufacturing companies, albeit with more perceived creditworthiness from their total assets worthiness, appear not to use trade credit extension to increase their sales revenue. This conforms to Delannay and Weill's (2004) arguments on the commercial motive under the market power theory where larger companies tend to have a better reputation for good quality products and better bargaining power and, as such, no or little credit is given (to mainly new customers). Similar findings by Soufani and Poutziouris (2002) on UK large companies do not support the notion that large companies extend more trade credit even though they may have a higher cash flow and better access to external financing.

A much better explanation may relate to the asymmetric information (Smith, 1987). Larger companies can invest more in the quality of their product reputations and, thus, they are confident that their product is of higher quality and, as such, they do not need to give their customers (especially well established with long term relationship as they know the product) time to inspect the product before paying for it.

Therefore, Hypothesis 1 under the financial motive that larger manufacturing companies will extend more trade credit than smaller size companies is rejected. Instead, the commercial motive based on the market power theory is accepted where a negative relationship between the size of the firm and trade credit extension subsists, i.e. a larger

firm will extend less credit to its customers. This negative relationship implies that large manufacturing companies in Malaysia with a higher relative bargaining power in buyer-seller relationships are reluctant to hold large amounts of trade receivables, and may impose stricter terms of payment to their clients.

(b) H2. Short-term Line of Credit (STCREDIT)

The testing of the STCREDIT variable against the ARTO dependent variable in the OLS regression concludes that the relationship is not significant. Accordingly, the hypothesis that short-term line of credit (as a measure of external financing) is a determinant of trade credit extension is rejected in this study. This means that the ability to access external financing is not a determinant factor for trade credit extension in the Malaysian manufacturing sector.

(c) H3. Profit and Internal Cash (OPEPROFIT)

The results of the testing of the OPEPROFIT variable against the trade credit extension variable in the OLS regression are also insignificant. Similarly, the hypothesis that access to internal financing as represented by OPEPROFIT is a determinant of trade credit extension is rejected in this study. This means that access to internal financing is not a determinant of trade credit extension in the Malaysian manufacturing sector.

(d) H4. Sales Growth (GROWTH)

Consistent with the test results that rejects Hypothesis 2 that a short-term line of credit is a determinant of trade credit extension, the hypothesis that sales growth, as the other

proxy to access to external financing, is also rejected in this study as the OLS regression results are not statistically significant. This further confirms that access to external financing is not a determinant of trade credit extension in the Malaysian manufacturing sector.

(e) H5. Incentive to Price Discriminate (GPMARGIN)

From the results of the testing of the price discrimination theory, this study finds that manufacturing companies with higher gross profit margin tend to extend more trade credit (b = 0.107, t = 1.880) and the relationship is significant at the 10% level. It appears that Malaysian manufacturers discriminate between different customers using trade credit instead of using the selling price. The findings, that approximately 60% of Malaysian manufacturers suffer from late payment, confirm that these companies do not enforce the credit terms granted and allow customers to pay after the due date without penalty are indeed an act of price discrimination (Paul and Wilson, 2006; Schwartz and Whitcomb, 1978).

The results show that Malaysian manufacturers with a higher gross profit margin have a greater incentive to sell, and if necessary, to finance additional units via trade credit extension, in line with the findings of Petersen and Rajan (1997).

However, the finding is inconsistent with the findings of Soufani and Poutziouris (2002) concerning UK small and large companies, in which the higher the firm's gross profit margin, the less is its incentive to price discriminate. Large UK firms may appear to have

kept their price level high enough due to their dominance in the market and try to avoid consumer groups or government intervention, especially concerning the violation of price discrimination violation regulations, whereas smaller firms are less likely to price discriminate as they are more vulnerable in the competitive market due to their size of establishment (Soufani and Poutziouris, 2002). However, medium-sized UK companies are more inclined to price discriminate, which is in line with this study and the findings of Petersen and Rajan (1997), where trade credit is used as a strategic tool to increase sales revenue. Accordingly, this study accepts the hypothesis that trade credit can be used as an effective means of price discrimination.

(f) H6. Liquidity

The results of the OLS regression in Model 1 shows a significant relationship between quick ratio, the proxy for liquidity and trade credit extension at the 5% significance level with a negative coefficient of -0.007 (t = 2.232). The negative coefficient on the liquidity suggests that Malaysian manufacturing companies are more likely to extend less trade credit despite their healthy liquidity even where they have the ability of utilizing the favourable cash position to finance their customers. This finding is in line with those of Marotta (2000) and Levchuk (2002) for Italian and Ukrainian companies, respectively. Both argue that healthy liquidity does not automatically lead to more trade credit granting, in line with the market imperfection or market power theory.

Furthermore, this healthy liquidity may be partly due to the fact that these companies sell mainly cash and, thus, do not suffer from the problem of late payment/defaults. The little

trade credit extended may be granted to customers with good patterns of payment or with a long-term relationship. This conjectures that Malaysian manufacturers are more risk-averse in credit granting although the trade-off of the opportunity and financing cost between financing low financial return but high risk accounts receivable (through this debtors financing may generate more turnover and more customers in the long term, but the credit risk is high) may produce more returns. Accordingly, this study accepts the hypothesis that high quick ratio companies have less incentive to promote sales via trade credit.

(g) H7. Collateral to Secure Financing (COLLATERAL)

In terms of assets tangibility or collateral, this study finds collateral to secure financing is significantly negatively correlated to trade credit extension. This is not in line with the prediction under the financial motive concerning access to external financing, where companies with higher tangibility can collateralise their assets to obtain external financing to fund their working capital, inter alia, granting trade credit. The negative coefficient of -0.175 (b = 3.671), at the 1% significance level, conclusively rejects the financial motive theory and the helping hand theory – that access to external financing as a collateral measure should be positively related to trade credit extension.

Nevertheless, the finding in this study is consistent with the previous study by Levchuk (2002). The inverse relationship is valid for the Malaysian manufacturing sector in that companies with higher collateral extend less trade credit to their customers as they are financially strong and can fund their working capital through other means without taking

the credit risk. This suggests that Malaysian manufacturers, especially public-listed manufacturing companies, are not leveraging on their assets strength to access external finance, which entails funding costs. They rely more on equity financing from public funds (being public-listed companies) and internally generated cash in their operations to fund their working capital and trade credit extension.

In this section, this study rejects the hypothesis that companies with higher collateral will extend more trade credit in the Malaysian manufacturing sector. This implies that despite having more collateral in terms of net fixed assets, and, hence, a greater ability to access external finance, Malaysian manufacturers extend less trade credit.

6.3.2 Dummy Variables and Model 1 Regression Results

Each dummy variable is introduced into the model separately before combining all the dummy variables in Model 1. The results of the introduction of the BOARD dummy is insignificant, implying that there is no significant relationship between trade credit extension between manufacturing companies on the Main and Second Boards of Bursa Malaysia. The SECTOR dummy variable is significant at 1% level in relation to size, liquidity and assets collateral whilst the AUDITOR dummy variable is significant at 5% level in relation to size and assets collateral. Table 6.1 depicts the results of Model 1 with the combined dummy variables which are consistent with the above.

Based on Model 1, this study confirms that industrial product manufacturers extend more trade credit than consumer product manufacturers at the 1% significance level. This

confirms the earlier Malaysian findings by Angappan and Nasruddin (2003) in which the average collection period for consumer products is 42 days as compared to 82 days in the industrial products and construction sector.

The empirical results show that companies that are audited by Big4 (Dummy = 1) audit firms extend less trade credit than companies audited by Non-Big4 (Dummy = 0) audit firms (b = -0.036, t = -2.477) at the 5% significance level. These findings are in line with the predictions of this study. As expected, Big4 audit firms are perceived as having the technical resources and additional expertise (Janssen *et al.,* 2005) in the audit of accounts receivables based on their global network resources and, as such, companies audited by the Big4 are expected to ensure proper compliance, management and control of accounts receivables in order to satisfy these Big4 auditors. With such internal control systems in place in the management of credit risk in receivables, companies audited by Big4 audit firms are seen to extend less trade credit than their counterparts. On the other hand, these companies probably have made adequate provisioning, write-offs to the fair value of the receivables and such actions reduce the ARTO ratio.

6.3.3 Conclusion for Model 1

In conclusion, for the basic Model 1, trade credit extension in the Malaysian manufacturing sector is determined by (a) size of the companies as a credit provider, (b) incentive to price discriminate (through gross profit margin), (c) liquidity of the companies and (d) ability to secure financing (collaterals). Access to internal (OPEPROFIT) and external financing (STCREDIT & GROWTH) are not determinants

of trade credit extension in Malaysia unlike previous studies in developed countries such as the US (Petersen and Rajan, 1997) and the UK (Soufani and Poutziouris, 2002). Nevertheless, this study's results are consistent with the findings of Levchuk (2002) on Ukrainian enterprises, suggesting that there are differences in the determinants of trade credit extension between developed and developing countries, which opens the opportunity for future research.

Interestingly, this study finds that large manufacturing companies, manufacturers with higher liquidity and manufacturing companies with higher collateral assets do not take advantage of practicing the "helping hand theory" in extending more trade credit to expand their businesses and are not financially motivated to extend more trade credit despite their strengths and advantages in the financial aspects. Manufacturing companies with higher gross profit margins will extend more trade credit to their customers and use this credit extension as a tool to discriminate among customers in line with the price discrimination theory.

The industrial products sector extends more trade credit compared to the faster moving consumer products sector and manufacturing companies audited by Non-Big4 audit firms extend less trade credit to their customers compared to their peers audited by Big4 audit firms. This study finds that listing board (which is classified based on their paid-up capital at the point of listing or transfers of listing) is not a determinant of trade credit extension, in contrast to the hypothesis on the size of company measured by the log of total assets. Listing on the Main or Secondary Board has no significance to the

determinants of trade credit extension.

This study shall offer some possible explanations in the subsequent sections, on the above conclusions at the end of extended Model 2 results and discussions, which will provide robustness and additional support to the initial findings in Model 1.

6.4 MODEL 2 – EXTENDED MODEL

Model 2 introduces the extension of Model 1 to cushion-off the off-setting effect of the explanatory variables, if any, on positive and negative operating profits, growing or declining sales growth and also to improve the linearity of the proxy for price discrimination, i.e. the gross profit margin ratio. It segregates the operating margin variable into positive and negative operating margin to minimize the off-setting effect between operating profit making and loss making manufacturing companies, if any, and to make the non-linearity specification correction for the gross profit margin variable by the inclusion of the gross profit margin squared.

The extended Model 2 with an adjusted R-squared of 13.9% is also considered low, with a relatively low improvement from the basic Model 1. Model 2 indicates that the GP margin proxy, improves its significance from the 10% level to the 5% level with the introduction of gross profit margin squared; the coefficient of the linear term rises from 0.107 to 0.339 ($t = 2.476$), while the coefficient on the squared term -0.387 ($t = -1.874$). The gross profit margin squared is used as the correction specification for linearity and the inclusion does indeed increase the coefficient of the linear term.

Although the adjusted R-squared can be considered low, it is slightly higher than the comparable results reported by Delannay and Weill (2004) for nine (9) Eastern Europe countries and Soufani (2002) for large and small UK companies. Petersen and Rajan (1997) reported a slightly higher R-squared at 14.1% for US small and medium-sized companies.

6.4.1 Model 2 - Determinants of Trade Credit Extension

The significant determinants of trade credit extension are highlighted below and discussed in relation to the initial Model 1 findings.

(a) H1. Size of Manufacturers as the Proxy for Credit Worthiness

Contrary to the expected positive relationship between company's size and trade credit extension, where larger companies are expected to extend more trade credit than smaller companies (Petersen and Rajan, 1997), this model re-affirms the significant inverse relationship in Model 1 that the larger the size of the manufacturer (in terms of total assets), the less trade credit they tend to extend. This inverse relationship is very significant at the 1% level (b = -0.054, t = 3.912) with *t-value* increases from -3.756 to -3.912, indicating a higher strength in Model 2.

Accordingly, similar to Model 1, Hypothesis 1 under the financial motive that larger manufacturing companies extend more trade credit than smaller size companies is rejected. The opposite is true, larger firms will extend less credit to their customers under the market power theory as explained in Model 1 above.

(b) H5. Incentive to Price Discriminate and Gross Profit Margin

After adjustment for correction specification in Model 2, the findings of Model 2 strengthen the hypothesis that companies with a higher gross profit margin tend to extend more trade credit (b = 0.339, t = -2.476) with improved significance, at the 5% level compared to the 10% level reported earlier in Model 1. The GPMARGIN-squared variable also resulted in a significant inverse relation when regressed with the dependent variable, ARTO at the 10% level.

The results re-affirm the hypothesis that trade credit can be used as an effective means of price discrimination in the Malaysian manufacturing sector, consistent with the findings of Petersen and Rajan (1997), as discussed in Model 1 above. Similarly, this study accepts the hypothesis that incentive to price discriminate is one of the determinants of trade credit extension in Malaysia.

(c) H6. Liquidity

The results of the OLS regression in Model 2 strengthens the significant relationship in Model 1 between quick ratio, proxy for liquidity, and trade credit extension (ARTO) at the 5% significance level (improved significance level from the earlier 10% level) with a negative coefficient of -0.007 (t = -2.298 under the extended Model 2 as compared to -0.232 in Model 1). As per Model 1, the results are in line with the market power theory, similar to the findings of Marotta (2000) and Levchuk (2002). Companies with better liquidity have the market power to dictate whether they are willing to invest in their customers in terms of the low return credit extension in return for increasing sales

revenue (Marotta, 2000) or to conserve their liquidity in lower risk investments or for other higher return assets with some element of risk-taking.

Malaysian manufacturing companies are more credit risk-adverse in credit granting and, thus, extend less trade credit despite their healthy liquidity, even when they have the ability of utilizing the favourable cash position to finance their customers. As such, this study re-confirms and accepts the hypothesis that high quick ratio companies have less incentive to promote sales via trade credit.

(d) H7. Collateral to Secure Financing

In terms of assets tangibility or collateral, the results in Model 2 are similar to Model 1 at the significance level but with a slightly lower coefficient and explanatory power (-0.161, t = -3.331). This finding is not in line with the financial motive theory and the helping hand theory in respect of access to external financing, in which companies with higher tangibility can collateralise their assets to obtain external financing to fund their working capital, inter alia, granting trade credit.

The negative relationship between credit extension and assets as collateral re-emphasizes that companies with higher collateral do not extend more trade credit to their customers to boost sales revenue. This shows that Malaysian public-listed manufacturing companies are not leveraging on their assets strength concerning access to external finance. In sum, despite having high fixed asset based collateral and, accordingly, greater ability to access external finance, Malaysian manufacturers do not extend more trade credit.

This study's results are not in line with the hypothesis on the financial motive of this study or with the findings in developed countries such as the US (Petersen and Rajan, 1997), however, similar findings are found in transition countries such as Eastern European countries (Levchuk, 2002).

In conclusion, this Model 2 extension of this study confirms the rejection of the basic Model 1's hypothesis that companies with higher collateral will extend more trade credit in the Malaysian manufacturing sector, instead, the opposite is true. Despite having more collateral in terms of net fixed assets and, accordingly, with greater ability to access external finance, Malaysian manufacturers extend less trade credit.

6.4.2 Dummy Variables and Model 2 Regression Results

The results from the introduction of each of the dummy variable separately into the Model 2 before combining all the dummy variables are similar to those in Model 1 except that the price discrimination is now significant at 5% significant level when the SECTOR dummy and the AUDITOR dummy are introduced separately. In combination, the second column of Table 6.1 depicts the regression results of Model 2.

Similar to Model 1 on dummy variables, the extended Model 2 confirms all the earlier findings that the industrial sector manufacturers extend more trade credit than consumer sector manufacturers ($b = 0.054$, $t = 3.791$) at the 1% significance level, and manufacturing companies audited by Big4 audit firms extend less trade credit than Non-Big4 auditors ($b = -0.035$, $t = -2.428$) at the 5% significance level. The same explanations

discussed in Model 1 are applicable to this extended Model 2 and are, therefore, not repeated here.

6.4.3 Conclusion for Model 2

In conclusion, similar to the initial model (Model 1) and prior to the introduction of collection promptness as an additional dichotomous variable, trade credit extension in the extended model (Model 2), is determined by: (a) size of the suppliers, (b) incentive to price discriminate through gross profit margin, (c) liquidity of the manufacturers and (d) their ability to secure financing (collateral). Larger manufacturers offer less trade credit extension. Similarly, manufacturers with higher liquidity and manufacturers with high collateral will extend less trade credit (Levchuk, 2002).

6.5 MODEL 3 – INTRODUCING COLLECTION PROMPTNESS

In the final Model 3, where the collection promptness is introduced as another dichotomous variable in the OLS regression, samples are categorised into prompt payment (PP) recipient and late payment (LP) recipient in respect of the promptness of collection of debts from their customers/trade debtors based comparisons between DSO/average collection period and the average credit period granted, as disclosed in their audited accounts. As discussed earlier, the samples were reduced to 287 (as 96 samples out of the total 383 samples did not disclose the credit terms in their audited financial statements).

By introducing the collection promptness dummy variable in the final OLS regression on the determinants of trade credit extension in the Malaysian manufacturing sector (as shown in Table 6.1), there is a very significant increase in the adjusted R-squared in Model 3 as compared to the earlier Models 1 and 2, to 0.321 from 0.124 and 0.139 previously. This finding on the increased R-squared value is consistent with prior studies such as the study of Pike and Cheng (2001/2002) in which they examine trade credit policy and credit management practices of large firms in the United States, United Kingdom and Australia; the introduction of credit policies, inter alia, collection management as additional dummy variables to their extended models of debtor days and days overdue has significantly increased the adjusted R-squared from 17.9% and 8.3% to 43.1% and 29.6%, respectively.

However, the gross margin explanatory variable (proxy for price discrimination) and auditor dummy variable (Big4 = 1 and Non-Big4 = 0), which are significant at the 5% and 1% level prior to the introduction of this collection promptness dummy variable has become not significant in Model 3. Instead, the newly introduced collection dummy variable is now the most significant (at the 1% level) determinant of trade credit extension ($b = 0.133$, $t = 9.586$). Contrary to the expected results, there is a positive relationship between late collection of debts and the supply of trade credit with the t-statistic of association of approximately three times the strength of the second most important determinant, company size. Surprisingly, the results show that companies suffering from late payment extend more trade credit.

It appears that the above positive association between the extension of trade credit and late collection of payment is contradictory to the negative 'a priori' expectation as it is anticipated that companies experiencing late payment will extend less trade credit as slower collections will reduce the frequency of reinvestment, or turnover (depending on the severity of the late payment), of its capital and, thus, deny the company from using its own capital (Nasruddin, 2008).

As discussed earlier, the collection promptness is developed from the comparison between DSO (ARTO x 365 days) and the average credit term (ACT) or credit period granted. This segregates companies that are prompt collectors (DSO less than ACT granted) and those suffering from late payment (DSO exceeding ACT granted). In addition, the trade credit extension, proxied by ARTO is compared to collection promptness (measured in the number of days). Delays in collection will result in increasing accounts receivable (AR) balance, which in turn leads to increased ARTO. (AR is the numerator for ARTO ratio.) This explains why the results obtained attract a positive relationship, instead of negative, by looking at the substance of the proxy over the form of the relationship between collection and trade credit extension.

The introduction of the collection promptness dummy improves the explanatory power of the results of this study as the clear segregation between prompt collection and late collection will further enhance this determinant of the trade extension model and reduce any spurious relationship. As mentioned earlier, in this final model, the gross margin explanatory variable is no longer significant, indicates that price discrimination theory is

not dominant in companies suffering from late collection payment as they are battling with cash flow requirements and in the period of distress. In such a situation, the main issue will be how much cash they can generate, not how profitable they can be.

In other words, Malaysian manufacturing companies may not compromise the high profit margin with a longer extension of credit period if they suffer from late payment from their customers. Recovery of outstanding accounts receivable from debtors takes priority over extending longer credit terms with a higher profit margin, especially in the period of economic downturn. The notion that 'cash is king' still prevails.

A similar observation is noted in terms of the drop in the significance of the auditor dummy variable (Big4 versus Non-Big4). When it comes to late payment issue, no companies, irrespective of whether they are engaging Big4 or Non-Big4 auditing firms, are spared from the delays of payment and, as such, there is no significant difference between which auditing firms are engaged and the problem of late collection. Table 6.2 summarises the results of the multivariate analysis of the determinants of trade credit extension in the Malaysian manufacturing sector, generalised from all the models.

In the analysis of the determinants of trade credit extension in the manufacturing sector of Malaysia, three significant determinants can be generalised from the OLS throughout all models: SIZE of the firm, LIQUIDITY and COLLATERAL. They all have an inverse relationship with trade credit extension, which means that larger companies extend less credit than medium-sized companies, companies with higher liquidity, and companies

Table 6.2 Summary of the Results of the Determinants of Trade Credit Extension in the Malaysian Manufacturing Sector

No.	Hypothesis	t-statistics ('+'= positive, '-' = negative)	Expected Results	Results Obtained	Comments
H1	**Company's Size (SIZE)** Larger companies will grant more trade credit to their customers if the financing and helping hand theories hold true and under market power theory, the opposite is true if larger companies grant less trade credit.	_	+	Significant***	Large companies will grant less trade credit (Market power theory supported)
H2	**Short-term Line of Credit (STCREDIT)** Companies with greater access to external short-term financing will grant more trade credit, if financing and helping hand theories hold true.	+	+	Not Significant	Financing and helping hand theories not supported
H3a	**Profit and Internal Cash (OPEPROFIT)** Companies with greater access to internal financing (higher operating profitability) will extend more trade credit, if the financing and helping hand theory hold true.	+ (Model 2)/ - (Model 3)	+	Not Significant	Financing and helping hand theories not supported
H3b	Contrary to the financing and helping hand theories, companies in distress (negative operating profitability) will also extend more trade credit to survive.	- (Model 2)/ + (Model 3)	_	Not Significant	Not supported
H4a	**Sales Growth (GROWTH)** Companies that have positive sales growth will extend more credit, if the commercial motive holds true.	_	+	Not Significant	Not supported
H4b	Contrary to the commercial motive, distressed/loss-making companies offer more trade credit despite negative sales growth for business survival.	_	_	Not Significant	Not supported
H5	**Collateral to secure financing (COLLATERAL)** Companies with higher collateral (net fixed assets to total assets) have better ability to secure external borrowings to extend trade credit (financing and helping hand theory) and the opposite is true under the market power theory.	_	+	Significant***	Market power theory supported. Financing and helping hand theories not supported.
H6	**Liquidity (LIQUID)** Companies with high liquidity have less incentive to promote sales via trade credit if the market power theory holds true and under the financial and helping hand theories, the opposite is true if companies with higher liquidity extend more trade credit.	_	+	Significant**	Market power theory supported. Financing and helping hand theories not supported
H7	**Incentive to Price Discriminate - Gross Margin (GROSS)** Companies with higher gross margin extend more credit, if the price discrimination theory holds true.	+	+	Significant*/** (Model 1* and Model 2**) / Not Significant (Model 3)	Price discrimination theory supported but when experiencing late payment situation, the theory is unsupported as cash flow (from debts recovery) is of paramount importance for business sustainability in such situations, not the gross margin.

Note: Unless specified, the results are for all the three models, Model 1 – the basic model, Model 2 – the extended model, and Model 3 – the final model with collection variable with level of significance ***, **, * at 0.01, 0.05, 0.10,level, respectively.

with higher net fixed assets extend less trade credit compared to companies with lower liquidity and lower net fixed assets, respectively.

This study also finds that industrial product manufacturers extend more trade credit than consumer product manufacturers. Except for the liquidity proxy, which has a negative relationship with ARTO (in line with the theory, e.g. Marotta, 2000), the size and collateral (net fixed assets/total assets) are contradictory to the prediction of the financing motive. This study finds a significant negative association between trade credit extension and size of the manufacturer and collateral held by the manufacturers, respectively. Unlike developed countries, this study concludes that access to internal and external financing is not a determinant of trade credit extension in Malaysia, a developing country.

Listed Malaysian manufacturers are not dependent on trade credit extension for their business operations, i.e. to grant credit facilities to finance their customers in order to increase sales. Instead, with the listed status, they have the market power in terms of reputation and/or market standing in financing their operations through medium or longer-term bank finance and, thus, are less reliant on business or trade credit demand. As listed companies' shares are openly tradable on the stock market, these companies' corporate guarantees are often used as unsecured collateral to obtain short-term financing from their banks, leaving those fixed assets as a charge more for medium or longer term financing. As such, listed manufacturing companies rely more on formal banking credit in the management of working capital.

6.6 FURTHER ANALYSIS ON THE DETERMINANTS OF THE TRADE CREDIT EXTENSION MODEL

Concerning control and dummy variables (in the final results in Model 3), two of the four variables were significantly related to trade credit extension: the promptness of the collection of payment (COLLECTION) and the industry sector (SECTOR). The GP MARGIN was a significantly positive determinant of trade credit until the COLLECTION control variable was introduced where it lost the relationship when the samples were segregated into prompt collection and late collection of payments.

This finding implies that the price discrimination theory does not hold in the situation where promptness of collection takes precedence. In other words, in the situation of late collection of payment, the sellers are not extending further trade credit to increase the sale to the late-paying debtors even though they have high gross profit margins. This is plausible as in the period of increased default risk due to late payment, the more sales generated to risky customers, the more the debtors outstanding or default situation despite pricing discrimination or maximisation of profitability.

The same is observed where the inverse relationship between the audit firms (Big4 = 1, Non-Big4 = 0) and the trade credit extension (ARTO) is no longer significant at the 5% level with the introduction of the COLLECTION control variable. In all three models, the theories of financial and commercial motives of internal financing (proxy by OPMARGIN), external financing (proxy by STCREDIT) and commercial motives (proxy

by GROWTHPOS and GROWTHNEG) are not empirically supported to be the significant determinants of trade credit extension for the Malaysian manufacturing sector.

6.7 COMPARISONS OF EMPIRICAL RESULTS

This study further compare the empirical results obtained from the determinants of trade credit extension with the findings from other countries and the surveys results undertaken by the World Bank. Section 6.7.1 explores the differences in the findings in Malaysia with to other markets whilst Section 6.7.2 compares this study empirical results with the survey results from the World Bank's Enterprise Survey.

6.7.1 Comparison of Empirical Results with Other Countries

Based on the results of the analysis and from the theories of credit extension perspective, it appears that the financing theory is not dominant in the determinants of trade credit extension in Malaysia. Instead, the market power theory is very prominent in the Malaysian listed manufacturers where large manufacturers (in terms of assets size and collaterals) and companies with higher liquidity do not extend more trade credit. Large companies may have the market power in term of product or supply-chain superiority, inelastic or essential products, giving them the upper hand in dealing with their customers and accordingly, they could dictate their business terms (Delanney and Weill, 2004). Even with higher liquidity and in contrast to financing and/or helping hand theories, cash-rich manufacturers are not seen to extend more trade credit. This is consistent with Marotta (2000) findings that manufacturers with good liquidity do not want to part their cash holding for riskier assets such as accounts receivable. In term of price discrimination

theory, this study affirms the universal theory that companies use credit extension as a tool to sustain or generate more business revenue.

It a nutshell, this study on Malaysia finds that large companies with high liquidity, high collateral assets, do not pass on the benefit to their customers (helping hand theory) by extending more trade credit in the Malaysian manufacturing sector. This phenomenon is contrary to previous studies in developed countries (Petersen and Rajan, 1997; Pike and Cheng, 2001; Soufani and Poutziouris, 2002). It appear that there is a different between the determinants of trade credit extension between emerging market like Malaysia as compared to developed market like US and EU.

On the other hand, Levchuk (2002) finds that in Ukraine, the helping hand theory is not prevalent; instead market power theory of trade credit is more prominent, similar to the findings in this study. The results of this yet another emerging market in the Eastern European countries (EEC) show that the coefficient for size of the firm, liquidity and collateral assets are negative in relation to trade credit extension implying that large companies with high liquidity, high collateral assets, do not pass on the benefit to their customers by extending more trade credit, similar to Malaysia. This implies that the market power theory prevails in emerging countries like Malaysia and Ukraine as compared to the prevalence of helping hand theory in developed countries like UK, US and EU. This further strengthens the case that there are differences between emerging economy and developed economy in the determinants of trade credit extension.

Several structural and cultural differences can be drawn between emerging markets like Malaysia and Ukraine and developed markets such as US, UK and the EU. Firstly, developed markets have more established financial banking system as compared to emerging countries like Malaysia or Ukraine in terms of access to external financing.

Secondly, developed markets have more established regulations framework in trade credit management with regulations or legislation governing the credit period/terms and interest on late payment of debts and also well-developed credit insurance to protect against bad debts. Seller cum suppliers are well guarded under the law to supply goods and to grant credit to buyers and expect collection within the stipulated time and to charge overdue interest and take recovery actions if they are being paid ultimately. As compared to emerging markets like Malaysia or Ukraine where the trade credit legal framework nor the trade credit insurance is not well established as yet, sellers are taking risks in parting their goods on credit term and in the event of defaults, they are taking further risk by initiating legal recovery in less-developed regulatory framework which, at times, the cost and time of recovery may not justify the benefits. As such, sellers in lesser developed markets are more conservative in parting their goods on credit and would rather enforce their "market power" than facing the risk of bad debts.

Lastly, there is possibly different payment culture between emerging and developed markets. Especially in emerging markets, especially in the Asian market like Malaysia, as per the exploratory findings in Chapter 3 on trade credit practices, there is a culture of prolonging payments for undisclosed reasons, probably due to lack of working capital

financing, weakness in credit and cash flow management, attitude compulsion or even to taking advantage of the lack of regulatory framework in the country. As this is a wide and contentious subject matter, a future research is warranted.

6.7.2 Comparing Empirical Results with Survey Results from The World Bank's Enterprise Survey

From the summary of results, this study concludes that in the Malaysian manufacturing sector, the market power theory is the main theory behind the determinants of trade credit extension and that the financing and helping hand theories are not supported in any of the related hypotheses. Table 6.3 shows that almost 50% of the companies surveyed use bank loans to finance working capital. As access to external financing for working capital is readily available in Malaysia (with only 15% of the respondents identifying access to external bank financing as a major constraint in business), buyers are able to obtain external working capital financing and will, in turn, use their financial strength to negotiate for better pricing with their suppliers.

As the value of security/collateral required is much lower in Malaysia, this partly explains the reason why Malaysian manufacturers with higher collateral grant less trade credit. It can be conjectured that if the customers themselves are not able to secure external trade financing from banks, despite the ease of access and low collateral requirements, in applying the market power theory, the supplier (who has the upper hand in such cases) may not wish to grant credit to this customer. The inability to obtain bank's trade financing in Malaysia can be a signal to the supplier that such a customer is

not creditworthy. Especially, in this study, where all samples are public-listed and established manufacturing companies in Malaysia with sizeable collateral (in terms of property, manufacturing plant and equipment) and, in turn, market power.

The empirical results of this study can be compared with the survey data collected in 2007 by the World Bank's Enterprise Survey of 1,115 companies in Malaysia, which was released in early 2010.[59] Table 6.3 featured the snapshot report on Malaysian's enterprise finance. Section 6.7.1 compares the findings on the line of credit and bank financing between this study and the enterprise surveys while Section 6.7.2 discusses the collateral value for financing.

Table 6.3 Featured Snapshot Report on Malaysia – World Bank's Enterprise Surveys

Finance	Malaysia	East Asia & Pacific	All countries
(1) % of Firms with Line of Credit or Loans from Financial Institutions	60.44	44.97	34.04
(2) % of Firms Using Banks to Finance Investments (purchase of fixed assets)	48.58	30.51	23.73
(3) % of Firms Using Banks to Finance Expenses (working capital)	49.32	33.69	27.79
(4) Value of Collateral Needed for a Loan (% of the Loan Amount)	64.6	126.8	139.45
(5) % of Firms Identifying Access to Finance as a Major Constraint	14.93	20.13	31.58

Source: http://www.enterprisesurveys.org/ExploreEconomies/?economyid=119&year= 2007, released in January 2010, accessed on 10 January 2010.

[59] The World Bank claims that the Enterprise Survey provides the world's most comprehensive company-level data in emerging markets and developing economies with business data on 100,000+ firms in 118 countries and the data is used to create indicators that benchmark the quality of the business and investment climate across countries. (www.enterprisesurveys.org). The Enterprise Surveys categorised Malaysia as part of the East Asia and Pacific region under the upper middle income category with a population of 27 million and with approximately USD7,000 gross national income (GNI) per capita in 2007.

Fabbri and Klapper (2009) study supply chain financing, in particular, the decision to extend trade credit on 2,500 Chinese firms based on firm-level data which was collected in 2003 as part of the World Bank Enterprise Surveys. They found that in China, suppliers with relatively weaker market power are more likely to extend trade credit. Also access to external financing and profitability are not significantly related to trade credit extension. They replicate the main results using data for Brazil and find additional support for the market power theory.

These findings are consistent with the findings of this study of Malaysian manufacturing sector in relation to market power and access to external financing. The findings differ in respect of profitability, the proxy for price discrimination between China and Malaysia, indicating that there is no strong incentive to price discriminate using trade credit in China as compared to Malaysia due to different political and cultural background.

6.7.2.1 Line of Credit and Bank Financing

As shown in Table 6.3, based on the World Bank's survey, more than 60% of the Malaysian companies surveyed have a line of credit or borrowings from financial institutions. This indicates that access to external finance is relatively common and easy in Malaysia compared to other emerging markets and developing countries.

Table 6.3 also shows that almost 50% of the companies surveyed use bank loans to finance working capital. As access to external financing for working capital is readily available in Malaysia (with only 15% of the respondents identifying access to external bank financing as a major constraint in business), buyers are able to obtain external

working capital financing and can in turn use their financial strength to negotiate for better pricing with their suppliers.

As such, it can be conjectured that the market power of both suppliers and buyers will determine the supply and demand of trade credit in Malaysia. This supports the findings of this study on the supply-side of trade credit – that the market power theory (and not the financing motive) is the main theory behind the determinants of trade credit extension in the Malaysian manufacturing sector.

6.7.2.2 Collateral Value for Financing

In addition, the value of collateral needed for a business loan or line of credit (calculated as a percentage of the loan value or the value of the line of credit) is below the loan amount of line of credit in Malaysia (65%), as compared to the average in the other countries that require a collateral amount that exceeds the loans/line of credit borrowed (East Asia & Pacific region – 127%, all countries – 140%).

As the value of security/collateral required is much lower in Malaysia, this partly explains the reason why Malaysian manufacturers with higher collateral are in fact, granting less trade credit. It can be conjectured that if the customers themselves are not able to secure external trade financing from banks, despite the ease to access and low collateral requirement, applying the market power theory, the supplier (who has the upper hand in such cases) may not wish to grant credit to a particular customer.

The inability to obtain bank's trade financing in Malaysia can be a signal to the supplier that such a customer is not creditworthy. Especially in this study, where all samples are public-listed and established manufacturing companies in Malaysia with sizeable collateral (in terms of property, manufacturing plant and equipment) and, in turn, with market power.

6.8 FINAL REGRESSION MODEL: DETERMINANTS OF TRADE CREDIT EXTENSION IN MALAYSIA

Based on the above discussion of results and findings, a final model has been developed in this study based on Model 3, which can be translated into the following equation:

$$\textit{TC Extension (Supply)} = 0.261 - 0.048\,SIZE + 0.012\,STCREDIT - 0.051\,OPPOS + 0.024\,OPNEG - 0.004\,GROWTHPOS - 0.133\,GROWTHNEG + 0.177\,GPMARGIN - 0.171\,GPMSQ - 0.006\,LIQUIDITY - 0.125\,COLLATERAL + 0.026\,BOARD + 0.024\,SECTOR - 0.019\,AUDITOR + 0.133\,COLLECTION + e$$

Where,

TC Extension = TC supply = Accounts receivable over Turnover ratio (ARTO)
SIZE = Company's size proxied by the logarithm of total assets (LOGTA)
STCREDIT = Short-term line of credit
OPPOS = Profit and internal cash, if positive, else 0.
OPNEG = Profit and internal cash, if negative, else 0.
GROWTHPOS = Sales revenue growth, if positive growth (2007/2008 vs. 2006/2007)
GROWTHNEG = Sales revenue growth, if negative growth (2007/2008 vs.2006/2007)
GPMARGIN = Gross margin
GPMSQ = Gross margin squared
LIQUIDITY = Liquidity

COLLATERAL = Collateral to secure financing

BOARD = Dummy variable for listing board, coded as 1 for Main Board companies and 0 for Second Board companies

SECTOR = Dummy variable for industry sector, coded as 1 for industrial products and 0 for consumer products

AUDITOR = Dummy variable for auditing firms, coded 1 for Big4 firms, 0 otherwise

COLLECTION = Dummy variable for collection promptness, coded 1 for late payment from debtors, 0 otherwise

e = Error term

6.9 CONCLUSION

In this chapter, the results of the multivariate analysis of the determinants of trade credit extension in the Malaysian manufacturing sector are presented based on three models of OLS regressions: the initial model (Model 1), the extended model (Model 2) and the final model (Model 3) with the introduction of collection promptness as the control variable. Most public-listed Malaysian manufacturing companies have a large amount of cash invested in accounts receivables (AR). This study finds that the investment in AR is even higher than in the inventories in the companies' working capital in the period under study.

Manufacturing companies with a higher gross profit margin will extend more trade credit in line with the price discrimination theory. Contrary to previous studies (Petersen and Rajan, 1997, Soufani and Poutziouris, 2002), this study finds that large companies; manufacturers with higher liquidity and with higher assets collateral extend less trade credit (not in line with the "helping hand theory"). The industrial products sector extends

more trade credit compared to the faster moving consumer products sector. On the other hand, manufacturing companies audited by Non-Big4 extend less trade credit to their customers compared to their peers who are audited by Big4 audit firms.

CHAPTER 7

MULTIVARIATE ANALYSIS FOR PHASE 2b: ASSOCIATION BETWEEN LATE PAYMENT AND PROFITABILITY

7.1 INTRODUCTION

This chapter depicts and summarises the results of the analysis on the association between late payment by customers and profitability based on the model developed in Chapter 5. Previous studies on the late payment issue (outside Malaysia) are mainly based on data from survey questionnaires (Summers and Wilson, 2000; Pike and Cheng, 2001; Paul and Wilson, 2006). Most empirical research on short-term financial decisions in corporate financial management focuses on working capital management and receivables are only one of the components (Shin and Soenen, 1998; Deloof, 2003; Teruel and Solano, 2007).

In Malaysia, prior studies concentrate on DSO or the average collection period (Angappan and Nasruddin, 2003; Nasruddin, 2008) whereas this empirical study offers a new quantitative dimension to the study of late payment and its effect on the profitability of firms. In this last part of the second phase of this study, the association between late payment and profitability will be investigated using empirical approach based on audited financial data and disclosures, bridging the knowledge gap between the studies of working capital management, trade credit management and international financial reporting standards.

Section 7.2 discusses the correlation analysis whilst Section 7.3 tests the three alternative models on the association between late payment and profitability using multivariate analysis. Section 7.4 further analyses the robustness of the late payment model based on collection promptness, by segregating samples into prompt payees versus late payees on the three different models, and Section 7.5 concludes the chapter.

7.2 CORRELATION AND OTHER NON-NORMALITY ANALYSIS

Table 7.1 shows the Pearson Product Moment correlation coefficients for the various pair wise combinations in a matrix for the association between late payment and profitability. As shown in the correlation matrix, all independent variables are correlated with profitability. The average collection period (DSO), Pareto days overdue (DODP) and leverage (DEBTTL) are negatively related to profitability at $p < 0.01$ whilst average days overdue (DODA) is negatively correlated with profitability at a lesser strength at $p < 0.05$, implying that companies with a shorter collection period, lower days overdue or lower leverage are more profitable.

Large companies (SIZE, in term of total assets), positive and negative growing companies (GROWTHPOS and GROWTHNEG) have a positive correlation with profitability, implying that large companies are more profitable than smaller-sized manufacturing companies. While a positive relationship between positive revenue growth and profitability is anticipated, the decrease in revenue growth (GROWTHNEG) with a relatively high positive correlation with OIROI, the proxy for profitability, at 0.487 ($p <$

0.01) is somewhat unexpected. One would expect the opposite correlation between GROWTHNEG and OIROI and this shall be discussed in this study.

The collection period, DSO, is negatively correlated with size of the manufacturers (SIZE and BOARD) and growth (GROWTHPOS and GROWTHNEG) whereas the DODP is negatively correlated with size (SIZE and BOARD) and negative growth. DODA is negatively correlated with size measured by total assets. This implies that large companies have lower average collection period/debtors days and also lower days overdue. Growing companies have lower days overdue but, unexpectedly, companies with decreasing revenue also experienced lower days outstanding and lower days overdue (based on the Pareto-rule) and will be further analysed and discussed in the multivariate analysis of this study. For late payment of receivables, the correlation suggests that slower or delayed collection of trade receivables will result in longer DSO and an extended credit period is required to cover the late payment from debtors, and further working capital is required.

7.2.1 Correlation between Dummy Variables and Other Variables

For dichotomous variables, the positive correlation between listing board and size (LOGTA) at 0.579 is relatively high. This positive correlation suggests that Main Board manufacturing companies are more profitable than Second Board companies and this is consistent with the size measured by the logarithm of total assets (SIZE) above. It is obvious that the Main Board companies with higher share capital requirements are larger in size.

Table 7.1 : Pairwise Correlation Matrix for the Association between Late Payment and Profitability

	OIROI	DSO	DODA	DODP	SIZE	GROWTH POS	GROWTH NEG	DEBTTL	BOARD	SECTOR	AUDITOR
OIROI	1.000										
DSO	-0.260 **	1.000									
DODA	-0.080 *	N/A	1.000								
DODP	-0.238 **	N/A	N/A	1.000							
SIZE	0.286 **	-0.243 **	-0.197 **	-0.206 **	1.000						
GROWTHPOS	0.182 **	-0.109 *	-0.044	-0.045	0.012	1.000					
GROWTHNEG	0.487 **	-0.225 **	-0.033	-0.227 **	0.201 **	0.102 *	1.000				
DEBTTL	-0.187 **	0.068	-0.045	0.008	0.076	-0.157 **	-0.093	1.000			
BOARD	0.310 **	-0.150 **	-0.140	-0.123 *	0.579 **	0.054	0.130 *	-0.118 *	1.000		
SECTOR	-0.073	0.075	0.114	0.083	0.037	0.091	-0.019	0.084	-0.078	1.000	
AUDITOR	0.072	-0.083	0.106	0.000	0.247 **	0.023	-0.016	-0.101 *	0.165	0.084	1.000

**, * Significant at 0.05, 0.10 level.

The rest of the dummy variables (SECTOR and AUDITOR) have no significant correlation with profitability. The COLLECTION dummy variable is not used in this part of the study relating to late payment as the late payment model segregates the samples into late payees and prompt payees (one model based on average days overdue, DODA and another model based on Pareto days overdue, DODP).

The new independent variable, leverage or gearing of the company (DEBTTL), is negatively correlated with two dummy variables: listing board (BOARD) and audit firm (AUDITOR), implying that Main Board companies have lower gearing than those in the Second Board and that companies audited by Big4 audit firms have lower gearings than those audited by Non-Big4.

7.2.2 Multicollinearity Test on the Late Payment Model

The rest of the correlations were discussed earlier in the determinants of the trade credit extension model in Chapter 7 and continuing from the multicollinearity discussion on the determinants model, the correlation matrix in Table 7.1 confirms that no multicollinearity exists between any of the other variables in the late payment model as none of the variables correlates above 0.8 (Gujarati, 2006). All variables have a correlation of less than 0.6 in this study on late payment of receivables. In order to further test on multicollinearity, each of the independent variables is regressed on the other independent variables and the variance inflation factor (VIF) is computed. All the VIF computed are between 1 and 2, which is in the low band and, accordingly, this study concludes that multicollinearity is not an issue in this large sample one-period year cross-sectional study.

7.3 MULTIVARIATE ANALYSIS

Based on the three alternative models to test the association between late payment and profitability, OLS regression analyses are performed to show the effects of the late payment on profitability (and not otherwise) and the results are summarised in Table 7.2. The days sales outstanding (DSO) and days overdue based on Pareto-rule (DODP) are significant at the 5% level with a coefficient of -0.063 (t = -2.152) and -0.057 (t = -1.890), respectively, both with R-squared of 32.5%.

The results confirm the inverse relationship between late payment and profitability: any DSO or DODP reduction will improve the profitability (measured by OIROI). Moreover, the negative correlation between DSO and profitability is consistent with prior findings (Deloof, 2003; Teruel and Solano, 2007).

Surprisingly, under Model 2, the average days overdue (DODA), the explanatory variable, which is commonly used as a measure of late payment, is not statistically significant in explaining the effect of late payment and profitability. This may be due to the way the data was collected as previously explained.[60] Another explanation is that the average credit period granted to customers (credit term) as disclosed by Malaysian companies in the notes to the financial statements may not be reflective of the actual receivables outstanding position in deriving average days overdue.[61] This justifies the

[60] Previous studies obtained average days overdue (DODA) data from questionnaire on the average number of late collection days experienced by respondents as opposed to the quantitative derivation in this study.

[61] By taking the simple average between the minimum and maximum credit period range disclosed in the financial statements and compared with DSO, 60% of the manufacturing companies in Malaysia suffered from late payment.

Table 7.2: Association between Late Payment and Profitability (OIROI) with Alternative Measurements

	Model 1 (DSO)			Model 2 (DODA)			Model 3 (DODP)		
Variable	Coef	t-Stat		Coef	t-Stat		Coef	t-Stat	
DSO	**-0.063**	**-2.152**	**						
DODA				-0.033	-1.008				
DODP							**-0.057**	**-1.89**	**
SIZE	0.018	1.355		0.021	1.523		0.019	1.362	
GROWTHPOS	**0.01**	**2.585**	***	**0.011**	**2.626**	***	**0.01**	**2.674**	***
GROWTHNEG	**0.309**	**4.98**	***	**0.325**	**5.38**	***	**0.308**	**4.946**	***
DEBTTL	**-0.041**	**-2.053**	**	**-0.041**	**-2.098**	**	**-0.043**	**-2.158**	**
BOARD	**0.033**	**3.05**	***	**0.033**	**2.996**	***	**0.033**	**3.037**	***
SECTOR	-0.011	-0.842		-0.011	-0.878		-0.011	-0.835	
AUDITOR	0.002	0.204		0.002	0.22		0.004	0.332	
C	0.04	1.268		0.022	0.723		0.024	0.773	
Adjusted R-sq.	0.325			0.318			0.325		
F-statistic	18.198			17.657			18.191		
N	287			287			287		

Notes:
The dependent variable is Operating Income Return on Investment (OIROI), derived from the operating income over total assets of the listed manufacturing companies.
The coefficients are estimated using ordinary least squares (OLS) and the reported t-statistics are White-adjusted values to control for heteroscedasticity.
***, **, * Significant at 0.01, 0.05 0.10 level.

reason to introduce days overdue based on Pareto-rules (DODP)[62] since companies tend to grant a longer than average credit term and the statistical results based on the rule of simple averaging is not significant, as found in this study.

This study also finds that company size, based on total assets, has no impact on profitability. This is in contrast to the findings of Teruel and Solano (2007) in which there is a positive association between size and profitability where larger firms generate higher profits.

[62] based on the comparison between DSO with Pareto credit period/term – 80% of maximum credit term and 20% of the minimum credit term, where companies tend to give longer credit term than shorter term)

However, when size is based on the classification of the Listing Board in Malaysia (based on the size of paid-up share capital), this study finds that Main Board companies perform better compared to their counterparts in the Second Board (significant at the 1% level of confidence in all three models. This is consistent with the findings of Teruel and Solano (2007). Apart from a larger size in terms of equity capital, Main Board companies have higher profit track records and are more established than their counterparts. This suggests that other aspects apart from size of equity may impact on profitability since the size factor (log total assets) has no impact on profitability.

In all three equations, company's growth is significantly associated with profitability with both increase and decrease in the growth variables and statistically significant at 1%. While the positive association between increase in revenue growth and financial performance is somewhat expected, the positive association between decrease in growth and profitability is somewhat puzzling and needs further investigation. Companies with a decrease in growth are expected to have inverse relationship with profitability as fewer sales are expected to generally reduce the OIROI since the operating overhead costs have to be sustained.

Nevertheless, as the companies in the sample are all established public-listed manufacturing companies with relatively easy access to capital market, despite the decrease in growth, they may have adequate sales volume to cover fixed overhead costs. These companies tend to be more selective in choosing more profitable/better paymaster customers. This usually results in improved margins, cash flow and maintaining

overhead costs, thus showing better financial performance despite the decrease in revenue growth.

Leverage is strongly associated to profitability in all three equations, and significant at 5%, implying that the lower the gearing the better the profitability. The findings indicate that the other two dummy variables, SECTOR and AUDITOR are not statistically significant in relation to OIROI and, thus, are excluded in the discussion of results.

In sum, the results show that the late payment problem leads to lower profitability in the Malaysian manufacturing sector. As shown in Table 7.2, it is interesting to note that the results of the regression between OIROI and DSO and that of OIROI and DODP are almost similar except for the DSO, as it measures collection period from the inception of the credit terms (zero days) until the collection date (which includes payment within credit terms plus those beyond their credit terms, if paid late).

Obviously, industries that practice shorter credit terms, translating to shorter DSO, will perform better compared to others with longer credit terms and DSO, because of a shorter cash conversion cycle in the management of working capital. Thus, longer DSO affects profitability. In contrast to DODP and DODA, DSO measurement could not identify a variation in credit period granted to customers. DODA and DODP measure the number of overdue days taken above its agreed credit terms. The credit terms may be varied across industries according to their practices and norms and these overdue days measurement are indeed a better measurement of late payment.

7.4 DISCUSSION OF RESULTS

Table 7.3 depicts the summary of the findings in this study in relation to the association between late payment from customers and profitability in the Malaysian manufacturing sector. In comparison with other studies, Teruel and Solano (2007) find a significant negative relationship between Spanish SME's profitability and the number of days accounts receivable (DSO), with a negative relationship between OIROI and leverage (ratio of debts to liabilities) but a positive relationship with company size (log of total assets) and sales growth, all at the 1% significant level. Except for company size, which is not a financial performance determinant factor in Malaysia, the findings of this study are consistent with the findings of Teruel and Solano (2007).

It was argued that the DSO is not suitable to measure late payment of receivables as it 'fail[s] to tackle the variation of standard credit terms offered by firms, thereby limiting their explanatory power' (Pike and Cheng, 2001: p.8). DSO itself has limited meaning unless compared against the credit period extended, in that different industries have different DSO norms (Pike and Cheng, 2001). For example, earlier results in the determinants of trade credit extension indicate that industrial product manufacturers extend a longer credit period (higher ARTO) than consumer product manufacturers (as per Section 6.3.2). Higher ARTO means longer DSO, however, this cannot be empirically proven in Model 1 using DSO in relation to profitability. This is because a reduction in DSO will improve profitability (Deloof, 2003; Teruel and Solano, 2007); this reduction may or may not due to late payment by customers.

The late payment by customer factor is not available in DSO unless compared to the normal credit period granted to customers. A reduction in DSO means a faster collection of accounts receivable or a reduction in the credit period granted, or even higher sales turnover. Without the available information of overdue days, DSO appears to be the best available dependent variable for collection period and issues on late payment were not considered (Nasruddin, 2008).

Accordingly, as this part of the study focuses on collection promptness and not the reduction of credit period, which is mainly determined by market forces and industry norms (Pike and Cheng, 2002), the DSO is not a good proxy for late payment by customers compared to days overdue (DOD) measurement (measure of the collection days that exceed the agreed credit period). However, Pike and Cheng's (2002) proxy for late payment by customers, the average days overdue (DODA), is not statistically significant in relation to profitability based on the results of this study and, therefore, not a valid OLS model on late payment. Instead, DODP, the modified days overdue, applying the Pareto principle introduced in this study, shows a significant inverse relationship with profitability in the Malaysian manufacturing sector at the 5% significance level.

The Model 3 - DODP is able to measure and identify the late payment period distinctively, provided adequate disclosure on trade receivables is made in the audited financial statements of the companies. DODP measures the number of overdue days taken above its agreed credit terms. The credit terms may be varied across industries

Table 7.3 Summary of the Results of the Association between Late Payment and Profitability in the Malaysian Manufacturing Sector

Ref.	Hypothesis	t-statistics ('+'= positive, '-' = negative)	Expected Results	Results Obtained	Comments
	Late Payment Proxy (DSO, DODA & DODP) and Profitability (OIROI)				
L1	**Days Sales Outstanding (DSO) – also known as average collection period** There is an inverse relationship between late payment by customers (measured by DSO) and profitability.	–	–	Significant**	Shortening the average collection period (DSO) will increase the profitability and vice versa.
L2	**Average Days Overdue (DODA)** There is an inverse relationship between late payment (measured by DODA) and profitability.	–	–	Not Significant	Not supported. DODA is not a good measurement of late payment in the Malaysian manufacturing sector.
L3	**Pareto Days Overdue (DODP)** There is an inverse relationship between late payment (measured by DODP) and profitability.	–	–	Significant**	Shortening the number of days of late payment by customers (using Pareto days overdue) will increase the profitability and vice versa.
C1	**Company's Size (SIZE)** There is a positive association between company size and profitability.	+	+	Not Significant	Not supported. Size alone has no significant effects on profitability.
C2	**Sales Growth (GROWTH)** (a) Positive sales growth is positively related with profitability.	+	+	Significant***	Positive growth is positively associated with profitability.
	(b) Negative sales growth is negatively related with profitability	+	-	Significant***	Puzzling, supported findings that negative growth is also positively associated with profitability.
C3	**Financial Debt Level (DEBTTL)** Lower gearing is positively associated with profitability	–	–	Significant**	The lower the gearing of the companies, the higher is their profitability.
D1	**Listing Board (BOARD)** Companies with high liquidity have less incentive to promote sales via trade credit if the market power theory holds true and under financial and helping hand theories, the opposite is true if companies with higher liquidity extend more trade credit.	+	+	Significant***	Main board companies perform better than the Second board companies.

Note: Unless specified, the results are for all the late payment measurement - DSO, DODA and DODP with level of significance ***, **, * at 0.01, 0.05 and 0.10.

according to their practices and norms and the DODP is indeed a much better measure of late payment. It is also a more objective way of identifying days overdue as compared to previous studies that gather the overdue days from the survey respondents; this is very subjective and likely to subject to several types of response bias such as acquiescence bias, auspices bias and social desirability bias, especially on the issues of late payment and the level of knowledge of respondents on the subject matter.

7.5 FURTHER ANALYSIS BASED ON COLLECTION PROMPTNESS

The results of the OLS regression in the preceding section on late payment by customer and profitability show the acceptance and significance of Model 1 – DSO (Deloof, 2003) measurement and Model 3 – DODP, new variable introduced via modification of the average days overdue model (Pike and Cheng, 2001/2002) but rejects Model 2-DODA. To further explain the robustness of the models, this section investigates in further detail, the analysis of the three models by segregating samples into prompt payee and late payees to avoid the setting-off effect, if any. As summarised in Table 7.4, this study finds that based on average days overdue (DODA), 60% of Malaysian manufacturing companies suffer from late payment as compared to 46% if it is based on days outstanding using the Pareto 80:20 rules described earlier in this study.

Based on the available samples, all the sub-modelling in this section will be in accordance with the above classifications. Model 1-DSO and Model 2-DODA will be segregated into two sub-models based on collection promptness measured by average days overdue, with 114 samples in the prompt payment category and the remaining 173

Table 7.4 Collection Promptness - Number of Companies

Number of companies	Average days overdue (DODA)	DODA Percentage	Pareto days overdue (DODP)	DODP Percentage
Prompt Payees	114	39.72%	154	53.66%
Late Payees	173	60.28%	133	46.34%
Total Sample (N) -FYE 2007/8	287	100.00%	287	100.00%

samples in the late payment category. Furthermore, Model 3-DODP will have 154 samples in the prompt payment category and 133 samples in the late payment category as Pareto-rule days overdue are introduced in Model 3.

7.5.1 Model 1 - DSO and Collection Promptness

Detailed analysis is carried out for the late payment models to corroborate the earlier findings. First, based on DSO or average collection period (ACP) segregating Model 1 (DSO) samples into prompt payees (DSO_PP) and late payees (DSO_LP), respectively, based on the following sub-equations, replacing the earlier DSO variable with DSO_PP and DSO_LP, respectively:

$$OIROI = a + B1\ DSO + B2\ SIZE + B3a\ GROWTHPOS + B3b\ GROWTHNEG + B4\ DEBTTL + B5\ BOARD + B6\ SECTOR + B7\ AUDITOR + e \quad (7.5.1)$$

$$OIROI = a + B1\ DSO\_PP + B2\ SIZE + B3a\ GROWTHPOS + B3b\ GROWTHNEG + B4\ DEBTTL + B5\ BOARD + B6\ SECTOR + B7\ AUDITOR + e \quad (7.5.2)$$

$$OIROI = a + B1\ DSO\_LP + B2\ SIZE + B3a\ GROWTHPOS + B3b\ GROWTHNEG + B4\ DEBTTL + B5\ BOARD + B6\ SECTOR + B7\ AUDITOR + e \quad (7.5.3)$$

Where,

DSO_PP = Days sales outstanding or average collection period for companies with prompt collection of AR

DSO_LP = Days sales outstanding or average collection period for companies with delay collection of AR

Note: The rest of the variables and error term are similar and have been explained in the preceding sections.

The OLS regression results for the sub-models based on Model 1 – DSO are summarised in first column of Table 7.5. The table shows that in both prompt payee and late payee sub-models, lower DSO contributes to higher profitability (at 10% level) and higher positive and negative revenue growth leads to higher profitability. However, for listing board and companies' gearing, this study finds that the relationships with profitability are only significant for manufacturing companies suffering from late payment by customer: Main Board companies, though suffering from late payment, still post higher profits than their counterparts on the Second Board. This implies that Main Board companies are more resilient than Second Board companies in tackling the late payment issue.

Similarly, companies suffering from late payment with lower gearing tend to show higher profitability. Interestingly, the gearing level has no impact on the profitability of companies that are not suffering from late payment by customers, as the statistical results are insignificant. This may imply that companies suffering from late payment may either

use internal generated funds or external financing to support the additional or prolonged working capital (thereby incurring financing cost). If external financing is utilised, the higher the level of gearing, the lower will be the companies' profitability as financing cost will impact the profitability, and vice versa. For prompt payee companies, the additional financing of working capital is not required as there are no delays in the collection of receivables and no additional financing costs are incurred.

7.5.2 Model 2 and 3 - Days Overdue (DODA & DODP) and Collection Promptness

Second, in order to test the robustness of the preceding model, especially on Pike and Cheng (2001/2002)'s days overdue measurement, a detailed analysis of Equation 7.5.2 (DODA) and 7.5.3 (DODP) was performed; by further segregating the equations into prompt payee (PP) and late payee (LP) companies for DODA and DODP, respectively. This is shown in the sub-equations below:

$$OIROI = a + B1\ DODA\_PP + B2\ SIZE + B3a\ GROWTHPOS + B3b\ GROWTHNEG + B4\ DEBTTL + B5\ BOARD + B6\ SECTOR + B7\ AUDITOR + e \quad (7.5.2a)$$

$$OIROI = a - B1\ DODA\_LP + B2\ SIZE + B3a\ GROWTHPOS + B3b\ GROWTHNEG + B4\ DEBTTL + B5\ BOARD + B6\ SECTOR + B7\ AUDITOR + e \quad (7.5.2b)$$

$$OIROI = a + B1\ DODP\_PP + B2\ SIZE + B3a\ GROWTHPOS + B3b\ GROWTHNEG + B4\ DEBTTL + B5\ BOARD + B6\ SECTOR + B7\ AUDITOR + e \quad (7.5.3a)$$

$$OIROI = a + B1\ DODP\_LP + B2\ SIZE + B3a\ GROWTHPOS + B3b\ GROWTHNEG + B4\ DEBTTL + B5\ BOARD + B6\ SECTOR + B7\ AUDITOR + e \quad (7.5.3b)$$

Table 7.5: Results of the Detailed Analysis of Model 1 (DSO), Model 2(DODA), Model 3 (DODP) and OIROI

Independent Variables	Detailed Analysis of Model 7.5.1 Days Sales Outstanding (DSO)				Detailed Analysis of Model 7.5.2 Average Days Overdue (DODA)				Detailed Analysis of Model 7.5.3 Days Overdue based on Pareto-rule (DODP)			
	Model 7.5.1 (a): DODA-PP^		Model 7.5.1 (b): DODA-LP^		Model 7.5.2 (a): DODA-PP^		Model 7.5.2 (b): DODA-LP^		Model 7.5.3 (a): DODP-PP^		Model 7.5.3 (b): DODP-LP^	
	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat
LP Proxy^ :												
DSO-PP (Prompt Pymt)	**-0.182**	**-1.858***										
DSO-LP (Late Pymt)			**-0.048**	**-1.932***								
DODA-PP					-0.088	-0.379						
DODA-LP							-0.01	-0.257				
DODP-PP									-0.064	-0.609		
DODP-LP											**-0.117**	**-2.865*****
SIZE	0.038	1.567	-0.002	-0.126	**0.049**	**2.098****	-0.003	-0.212	0.019	0.896	0.011	0.704
GROWTHPOS	**0.006**	**2.417****	**0.014**	**2.943*****	**0.008**	**3.072*****	**0.015**	**2.985*****	**0.009**	**2.634*****	**0.042**	**3.729*****
GROWTHNEG	**0.308**	**3.106*****	**0.311**	**3.892*****	**0.28**	**3.55*****	**0.398**	**4.744*****	**0.389**	**4.098*****	**0.217**	**3.186*****
DEBTTL	-0.048	-1.26	**-0.038**	**-1.9***	-0.058	-1.523	-0.03	-1.574	-0.031	-1.181	**-0.05**	**-2.005****
BOARD	0.016	0.768	**0.045**	**3.63*****	0.021	1.014	**0.043**	**3.485*****	0.021	1.353	**0.049**	**3.391*****
SECTOR	-0.008	-0.369	-0.012	-0.936	-0.016	-0.701	-0.011	-0.813	-0.001	-0.07	-0.02	-1.148
AUDITOR	-0.001	-0.071	0.007	0.531	-0.012	-0.585	0.011	0.846	0.006	0.394	0.007	0.482
C	0.024	0.416	0.074	2.022	-0.027	-0.509	0.061	1.756	0.02	0.456	0.041	0.985
Adjusted R-squared	0.292		0.339		0.271		0.354		0.297		0.34	
F-statistic	6.776		12.089		6.249		12.803		9.081		9.514	
N	114		173		114		173		154		133	

Notes:
The dependent variable is Operating Income Return on Investment (OIROI), derived from the operating income over total assets of the listed manufacturing companies.
The coefficients are estimated using ordinary least squares (OLS) and the reported t-statistics are White-adjusted values to control for heteroscedasticity.
***, **, * Significant at 0.01, 0.05 and 0.10 level.

Where,

DODA_PP = Average days overdue for companies with prompt collection of AR

DODA_LP = Average days overdue for companies with delay collection of AR

DODP_PP = Pareto-rule Days Overdue for companies with prompt collection of AR

DODP_LP = Pareto-rule Days Overdue for companies with delay collection of AR

Note: The rest of the variables and error terms are similar and have been explained in the preceding sections.

The results of the detailed analysis of the regressions between OIROI and days overdue are presented in the second column (Model 2) and third column (Model 3) of Table 7.5, respectively. The detailed results indicate that the days overdue based on the Pareto-rule (DODP) variable are strongly negatively correlated with the profitability proxy by OIROI and significant at the 1% level in the late payment model (DODP_LP). This correlation between OIROI and DODP_LP contributes to the overall significance of the late payment model discussed in the preceding section.

The rest of the other alternative independent variables, DODA_PP (b = -0.088, t = -0.0379), DODA_LP (b = -0.01, t = -0.257) and DODP_PP (b = 0.064, t = -0.609) are not statistically significant, resulting in the insignificance of these independent variables in the overall models discussed. Based on this further analysis, it is clearly identified that late payment from customers has a significant inverse effect on profitability based on the samples of 133 companies that suffer from delays in collection of debts.

As a whole, as per the preceding chapter, the size of the manufacturers (measured in terms of the logarithm of total assets), has no impact on OIROI at the 10% significance

level. However, detailed analysis of Model 7.5.2 – the average days overdue model for companies with prompt collection from customers (DODA) – indicates that larger manufacturers with more total assets perform better than smaller manufacturers at the 5% significance level (b = 0.049, t = 2.098). Nevertheless, it loses its significance in the detailed analysis of Model 7.5.3 with samples of companies suffering from late payment (as opposed to prompt payment companies). This suggests that the late payment impact on profitability affects all companies, irrespective of their size (based on total assets).

As predicted from the discussion in the preceding section, both the positive and negative revenue growth, as control variables, are strongly associated with profitability, measured by OIROI and are significant at the 1% level throughout all the alternate models. Companies with a decrease in growth are expected to have an inverse relationship with profitability as fewer sales are expected to generally reduce the OIROI since the operating overhead costs have to be sustained.

Nevertheless, as the companies in the sample are all established public-listed manufacturing companies with relatively easy access to the capital market, despite the decrease in growth, they may have adequate sales volume to cover fixed overhead costs. These companies tend to be more selective in choosing more profitable/better paymaster customers. This usually results in improved margins, cash flow and maintaining overhead costs, thus, showing better financial performance despite the decrease in revenue growth.

In terms of gearing of the manufacturing companies, this detailed study finds that gearing is only significant in Model 7.5.3(b) with DODP_LP as the independent variable (b = -0.05, t = 2.005). At the 5% significance level, the negative coefficient suggests that the lower gearing or leverage improves the financial performance of companies suffering from late payment based on the Pareto-rule model. For the other alternative models, the inverse relationship between leverage and OIROI cannot be concluded as the results are not significant.

The listing board, BOARD, is significant only for the late payment alternative models, both in the average days overdue (DODA) and days overdue based on the Pareto-rule (DODP) at the 1% level. The positive relationship with the profitability variable indicates that Main Board companies that suffer from late payment are better off compared to their peers on the Second Board. This implies that in the case of delay in the collection from customers, larger companies (in terms of shareholding equity) perform better than those with smaller equity holding in terms of financial performance. Larger capitalised manufacturers have better financial strength to sustain their businesses despite suffering from late payment whereas smaller capitalised manufacturers may suffer setbacks, especially when it comes to the financing of their business operations and faced with late collection problems that impede their cash flows.

This study finds no significant relationship between the industry sector and the audit firms employed by the manufacturing companies with profitability. In sum, the detailed

study on the days overdue models segregating into prompt payee and late payee clearly show the significance of late payments by customers on profitability (OIROI).

For the two significant late payment sub-models, one based on the average collection period (DSO_LP) and the other based on Pareto days overdue (DODP_LP), this study uncovers similar findings and results from the respective OLS regressions; albeit one explaining the average collection period negative effect on profitability (without taking into account the variation of standard credit terms offered by the companies) and the other explaining the effect of days overdue (the excess of DSO over the normal credit period offered by the companies) on profitability.

The above empirical results show that on average 60% (or 46% based on Pareto days overdue) of the listed manufacturing companies in Malaysia suffers from late payment confirm the findings from the initial exploratory study in Chapter 3 of this thesis where 7 out of 10 of the respondents suffer from late payment. Whilst the last part of the exploratory study explores the reasons for late payment, this Phase 2b study links the issue of late payment to corporate performance and finds that there is a negative effect of late payment by debtors on the profitability, documenting the cause and effect of late payment by debtors in the Malaysian manufacturing sector.

7.5.3 Final Regression Model: Association between Late Payments on Profitability

Based on the above discussion and the conclusions from the results, robustness and findings on the association between late payment by customers and profitability, a final late payment model based on Model 3-DODP has been developed and can be translated into the following equation:

Profitability (OIROI)	***= 0.773 - 1.89 DODP +1.362 SIZE + 2.674 GROWTHPOS + 4.946 GROWTHNEG - 2.158 DEBTTL + 3.037 BOARD – 0.835 SECTOR + 0.332 AUDITOR + e***

Where,

OIROI	=	Operating income return on investment, i.e. operating income to total assets, proxy for profitability of companies
DSO	=	Days sales outstanding or average collection period over 365 days
DODA	=	Average days overdue, i.e. average days overdue from average credit period (DSO) granted over 365 days
DODP	=	Pareto days overdue (based on Pareto 80:20 rules) over 365 days
SIZE	=	Company's size represented by the logarithm of total assets (LOGTA)
GROWTHPOS	=	Sales revenue growth (2007/2008 vs. 2006/2007) if positive growth
GROWTHNEG	=	Sales revenue growth (2007/2008 vs. 2006/2007) if negative growth
DEBTTL	=	Short-term and long-term bank borrowings to total liabilities
SECTOR	=	Dummy variable for industry sector, coded as 1 for industrial products and 0 for consumer products
BOARD	=	Dummy variable for listing board, coded as 1 for Main Board companies and 0 for Second Board companies
AUDITOR	=	Dummy variable for auditing firms, coded 1 for Big4 firms, 0 otherwise
e	=	error term

7.6 CONCLUSION

In this chapter, the findings of the last part of Phase 2b, the last phase of this study, are presented based on various regression analyses conducted on the association of late payment on profitability in Malaysian manufacturing companies using operating income return on investment (OIROI) as the proxy for profitability.

For size of the manufacturing company in terms of total assets, this study finds no significant impact of company size on profitability (measured by OIROI). Nevertheless, if size is measured by equity (based on classification of listing board in Malaysia), this study finds that Main Board companies fair better in terms of financial performance as compared to their peers on the Second Board at the 1% significance level. As far as leverage is concerned, in all three equations, there is a conclusive argument that (at the 5% significance level), the lower the gearing of the manufacturing companies, the better will be their financial performance.

This study finds an alternate measurement of late payment and credit management performance using days overdue based on the Pareto principle, which is introduced and tested along with the existing common measurements – average days overdue and days sales outstanding. This study proves the hypothesis that by shortening the cash conversion cycle via a reduction in the number of days sales outstanding and/or days overdue, companies can improve their profitability.

This study proves that late payment information could be obtained empirically from the audited financial statements (provided that adequate disclosures on accounts receivable are made). Perhaps this is one of the earliest empirical studies of this kind to address late payment issues. Most previous studies collect late payment information from survey respondents. This could pave the way for comparative studies across countries and the findings will contribute to the convergence of the financial reporting standards into single global standards.

CHAPTER 8

SUMMARY AND CONCLUSION

8.1 INTRODUCTION

The final chapter of this thesis discusses the implications, contributions, limitations and suggestions for future research on trade credit extension and the association between late payment and profitability in the Malaysian manufacturing sector. Section 8.2 addresses the implications of the study whilst Section 8.3 highlights some limitations of this study. Section 8.4 suggests some recommendations for future research while Section 8.5 summarizes and concludes.

8.2 IMPLICATIONS OF STUDY

This research provides a significant contribution to the trade credit management literature in respect of trade credit extension and late payment theories via empirical testing. The implications of this study contribute to both the practice and theory of trade credit management. The implications for practice are discussed in section 8.2.1 whilst the implications to theory are discussed in section 8.2.2.

8.2.1 Implications for Practice

By employing an exploratory sequential mixed methodology from the initial exploratory study to an empirical study, this study exposes the issue of the sensitivity of the trade credit management subject matter in the Malaysian business environment. From the lack

of available disclosed information as well as the unreliability of information and the reluctance on the part of companies to divulge information on trade credit, especially on late payment by customers, it appears that trade credit information is highly confidential. Owing to these factors, trade credit management in Malaysia is an unexplored area despite its importance.

Despite the discouraging responses on the exploratory study stage, this study made a breakthrough in the study of credit management, which was the motivation to move to content analysis and empirical study based on published information. The painstaking content analysis, on the disclosure of credit period in the audited financial statements, for each and every company in the sample has been fruitful as this study was able to provide empirical proof of late payment in the Malaysian manufacturing sector. This is one of the first studies of this kind on this subject matter. It draws information from disclosures in the financial statement and compares it to compute ratio in financial analysis, and then applies the Pareto 80:20 principles to determine the days overdue and the impact of late payment on the Malaysian manufacturing sector.

This study serves as a first and final wake-up call to the practice in Malaysia, as the deadline to comply with the accounts receivable disclosure requirements under FRS 7-Financial Instruments: Disclosures[63] is 1 January 2010. Malaysian business practitioners will have to pay more attention to their trade credit management and late collection of

[63] FRS 7 is the Malaysian financial reporting standard which is adopted from IFRS 7: Financial Instruments: Disclosures. IFRS 7 has been implemented internationally since 1 January 2007 in some countries. In Malaysia, IFRS 7 implementation has been deferred until 1 January 2010. See http://www.masb.org.my/index.php?option=com_content&view=article&id=1243&Itemid=57

payment issue. Late payment impacts not only the financial performance of companies but also the disclosure of financial statements. In addition, it will be onerous to comply with the mandatory disclosure requirements in relation to ageing and long outstanding overdue debts and this will be subject to impairment test.

Under FRS 7, the disparity between the disclosed credit period granted and the average collection period (DSO) will be addressed, as debts falling after the credit period granted will be shown in the respective ageing and impairment testing for any potential provision for doubtful debts; any non-provision for late payment must be justified. Thus, the days sales outstanding (or the average collection period) for accounts receivable, individually or collectively, should not be above 365 days (even if the debts are with collateral) in order to remain classified as current assets. Furthermore, current assets that are not realizable in the next twelve months and without sound commercial justification, will be reclassified as non-current assets. Based on this study, where 60% of the manufacturers suffer from late payment by customers, the implications of the impending implementation of FRS 7 cannot be taken lightly by practitioners.

From 1 January 2010, the days of deliberate omission on certain sensitive information, such as credit period or credit terms, are over as listed companies will have to start to comply with FRS 7 disclosures requirements by FYE 31 December 2010 financial statements. Based on 2007-2008 audited accounts, this study finds that 25% of the selected samples (96 out of 383 companies) omitted such disclosure. By 2010 (provided that MASB do not defer the effective date of implementation date of FRS 7), all listed

companies will be on a 'level playing field' within the Malaysian environment and also globally as more than 100 countries in the world are adopting IFRS 7.

This study could prompt the regulators to lookout for accounts receivable and late payment issues in the Malaysian public-listed companies as early as possible. Early detection of these issues could avert corporate scandals, which lead to the collapse of companies that use accounts receivables as part of their 'cover-up' schemes. At the point of writing, companies like Megan Media Holdings Berhad and Wimems Corporation Berhad have been delisted from the Malaysian bourse.

The Securities Commission (as the regulator of the capital market development in Malaysia) should ensure that subsisting requirements for companies that undertake initial public offer (IPO) to make provision for doubtful debts for ageing trade debts of more than 180 days to be complied throughout the listing period as part of Bursa Malaysia's listing requirements, not just at the point of IPO. Alternatively, the longest stretch for debtors ageing could be at 365 days before making full provision or being reclassified as non-current assets with adequate disclosure to justify the reclassification.

Based on this and other findings gleaned from the interviews, this research proposes several recommendations that could be undertaken in order to promote awareness among local corporate players. It is hoped that with the increase in the awareness on the importance of trade credit management, the same should be reflected in the financial reporting disclosure in Malaysia.

8.2.1.1 The Role of the Malaysian Accounting Standards Board (MASB)

In the absence of any regulations governing trade credit or accounts receivable management, the only reference of reporting requirements has been that of the financial reporting standards issued or adopted by MASB. This study finds that there is no governing regulations or legislation (apart from the approved accounting standards by MASB relating to accounts receivable management) on the trade credit management practices of the listed manufacturing sector in Malaysia.

Apart from the yet to be adopted FRS 7, which clearly stipulates the disclosure requirements for accounts receivable, the present adopted FRS does not specifically sanction the disclosure of credit period granted. This situation creates a free-for-all disclosure situation, although 75% of the companies in this study do in fact disclose their credit period granted pending the mandatory adoption of FRS 7 in the coming year (i.e. with effect from 2010 as announced by the Malaysian Accounting Standard Board). However, the IASB indicates that the FRS 7 will be fine-tuned and further amended with the expected issuance of a revised standard for FRS 7. This may impede the implementation from 1 January 1 2010. Perhaps MASB needs to investigate the implications and readiness of corporate Malaysia for FRS 7.

8.2.1.2 Greater Regulatory Role

In the UK, the regulators have taken determined steps to combat the late payment issue. The Companies Act 1985 (revised 1987) requires large companies to state their trade credit payment policy and practice in their directors' report. This requirement is intended

to be effective by exposing late payers. Nevertheless, the problem is that although many large companies comply, others complied only with the requirement to state their policy and did not disclose their actual performance (Wilson, 2008).

A similar issue occurred in the Malaysian manufacturing sector: although 75% of the samples disclose the credit period granted, they merely state their policy and the range of normal credit period extended per their credit policy. In fact, there is no mention of actual average collection period or days sales outstanding, which can be easily determined by a simple ratio calculation, even if the actual DSO is well above the stated normal credit period granted as disclosed.

The regulators such as the Securities Commission and Bursa Malaysia are the bodies that may be able to undertake a regular review and enquire about the companies on the anomaly between the disclosed credit periods granted and their actual average collection period. On the part of the Companies Commission of Malaysia (CCM), the Companies Acts, 1965 (as amended in 2007) may have to be further amended to incorporate this disclosure requirement for all incorporated limited companies (and not only listed companies) in Malaysia as a matter of good business practice. If only listed companies are required to report on a statement about the policy and practice on credit period granted, listed companies could use this loophole to avoid reporting (for all their subsidiaries) by a statement in the annual Directors' Report that only reports on the listed arm, which would normally be a holding company.

8.2.1.3 The Role of Central Bank of Malaysia – Bank Negara Malaysia

Unlike in some OECD countries, in Malaysia, there is no data published on trade credit by the Malaysian regulatory authority. In the OECD model for the Balance of Payments (BoP), trade credit is one of the major components of BoP. However, in the Malaysian BoP, there is no figure stated for trade credit in the reporting. BNM uses an alternative approach in trade credit reporting, where in the absence of actual data, the IMF's Balance of Payments Manual provides that trade credit may be measured by the difference between entries for the underlying transactions in goods and services, which are recorded as of the dates when ownership changes, and the entries for payments related to these transactions.[64] For better and more accurate reporting, BNM (the Central Bank of Malaysia) could cooperate with the Statistics Department of Malaysia, Bursa Malaysia and CCM to compile and report on the trade credit value in the national BoP so that comparisons to OECD-countries would be meaningful. If trade credit figures are made available, one may be able to appreciate the importance of trade credit in the Malaysian economy. This would be of significant importance to the regulators who may propose and implement effective fiscal and monetary policies in the Malaysian business environment.

At present, BNM is concentrating on regulating the financial institutions' credit (popularly known as trade financing) but not the non-financial trade credit, which is one of the most important alternative or/and substitutes for bank lending. BNM has

[64] According to IMF's Balance of Payments Manual available at http://www.imf.org/external/np/sta/bop/ bopman.pdf, trade credits consist of claims and liabilities arising from the direct extension of credit by suppliers and buyers for transactions in goods and services and advance payments for work in progress (or to be undertaken) that is associated with such transactions. (Loans to finance trade are not included as these are classified under loans).

maintained a credit bureau since 1982 under the Central Bank of Malaysia Act 1958 (as amended). In fact, the Credit Bureau essentially collects credit information on borrowers from lending institutions and furnishes the credit information collected back to the institutions, in the form of a credit report, via an on-line system known as Central Credit Reference Information System (CCRIS). This assists the financial institutions to make informed and responsible lending decisions in a timelier manner. Furthermore, it helps the financial institutions to mitigate any possibility of serious problems such as fraud cases.[65]

It is noted that BNM is undertaking their role more on the financial institutions perspective but not the part of the non-financial institutions trade credit, which may be claimed to be not under their purview. There is a clear gap between financial institutions' financing and non-financial institutions' trade credit, the former is heavily regulated whilst the latter is open-ended with no available statistics on the significance of the amount financed.

BNM also set-up a Credit Counselling and Debt Management Agency (CCDA) in 2006 to provide financial counselling and debt management, as well as financial education to individual financial institution borrowers. Moreover, BNM also established a Small Debt Resolution Scheme (SDRS) to provide assistance to viable small and medium scale enterprises that are constrained by non-performing loans/financing and distressed SMEs with performing loans/financing under multiple participating financial institutions, by facilitating restructuring or rescheduling and, where appropriate, providing new financing. All the concerted efforts by BNM are within the purview of financial

[65] http://creditbureau.bnm.gov.my/

institutions' credit and borrowings and yet there is no regulatory body to monitor the business-to-business trade credit and the associated late payment problems.

All the arguments lead this study to suggest that there is an urgent need to initiate a monitoring and control system over the business-to-business credit in Malaysia by the regulators. In countries like the UK, Company Law has been amended to monitor and regulate trade credit and in the EU the late payment legislation is in force.

8.2.1.4 A Need for a Credit Management Research Centre in Malaysia

Apart from the lack of regulation and control over trade credit in Malaysia, there is an urgent need to set-up a credit management research centre (CMRC). In the UK, the CMRC, was established at Leeds University Business School in 1998, with funding from the Institute of Credit Management, commercial sponsors from the credit industry and government departments. The unique focus of the UK CMRC is to engage in a research programme that combines academic rigour with practitioner and policy relevance, building strong relationships with the credit industry and policy makers. The target audience is professional services, businesses and industries. The critical success factor of the UK CMRC is the industry partnerships with a commitment to dynamic and relevant research, innovative teaching and exceptional postgraduate courses in credit management (Source: http://www.cmrc.co.uk, accessed on 3 August 2009).

As Professor Arthur, Vice-Chancellor, University of Leeds acknowledges the importance of credit management research:

"Recent worldwide events have demonstrated that Credit Management Research could not be more topical or important than it is today. This leading edge team will continue to make key advances that will inform industry and have a global impact"[66]

The UK CMRC has enjoyed continual support from the credit industry for the past ten years with research focusing on consumer credit, trade credit, risk modelling and credit scoring. It is now a world-leading research facility with strong connections with business and industry and is known across the world.

Drawing from the success of the UK CMRC, there is a great need to set-up a CMRC in Malaysia, focusing on trade credit, credit management policies and practices and late payment problems among other related issues. This will need support from the policy makers and academics in partnership with the industry but, more importantly, more research on credit management is required. Collaboration with local higher institutions to set-up a CMRC within faculties of business and accountancy would be ideal, as vigorous research needs to be undertaken before obtaining financial support from the industry.

8.2.1.5 The Role of Association of Credit Management Malaysia

The Association of Credit Management Malaysia (ACMM) was established under the Societies Act 1966 in November 1983. The ACMM is a professional organisation for persons engaged in all facets of credit and finance portfolio. The ACMM's role is to raise professional standards in credit management all over the country and to increase the

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[66] Source: http://www.cmrc.co.uk. Accessed on 3 August 2009

awareness of the importance of the credit function, which is a vital role of improving marketing, profitability, cash flow and legal processes. Thus, the primary objective is to play a major role as professionals in the field of credit management. The main objectives of the Association include:[67]

- Developing networking among members and those engaged in credit management.
- Promote and upgrade the standards of credit management in the country.
- Conducting courses, seminars and tea-talks thereby keeping members abreast with developments related to their jobs as well as to upgrade their knowledge on credit and receivables management.
- To represent the business community in similar matters relating to government policy and legislation.

ACMM argues that it is through the Association and its membership that standards of professionalism can be improved and recognized. However, after more than 26 years in existence, ACMM is still an unnoticeable credit association with just over three hundred members and plays no real role in the development of trade credit management in Malaysia. There is a need to convert the ACMM into a premier credit management institute, emulating the success of local accounting bodies such as the Malaysian Institute of Certified Public Accountants (MICPA) in producing local accountants. Furthermore, ACMM can play the role of the Association of Banks in Malaysia. This has strong representation in financial institutions policy development that undertakes research and

[67] Source: www.acmm.org.my. Accessed on 3 August 2009.

development in credit management and offers professional credit management qualifications such as the Institute of Credit Management's certificate and diploma in credit management in the UK. Such qualifications come with an option to further study, leading to a degree in credit management awarded by Thames Valley University, UK. This field of study is lacking in Malaysia.

8.2.1.6 The Role of Professional Accounting Bodies

Professional accounting bodies, such as the Malaysian Institute of Accountants (MIA) and the Malaysian Institute of Certified Public Accountants, could promote the importance of trade credit and its management in light of the impending implementation of IFRS 7, taking cue from the delays in the implementation of IFRS 139 in Malaysia due to the readiness issue. These professional accountancy bodies should regularly adopt or issue guidelines and best practices in trade credit management for their members such as the MMAG 3 – Accounts Receivable Management issued by MIA in the 1990s. In the absence of an active professional body in credit management, the accountancy profession could spearhead the development of trade credit management in Malaysia, especially with the implementation of IFRS 7 with effect from 2010.

The accounting profession does not compromise on the issue of accounts receivable and late collection of payment, as proper valuation and impairment testing are required to ensure the accounts receivable balance in the balance sheet is fairly stated. It is important to educate the business practitioners on the rationale and benefits of such accounts receivable disclosures and the importance of 'true and fair' reporting, especially in the globally open economy.

8.2.1.7 Intensifying Trade Credit Management Education

Professional accounting bodies are capable of promoting seminars and training related to trade principles of credit management, accounting requirements for testing, impairment and provisioning of doubtful debts and financial reporting requirements. This should help to identify ways of adding value between accounting requirements and business objectives in AR collections. Much of the existing training in trade credit management is primarily on how to collect debts from commercial and legal perspectives whilst on the part of the accounting profession, the courses relating to accounts receivable management are normally covered under cashflow or working capital management (together with inventory, accounts payable, other current assets and liabilities) or under FRS 7 together with all other disclosure requirements.

There is an apparent knowledge gap between business practitioners and accounting practitioners, one with "how-to" operationalise knowledge and the other with financial reporting (and disclosure) knowledge. There is a missing link between these two, creating demand for financial professionals to perform on the operations and reporting front in the area of trade credit management.

8.2.1.8 Implications to Academics

The results presented in this study are useful to academic researchers in specific areas of trade credit management and in the area of working capital management in general. Apart from focusing on the determinants of trade credit extension, this study has also provided empirical evidence on the effect of late payment problems and shows that longer days

overdue has a negative effect on profitability. The findings of this study may serve as the starting point for more empirical research that can further explore the importance of trade credit management and the late payment problems in Malaysia. This study can be extended to other countries, especially to emerging economies and transition countries, where the formal financing systems are still not well developed and trade credit plays a vital role in bridging the financing gap.

From an academic point of view, credit management should not be seen as a banking and finance subject only. Although there are many similarities between banking and trade credit risk management, they are totally different subjects and need to be studied in their own context. Unlike banking credit, which is a very structured and compliance-focused subject with an abundance of well researched literature, trade credit management utilizes a lot of judgment and commercial practices (as shown in this study) and differs from one sector to another and depends on companies' characteristics, etc. Consequently, trade credit management qualification and research are long overdue for all aspiring accountants and credit managers.

8.2.1.9 Implications for Management and Shareholders

The results presented in this study could create an awareness for both management and shareholders of the role and importance of trade credit management and the seriousness of late payment impact on corporate profitability. Sound credit management policies and practices can improve financial reporting quality in relation to the impending implementation of FRS 7 in Malaysia.

In addition, Shareholders and the Minority Shareholders Watchdog Group (MSWG) can play their role in enquiring whether there is an anomaly between the disclosed credit period granted and the actual average collection period. This can be achieved by undertaking basic financial analysis of the audited financial statements of the companies they invested in before attending the annual general meeting to adopt the audited accounts.

By so doing, the management and even the external auditors may be more vigilant and concerned about the importance of credit management. In this context, the management of the listed companies' role is to ensure that their financial statements adequately disclose the information on accounts receivable management and in doing so they have to ensure that the disclosure (or lack of it) does not mislead the users of the financial statements. They owe a fiduciary duty to report fairly to the shareholders and consequently disclose the credit period granted as well as actual collection period must be carefully studied. If there is a material gap between these two, additional disclosure may be warranted to explain to shareholders the reasons behind the discrepancies and why no adjustments have been made, and to avoid a standard disclosure such as "other credit terms are assessed and approved on a case-to-case basis" (Source: Annual Report 2008, HeveaBoard Berhad, p. 65).

Rather than being seen as divulging 'trade secrets' or 'opening wounds' regarding late payment issues in complying with the FRS 7 disclosure requirements pertaining to AR, this study serves as a wake-up call to improve and innovate the credit management of the Malaysian manufacturing sector. This is to ensure that Malaysian manufacturers are par

with their peers in the international arena to remain competitive and relevant in the open global market.

8.2.2 Implications for Theory

The results of this study indicate that contrary to the prediction of the financing theory, short-term bank credit line of credit, sales revenue growth, profit and internal cash are not the main determinants of the trade credit extension in the Malaysian manufacturing sector. The study finds a significant relationship between company's size and trade credit granting. However, the correlation shows the opposite sign from the prediction in the financial theory. As such, the market power theory comes to play instead: the larger and more established the company the less trade credit they offer (asymmetric information). Similarly, manufacturers with higher liquidity offer less trade credit to their customers as they have better market power and do not need to use trade credit extension as a marketing tool to improve the revenue.

Contradictory results in the financing theory were evidenced in the collateral to secure financing. Manufacturing companies with high collateral (in terms of fixed assets) were found to extend less trade credit to their customers. This inverse relationship does not support the theory of financing nor the 'helping hand' theory (Paul and Boden, 2008) where firms that have better access to external financing help out their customers that have restriction in financing by extending trade credit to bridge their customers' finance. This can be explained under the market power theory and asymmetric information theory that larger companies tend to have a better reputation, bargaining power and are confident

of their product quality, and, therefore, will allow less time to customers to inspect their products before payment.

In line with the prediction of the price discrimination theory and the findings of Petersen and Rajan (1997), this study finds that manufacturers with a higher profit margin extend more trade credit. Nevertheless, in the situation of late payment from customers, the price discrimination theory loses its significance when collection promptness is in question. This implies that when the manufacturers are facing late payment, they reduce their extension of trade credit, notwithstanding how high is the gross profit margin of their products.

It appears that listed manufacturers in Malaysia have no difficulty in obtaining external financing to fund their business. This can be explained in the sense that since listed companies' shares have market value, the working capital financing can be easily obtained via trade financing facilities from financial institutions with minimal collateral such as the listed company corporate guarantee. This somewhat explains why the financing theory is not as relevant in the study as all the samples are public-listed companies.

In respect of working capital management, this study deploys the use of operating income return on investment (OIROI) as the indicator for profitability for management effectiveness instead of the usual return on assets (ROA), return on investment (ROI) or return on equity (ROE). This is because the consolidated group audited figures are used

in this study to minimize non-operating items impact, the OIROI ratio (which is the operating income over total assets also known as OPTA, see Nasruddin, 2008). A previous study on working capital management by Teruel and Solano (2007) uses the same OPTA ratio except that they referred to the ratio as ROA.

This study's findings on the association of days sales outstanding (DSO as the proxy for late collection of payment from debtors) and profitability (OIROI) support the theory that the reduction in DSO improves profitability (Deloof, 2003; Teruel and Solano, 2007). It moves further, however, to take on Pike and Cheng's (2002) argument that DSO is not the appropriate proxy as different industries have different DSO norms. This study has proved this by showing that industrial products manufacturing companies have a higher DSO than consumer products manufacturers. The days overdue (DODA) proxy promulgated by Pike and Cheng (2002) as an alternative to DSO is empirically tested in this study and the modified days overdue proxy uses the Pareto-rule (DODP) to obtain absolute days (instead of a range period) for this analysis.

However, our study shows that the DODA proxy proposed by Pike and Cheng (2002) is not an acceptable proxy for late payment but DODP is empirically proven to be an explanatory variable for late payment. It is interesting to note that the study finds that the DSO and DODP explanatory variables are both significant and can be empirically a proxy to each other except for the difference in the baseline measurement. DSO commences from the day the credit is given until payment date while DODP starts from the day the debt is overdue until the ultimate settlement. Accordingly, the use of DSO as a late payment measure, in the absence of DODA information (as in Deloof, 2003), is an

acceptable explanatory variable despite the differences in the measurement. Further research on this interesting area (which is beyond the scope of this study) could be commissioned subsequent to this study. In sum, at the firm level, this study proves that shortening the collection days and/or reducing the overdue days would improve the profitability of the companies.

8.3 LIMITATIONS OF THE STUDY

As per previous studies this empirical study, which used cross-sectional historical one-year financial data and ratio analysis as proxies, is subject to some limitations; the main ones are listed below:

First, this study only examines the financial data for financial year ending 2007/2008 based on consolidated group figures except for data for sales revenue growth where the preceding year revenue is used to determine the revenue growth. So the content analysis of the annual audited financial statements for the disclosure of credit period granted and the auditors of the company is for one single year, and accordingly, an analysis over a period of time may be more representative of other financial periods. As such, longitudinal analysis will be more appropriate for the construction of policy. Nevertheless, the financial data, which is very relevant in terms of timeliness, can be used as an indication of the recent development (or lack of it) in trade credit management.

Secondly, heteroscedasticity may be a serious problem because the measurement of trade credit (or its proxy) from financial data, etc. may be affected by some firm characteristics

in the determinants of trade credit extension. Nevertheless, the empirical results are reported using White-adjusted values to improve upon OLS estimates.

Thirdly endogeneity problem is also an issue to address as some of the so-called independent variables are jointly determined with the dependent variable. However, this study collected only one-year firm-level cross-sectional data, with limited data, the problem of endogeneity will need to be investigated in future. With a richer set of data, instruments could become available for tests such like 2SLS and techniques like Generalised Method of Moments to account for endogeneity.

Fourthly, this study concentrates on the Malaysian public-listed companies in the manufacturing sector only and, thus, does not allow for any comparison with other sectors and indeed other countries. This means that the validity of the conclusions might not hold for other sectors in Malaysia or in other countries.

Lastly, the proxy used to represent the trade credit extension, which is the receivables turnover ratio, is subjective in nature and other proxies using different measurement to determine trade credit extension such as accounts receivable over total assets and DSO may provide different results as they are computed based on a different denominator.

8.4 SUGGESTIONS FOR FUTURE RESEARCH

As trade credit is an unexplored research area in Malaysia and the region, the scope for future research is very wide and many other aspects of trade credit management can be

further undertaken. In the first instance, for future research, the reasons for late payment of debts by customers as discussed in section 3.6 is a good starting point for a grounded theory of late payment. From the discussion in section 2.11.2, the causes of late payment have been identified but not the theories behind such phenomena. In a perfect capital market, there should be delays in payment of accounts receivable. As such, this late payment phenomena is probably due to some kinds of imperfections. Further research to uncover the theories of late payment could be undertaken in the near future.

This study only addresses one side of trade credit, the supply-side of trade credit management and identifies the determinants of trade credit extension and late collection issues by associating late payment by customers with profitability based on one common indicator. This is only the initial step in investigating this subject matter. However, credit management covers a whole spectrum of demand and supply of trade credit and is part of the study of working capital management, which encompasses other important components such as inventory, accounts payable, accounts receivable and cash. Further research to extend the current study is possible in some other areas.

Further studies comprising all sectors (not only the manufacturing sector) will shed light on differences and similarities between sectors. Consequently, further research can incorporate a larger sample, which may even allow a comparison not just in terms of sector but also in terms of different policies and practices between companies' size or across different countries, can perhaps provide better tests of the relationships examined in this study.

The ordinary least squares regression model used in this study to identify the determinants of trade credit extension can be replaced by the two-stages least squares (2SLS) as used by Levchuk (2002) and Ono (2001) for the determinants of trade credit demand in Japanese manufacturing sector over a period of time instead of a cross-sectional study. The 2SLS method would address the endogeneity issue, if any, associated with the relationships among the variables.

Also, further studies could be expanded into the demand-side of trade credit as undertaken by Ono (2001) in Japan, Marotta (2000) in Italy, Paul and Wilson (2006) in the UK, or even on the net trade credit impact, i.e. the net difference between the trade credit demand and trade credit supply (Paul and Wilson, 2006; Ge and Qiu, 2007).

As for the association between late payment and profitability, similar to the determinants of trade credit extension, a wider sector coverage and, perhaps, a longer longitudinal study may give better benefits in analysing the relationship to provide greater support of the association between late payment and profitability, and would further contribute to the body of knowledge.

Future studies can test the relationship examined in this study using different proxies of trade credit, as researchers do not identify a universal proxy to trade credit. Testing the relationship using different proxies of trade credit will further validate the existing findings of this study. Further cross-sector and cross-country empirical studies on late

payment will validate the use of Pareto-rule days overdue (DODP) versus average days overdue (DODA), as promulgated in this study. More studies are recommended to confirm or reject the use of DSO as a late payment measure in the absence of average days overdue information (as in Deloof, 2003) and would further contribute to the body of knowledge in the area of working capital management.

This study is a positivist research, which is mainly a quantitative based research approach. Perhaps future research might follow up this study using an interpretive or critical perspective to look into qualitative issues through interviews and case-study on trade credit management to shed light on issues not clearly explainable in this study.

8.5 SUMMARY AND CONCLUSION

This study is undertaken with the motivation to shed light on trade credit management in the Malaysian environment. After more than half a century since gaining independence, the economy and capital market of the country has grown and transformed, yet little attention is given to trade credit management research despite its importance and the vital role it plays in terms of financing. This study attempts to fill the gap. The results and discussion of the findings have contributed significantly to the local trade credit management literature on the determinants of trade credit extension in the Malaysian manufacturing sector, which, to my knowledge, has not been undertaken before. The lack of local literature shows that the area of trade credit management is a neglected area despite its importance.

In addition, this study introduces a new concept of dealing with late payment from customers by using a measure that enables empirical testing to be performed objectively, as compared to previous studies around the globe that use respondents' survey replies, which are more subjective in nature. This opens up an exciting frontier in the area of the study of late payment issues, which is a contemporary global phenomenon and very topical, especially in the current economic climate.

By understanding the determinants of trade credit extension, this research discussed the implications and made several recommendations to academics and practitioners alike to promote trade credit management development in Malaysia and to address the issues on late payment by customers. Moreover, this study has found an association between late payment and lower profitability and suggests steps to combat late payment by reducing the days overdue, which results in improved profitability.

Based on the research questions, the study finds interesting insights that are not adequately explored at present. It is found that accounts receivable are the most important current asset of manufacturing companies in the Malaysian manufacturing sector, close to 18% of total assets value, overtaking the importance of inventory.

Based on detailed content analysis of accounts, this study finds that the most common credit period or term extended by Malaysian manufacturers is between 30 to 90 days. The average collection period is approximately 82 days, whilst the median collection period is 75 days, indicating that the Malaysian manufacturing sector is experiencing late payment.

In order to reflect the tendency of late payment in the collection of debts, this thesis uses the Pareto-rule to calculate the days overdue by assuming that 80% of the debts would be collected at the maximum credit days granted and 20% of debts will be paid at the minimum credit period granted.

Based on the average days overdue, approximately 60% of listed manufacturing companies in Malaysia suffer from late payment from their debtors with larger manufacturing companies suffering less late payments from their customers compared to medium-sized companies. A better measurement of late payment, using Pareto days overdue, indicates that 46% of the public-listed manufacturing companies in Malaysia suffer from late payment. In sum, late payment by customers is one of the main issues plaguing Malaysian manufacturers.

In the determinants of trade credit extension for Malaysian large and medium-sized companies in the manufacturing sectors, it is found that larger and more established companies offer less trade credit. In addition, manufacturers with higher liquidity offer less trade credit to their customers as they have better market power. In the industry sector analysis, this study finds that industrial product manufacturers extend more trade credit compared to the more fast-moving consumer products sector. This is in line with the theory of elasticity of demand. Contrary to the finance theory, large manufacturers extend less trade credit than medium-sized manufacturers. Manufacturing companies with high collateral in terms of fixed assets are found to extend less trade credit to their customers instead of helping out those with restricted financing.

In line with the price discrimination theory, this study finds that manufacturers with a higher profit margin extend more trade credit. However, when manufacturers face a late payment situation, they reduce their extension of trade credit, regardless of the gross profit margin of their products. Other than the above, this research finds that short-term bank credit, sales revenue growth, profit and internal cash are not the determinants of the trade credit extension.

In respect of the association between late payment by debtors and profitability of Malaysian manufacturing companies, this study empirically concludes that late payment from customers, based on the Pareto-rule days overdue (DODA), results in lower profitability based on profitability as measured by using operating income return on investment (OIROI) as a proxy.

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APPENDICES

APPENDIX I

LIST OF COMPANIES UNDER STUDY
DETERMINANTS OF TRADE CREDIT EXTENSION AND LATE PAYMENT IN MALAYSIA

No.	Ref.	Company Name (Short name based on Reuters' classification)	Financial Year Ending (FYE)	Listing Board (0 = Main, 1 = Second)	Sector (0=Consumer, 1=Industrial)
1	SI1	ABRB-Abric	12/31/2007	0	1
2	MI5	ACBM-Ancom	5/31/2008	1	1
3	MC1	ACOU-Acostec	3/31/2008	1	0
4	MI10	ADVA-ASB	12/31/2007	1	1
5	MI1	ADVE-Adventa	1/31/2008	1	1
6	SI3	AEMU-AEM	12/31/2007	0	1
7	MC5	AFCB-Asiafile	3/31/2008	1	0
8	MC4	AFHB-Apollo	4/30/2008	1	0
9	SI4	AIKB-AIkBee	12/31/2007	0	1
10	MI2	AISS-AISB	12/31/2007	1	1
11	SI10	AIVB-Aventure	12/31/2007	0	1
12	MC3	AJIN-AJI	3/31/2008	1	0
13	MI3	AJIY-Ajiya	11/30/2007	1	1
14	SC1	AMKH-Amtek	6/30/2008	0	0
15	MI4	AMMS-ALCOM	12/31/2007	1	1
16	MI6	ANNJ-AnnJoo	12/31/2007	1	1
17	MI7	APBS-APB	9/30/2007	1	1
18	MI8	APLB-APLI	6/30/2008	1	1
19	MI9	APMA-APM	12/31/2007	1	1
20	SC2	APPR-APP	12/31/2007	0	0
21	SI2	APTB-AdvPkg	12/31/2007	0	1
22	SI5	ARNK-ARank	7/31/2008	0	1
23	MC2	ARTW-Ahealth	6/30/2008	1	0
24	SI6	ASUP-Asuprem	12/31/2007	0	1
25	SI7	ATLA-Atlan	2/29/2008	0	1
26	MI11	ATNO-Astino	7/31/2008	1	1
27	SI8	ATUR-Aturmaju	12/31/2007	0	1
28	SI9	AUTH-Autoair	6/30/2008	0	1
29	SI11	AXII-Axis	3/31/2008	0	1
30	MC6	BAEG-Baneng	12/31/2007	1	0
31	SC3	BASW-Baswell	9/30/2007	0	0
32	MC7	BATO-BAT	12/31/2007	1	0
33	MI12	BHIB-BHIC	12/31/2007	1	1
34	SI12	BIGI-Big	12/31/2007	0	1
35	SC4	BISS-Biosis	12/31/2007	0	0
36	MI13	BKGB-Bkoon	12/31/2007	1	1
37	MC8	BONI-Bonia	6/30/2008	1	0
38	SI13	BPAC-Bright	8/31/2008	0	1
39	MI14	BPAK-BoxPak	12/31/2007	1	1
40	MI15	BPPL-BPPlas	12/31/2007	1	1

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41	MI16	BSAB-BSA	12/31/2007	1	1
42	SI14	BSCL-BSLCorp	8/31/2007	0	1
43	SI15	BTMR-BTM	12/31/2007	0	1
44	MC9	CABC-CAB	9/30/2007	1	0
45	SC6	CAEY-Caely	12/31/2007	0	0
46	MI19	CBIP-CBIP	12/31/2007	1	1
47	MC10	CBMS-Carlbg	12/31/2007	1	0
48	SC8	CCKH-CCK	6/30/2008	0	0
49	MC13	CCLD-Cocoland	12/31/2007	1	0
50	MC11	CCMD-CCMDBIO	12/31/2007	1	0
51	SI17	CFMS-CFM	3/31/2008	0	1
52	SC9	CHEE-Chee Wah	6/30/2008	0	0
53	MI24	CHOO-ChooBee	12/31/2007	1	1
54	SI19	CHRB-Chuan	12/31/2007	0	1
55	SI18	CHUT-Chang	6/30/2008	0	1
56	SI20	CICM-CICB	12/31/2007	0	1
57	MC12	CIHB-CIHldg	6/30/2008	1	0
58	MI25	CIMA-CIMA	12/31/2007	1	1
59	MI21	CLMS-CCM	12/31/2007	1	1
60	SI21	CNAC-CNAsia	12/31/2007	0	1
61	SI22	CNLE-CNLT	12/31/2007	0	1
62	MI18	CNON-Canone	12/31/2007	1	1
63	SI16	CONC-Cepco	8/31/2008	0	1
64	SC7	CRSM-Cam Res	12/31/2007	0	0
65	MC14	CSCB-Cscenic	12/31/2007	1	0
66	MI102	CSTH-CSC-Onasteel	12/31/2007	1	1
67	MI26	CTAL-Coastal	12/31/2007	1	1
68	MI22	CTRB-Cenbond	3/31/2008	1	1
69	MI23	CWHB-ChinWell	6/30/2007	1	1
70	MI20	CYCB-CCB	12/31/2007	1	1
71	SI23	CYCL-CYL	1/31/2008	0	1
72	MI27	CYMA-Cymao	12/31/2007	1	1
73	SC10	DBEG-DBE	12/31/2007	0	0
74	MC16	DBMS-Dlady	12/31/2007	1	0
75	MC15	DEGM-Degem	12/31/2007	1	0
76	MI29	DELL-Delloyd	12/31/2007	1	1
77	SI24	DICM-Denko	3/31/2008	0	1
78	MI30	DKLC-DK	3/31/2008	1	1
79	SI25	DNCE-Dnonce	8/31/2007	0	1
80	MI31	DOLC-Dolmite	12/31/2007	1	1

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81	MI32	DOMN-Dominan	3/31/2008	1	1
82	MC17	DPBM-DNP	6/30/2008	1	0
83	MI28	DPPM-Daiboci	12/31/2007	1	1
84	MC18	DPSS-DPS	12/31/2007	1	0
85	MI33	DRBM-DRBH	3/31/2008	1	1
86	SI26	DUFU-Dufu	12/31/2007	0	1
87	MC19	DXNH-DXN	2/29/2008	1	0
88	SI27	EGCM-EG	6/30/2008	0	1
89	SI28	EKIB-EKIB*	12/31/2007	0	1
90	MC20	EKOW-Ekowood	12/31/2007	1	0
91	MI34	EKSN-Eksons	3/31/2008	1	1
92	SC11	EMIC-Emico	12/31/2007	0	0
93	MC21	EMIV-EMICO	12/31/2007	1	0
94	MI36	ENGD-Englotechs	12/31/2007	1	1
95	MC22	ENGH-Eng Kah	12/31/2007	1	0
96	MI35	EONM-Emetall	12/31/2007	1	1
97	MI37	EPMB-EPMB	12/31/2007	1	1
98	SC12	ERHB-Euro	12/31/2007	0	0
99	SC13	ESAN-Eurosp	5/31/2008	0	0
100	MI38	ESSO-ESSO	12/31/2007	1	1
101	MI40	EVER-Evermas	3/31/2008	1	1
102	MI39	EVGN-Evergrn	12/31/2007	1	1
103	MI41	FACN-FACBInd	6/30/2007	1	1
104	MI43	FCWH-FCW	6/30/2008	1	1
105	SC15	FFHB-FFHB	12/31/2007	0	0
106	SC14	FMBS-Farmbes	12/31/2007	0	0
107	SC16	FMOS-Formost	12/31/2007	0	0
108	MC24	FPIB-FPI	3/31/2008	1	0
109	MC23	FRAS-F&N	9/30/2007	1	0
110	SI31	FUSE-Fututech	12/31/2007	0	1
111	MI42	FVCO-Favco	12/31/2007	1	1
112	SI30	FWEB-Furnweb	12/31/2007	0	1
113	MI44	GBHK-GBH	12/31/2007	1	1
114	SI32	GEFU-Gefung	12/31/2007	0	1
115	SI33	GESH-GeShen	12/31/2007	0	1
116	SI34	GFRO-GFB	9/30/2007	0	1
117	MC25	GLIS-Goldis	1/31/2008	1	0
118	MC27	GNCHGuanCng	12/31/2007	1	0
119	MI45	GOPK-Gopeng	12/31/2007	1	1
120	SI36	GPAH-GPA	3/31/2008	0	1

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121	MC26	GROS-GPharos	12/31/2007	1	0
122	SI37	GSBR-GSB	3/31/2008	0	1
123	MI46	GUHB-GUH	12/31/2007	1	1
124	MC28	GUMS-Guiness	6/30/2008	1	0
125	SI38	GUNU-Gunung	12/31/2007	0	1
126	SI35	GWAY-Goodway	12/31/2007	0	1
127	SI39	HARV-Harvest	12/31/2007	0	1
128	MI47	HEVE-Hevea	12/31/2007	1	1
129	MI50	HILI-HIL	12/31/2007	1	1
130	MI51	HIRO-Hiro	12/31/2007	1	1
131	MC30	HLIB-HLIndus	6/30/2008	1	0
132	MC31	HOVI-Hovid	6/30/2008	1	0
133	MI54	HOWA-HWGB	12/31/2007	1	1
134	SI41	HPIR-HPI	5/31/2008	0	1
135	MC32	HSIB-HapSeng	12/31/2007	1	0
136	MI49	HTVE-Hiap Teck	7/31/2008	1	1
137	SC18	HUAT-HuatLai	12/31/2007	0	0
138	MI53	HUME-HumeInd	6/30/2008	1	1
139	SC19	HUZA-Hunza	12/31/2007	0	0
140	SC20	HWAT-HwaTai	12/31/2007	0	0
141	MI48	HXZS-Hexza	6/30/2008	1	1
142	SC17	HYLI-HingYap	6/30/2008	0	0
143	MC33	HYTX-Hytexin	3/31/2008	1	0
144	MC34	IBHD-I-Bhd	12/31/2007	1	0
145	MI55	ICPB-ICP	3/31/2008	1	1
146	MI56	IESS-Ingress	1/31/2008	1	1
147	SI42	IMSP-Imaspro	6/30/2008	0	1
148	MC35	IQGH-IQGroup	3/31/2008	1	0
149	SI43	IREE-Iretex	12/31/2007	0	1
150	SI44	IRMR-IRMGrp	12/31/2007	0	1
151	MI57	IRUB-IRCB	1/31/2008	1	1
152	MI58	JADI-Jadi	12/31/2007	1	1
153	MI59	JAVB	6/30/2008	1	1
154	MC36	JAYC-Jaycorp	7/31/2008	1	0
155	MC37	JERA-Jerasia	3/31/2008	1	0
156	MI60	JHTN-Johotin	12/31/2007	1	1
157	SI45	JKBM-Jaskita	3/31/2008	0	1
158	SI46	JMRB-JMR	3/31/2008	0	1
159	MC38	JOHN-JMI	3/31/2008	1	0
160	SI47	JOTE-JoTech	12/31/2007	0	1

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No.	Ref.	Company Name (Short name based on Reuters' classification)	Financial Year Ending (FYE)	Listing Board (0 = Main, 1 = Second)	Sector (0=Consumer, 1=Industrial)
161	SI48	JPKH-JPK	3/31/2008	0	1
162	MI61	JTIA-Jtiasa	4/30/2008	1	1
163	MC39	JTIN-JTInter	12/31/2007	1	0
164	MC40	KBBR-KBB	12/31/2007	1	0
165	SI49	KEHG-KeinHing	4/30/2008	0	1
166	SC22	KFMB-KFM	3/31/2008	0	0
167	MC42	KHEE-Khee San	6/30/2008	1	0
168	SC23	KHIN-Khind	12/31/2007	0	0
169	SI40	KHLH-HighTec	10/31/2007	0	1
170	MI62	KIAL-KiaLim	12/31/2007	1	1
171	MI64	KIMH-KimHin	12/31/2007	1	1
172	MI63	KJCS-KIanJoo	12/31/2007	1	1
173	MI66	KKBE-KKB	12/31/2007	1	1
174	MC41	KMAK-Kenmark	3/31/2008	1	0
175	MI67	KNMP-KNM	12/31/2007	1	1
176	MC44	KOIN-Kotra	6/30/2008	1	0
177	SI50	Komarkcorp	4/30/2008	0	1
178	SI52	KPOW-Kpower	4/30/2008	0	1
179	MI68	KRIB-Kossan	12/31/2007	1	1
180	MI70	KSMS-Kseng	12/31/2007	1	1
181	MI65	KSTE-Kinsteel	12/31/2007	1	1
182	SC21	KWNF-Kawan	12/31/2007	0	0
183	MI71	KYMH-KYM	1/31/2008	1	1
184	SI53	LATX-Latexx	12/31/2007	0	1
185	SC24	LAYH-LayHong	3/31/2008	0	0
186	MI72	LBAL-LBAlum	4/30/2008	1	1
187	SI54	LBIP-LBICap	12/31/2007	0	1
188	SC25	LCHB-Len Cheong	12/31/2007	0	0
189	MI73	LCTH-LCTH	12/31/2007	1	1
190	MC48	LDIV-LionDiv	6/30/2008	1	0
191	MI81	LEAD-LSteel	12/31/2007	1	1
192	MI75	LEWE-Leweko	12/31/2007	1	1
193	MI77	LGDS-Lingui	6/30/2008	1	1
194	MC47	LHEN-LiiHen	12/31/2007	1	0
195	MC46	LHHS-LHH	3/31/2008	1	0
196	SI56	LHSN-Limahsn	12/31/2007	0	1
197	SI55	LHTM-LEESK	12/31/2007	0	1
198	MI76	LINE-Linear	12/31/2007	1	1
199	MI78	LION-Lioncor	6/30/2008	1	1
200	MI79	LLBM-LionInd	6/30/2008	1	1

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No.	Ref.	Company Name (Short name based on Reuters' classification)	Financial Year Ending (FYE)	Listing Board (0 = Main, 1 = Second)	Sector (0=Consumer, 1=Industrial)
201	MI80	LMCE-LMCEMNT	12/31/2007	1	1
202	MC49	LONB-Lonbisc	6/30/2008	1	0
203	SI57	LPCO-Lipo	6/30/2008	0	1
204	MI82	LTER-Luster	12/31/2007	1	1
205	MC45	LTHB-Latitud	6/30/2008	1	0
206	SC26	LTKM-LTKM	3/31/2008	0	0
207	MI74	LUNS-Leader	12/31/2007	1	1
208	SI58	LYSA-Lysaght	12/31/2007	0	1
209	MI84	MAEM-MaeMode	5/31/2008	1	1
210	MC50	MAME-Mamee	12/31/2007	1	0
211	MI85	MATE-Magni Tech	4/30/2008	1	1
212	MC51	MAXB-MaxBix	12/31/2007	1	0
213	MI88	MAXT-Maxtral	12/31/2007	1	1
214	SI68	MCEI-Multico	7/31/2008	0	1
215	SI61	MEIS-Mercury	12/31/2007	0	1
216	MI90	MENT-Mentiga	12/31/2007	1	1
217	MC52	MFMB-Mflour	12/31/2007	1	0
218	MI92	MIEC-Mieco	12/31/2007	1	1
219	SC27	MILU-Milux	8/31/2008	0	0
220	MC53	MINT-Mintye	1/31/2008	1	0
221	SI64	MIPL-Minply	12/31/2007	0	1
222	MI93	MNHO-Minho	12/31/2007	1	1
223	SI60	MPII-Maypak	12/31/2007	0	1
224	SI65	MRIL-Mithril	6/30/2008	0	1
225	MI91	MROD-Metrod	12/31/2007	1	1
226	MI94	MSCB-MSC	12/31/2007	1	1
227	MI87	MSWK-Masteel	12/31/2007	1	1
228	SI66	MTEA-Mteam	12/31/2007	0	1
229	SI63	MTEH-Metech	12/31/2007	0	1
230	SI62	MTRM-MetalR	6/30/2008	0	1
231	MI95	MUDA-Muda	12/31/2007	1	1
232	MC54	MWEM-MWE	12/31/2007	1	0
233	MI86	MYAS-Maica	3/31/2008	1	1
234	MC55	NESM-Nestle	12/31/2007	1	0
235	MC56	NHFH-NHFatt	12/31/2007	1	0
236	SC30	NHSN-Ni	12/31/2007	0	0
237	MC57	NIKE-Nikko	3/31/2008	1	0
238	MI99	NMBS-Nylex	5/31/2008	1	1
239	MC58	NTPM-NTPM	4/30/2008	1	0
240	MI98	NWPH-NWP	8/31/2008	1	1

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241	SI69	OCHE-OCI	6/30/2008	0	1
242	MC59	OFIH-OFI	3/31/2008	1	0
243	MI100	OGON-Octagon	10/31/2007	1	1
244	MI101	OKAC-OKA	3/31/2008	1	1
245	MI103	Ornapaper	12/31/2007	1	1
246	MI97	ORPA-Narra	6/30/2008	1	1
247	MC60	OTLS-Orient	12/31/2007	1	0
248	SI70	PAHA-Pahanco	12/31/2007	0	1
249	MI105	PAOS-PAOS	5/31/2008	1	1
250	MI104	PARB-PA	12/31/2007	1	1
251	MC69	PCAP-Putera	5/31/2008	1	0
252	MC63	PCCS-PCCS	3/31/2008	1	0
253	MC61	PDNI-Padini	6/30/2008	1	0
254	MC64	PELK-Pelikan	12/31/2007	1	0
255	SI71	PENS-Pensonic	5/31/2008	0	1
256	MC67	PEPT-PPB	12/31/2007	1	0
257	MI107	PGAS-PetGas	3/31/2008	1	1
258	SI75	PGFM-Poly	2/29/2008	0	1
259	SC31	PGON-Paragon	12/31/2007	0	0
260	MC66	PHUA-Poh Huat	10/31/2007	1	0
261	MI108	PIEN-PIE	12/31/2007	1	1
262	SI74	PMBT-PMBTech	12/31/2007	0	1
263	MI109	PMCS-PMCorp	12/31/2007	1	1
264	MI110	PMET-Pmetal	12/31/2007	1	1
265	SI72	PMJU-Permaju	12/31/2007	0	1
266	MC62	PMMY-Panamy	3/31/2008	1	0
267	MI111	PNEB-PNEPCB	9/30/2007	1	1
268	MC65	POHK-Poh Kong	7/31/2008	1	0
269	SI76	PPGB-PPG	9/30/2007	0	1
270	SI77	PPHB-PPHB	12/31/2007	0	1
271	SI78	PRMN-Premium	12/31/2007	0	1
272	MC68	PROT-Proton	3/31/2008	1	0
273	MI106	PSTM-Perstim	3/31/2008	1	1
274	MI113	PTAR-Prestar	12/31/2007	1	1
275	MI112	PTWR-Polytwr	8/31/2007	1	1
276	MC70	PWEE-PW	12/31/2007	1	0
277	MI114	PWPB-Pworth	6/30/2007	1	1
278	SC32	PXUS-Prlexus	7/31/2008	0	0
279	SI79	QCHB-Quality	1/31/2008	0	1
280	MC71	QRES-QL	3/31/2008	1	0

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281	SI80	RALC-Ralco	12/31/2007	0	1
282	SI81	RAPD-Rapid	12/31/2007	0	1
283	SI82	RCIK-RCI	12/31/2007	0	1
284	SI83	RESN-Resintech	2/29/2008	0	1
285	MI115	RUMM-Ruberex	12/31/2007	1	1
286	MI117	SANH-Sanbumi	12/31/2007	1	1
287	MI118	SAPU-Sapind	1/31/2008	1	1
288	MI130	SCCE-Success	12/31/2007	1	1
289	SI89	SCER-Seacera	12/31/2007	0	1
290	SI85	SCIB-SCIB	12/31/2007	0	1
291	MI120	SCOMI	12/31/2007	1	1
292	SI87	SCWF-Scnwolf	3/31/2008	0	1
293	MI122	SEAL-Seal	6/30/2008	1	1
294	MC72	SEQO-Sequoia	7/31/2007	1	0
295	MC74	SHCS-SHChan	12/31/2007	1	0
296	SC34	SHHR-SHH*	6/30/2008	0	0
297	MI124	SIND-Sindora	12/31/2007	1	1
298	MI125	SINO-Sinora	12/31/2007	1	1
299	SI90	SKBC-SKBShut	6/30/2008	0	1
300	MC73	SKOU-Sernkou	12/31/2007	1	0
301	MI127	SKPR-SKP Res	3/31/2008	1	1
302	SI91	SKWB-SKW	11/30/2007	0	1
303	MI123	SLRS-Shell	12/31/2007	1	1
304	SI95	SMAE-Stone	3/31/2008	0	1
305	SI93	SMBH-SMIS	12/31/2007	0	1
306	SI88	SMNG-Scomien	12/31/2007	0	1
307	MI52	SNHN-Huaan	12/31/2007	1	1
308	MI116	SOUS-SAB	4/30/2008	1	1
309	SI99	SPLH-Superlon	4/30/2008	0	1
310	SC36	SPTZ-Spritzr	5/31/2008	0	0
311	MC75	SRDG-Silver	10/31/2007	1	0
312	SI96	STEC-STSTec	12/31/2007	0	1
313	MI128	STEE-SSteel	12/31/2007	1	1
314	MI119	STIK-Scientex	7/31/2008	1	1
315	MI126	STTM-Sitatt	3/31/2008	1	1
316	MI129	SUBU-Subur	7/31/2008	1	1
317	SI97	SUNC-Suncrn	12/31/2007	0	1
318	SI98	SUPE-Super	3/31/2008	0	1
319	MI131	SUPM-Supermix	12/31/2007	1	1
320	SC37	SYFR-SYF	7/31/2007	0	0

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321	MI132	TAAN-TaAnn	12/31/2007	1	1
322	SC38	TAFI-Tafi	12/31/2007	0	0
323	SI106	TCMA-Tracoma	12/31/2007	0	1
324	SI101	TECV-Techven	12/31/2007	0	1
325	MI134	TEKA-Tekala	3/31/2008	1	1
326	MI136	TGIB-TGuan	12/31/2007	1	1
327	SC41	TGLB-TGL	6/30/2008	0	0
328	SC40	TGPB-TecGuan	1/31/2008	0	0
329	MI139	THRB-TongHer	12/31/2007	1	1
330	MI133	TKCS-Tasek	6/30/2007	1	1
331	SC39	TKSO-Takaso	7/31/2007	0	0
332	SI120	TKWO-Yoko	12/31/2007	0	1
333	MC78	TMEI-Tomei	12/31/2007	1	0
334	MC76	TNCS-TChong	12/31/2007	1	0
335	SI103	TOMY-Tomypak	12/31/2007	0	1
336	SI104	TOYG-Toyoink	3/31/2008	0	1
337	SC42	TPCP-TPC	12/31/2007	0	0
338	MI140	TPGC-TopGlove	8/31/2008	1	1
339	MC77	TSHB-TekSeng	12/31/2007	1	0
340	MI138	TTNP-Titan	12/31/2007	1	1
341	SI102	TWEL-Timwell	12/31/2007	0	1
342	SI100	TWHB-TaWin	12/31/2007	0	1
343	MC79	TWMM-TWS	12/31/2007	1	0
344	MI137	TWPH-TienWah	12/31/2007	1	1
345	SI105	TYCM-Toyocom	12/31/2007	0	1
346	MI141	UACS-UAC	12/31/2007	1	1
347	SI107	UBIN-UBB	12/31/2007	0	1
348	MI142	UCHI-UchiTec	12/31/2007	1	1
349	SI108	UDSB-UDSCap	8/31/2008	0	1
350	SI110	UMSN-UMSNG	12/31/2007	0	1
351	MC80	UMWS-UMW	12/31/2007	1	0
352	SI109	UNKB-UKB	3/31/2008	0	1
353	MC81	UPAB-UPA	12/31/2007	1	0
354	MI143	UULI-ULICorp	12/31/2007	1	1
355	MI145	VSID-VS	7/31/2008	1	1
356	MI144	VSTL-Versatile	12/31/2007	1	1
357	SI111	VTVI-Vintage	12/31/2007	0	1
358	MI146	WAHE-Wah Seong	12/31/2007	1	1
359	SI112	WATA-Watta	9/30/2007	0	1
360	MI148	WCALL-Wellcal	9/30/2007	1	1

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361	MI147	WEID-Weida	3/31/2008	1	1
362	SI114	WENG-Wong	10/31/2007	0	1
363	SC43	WGZH-WangZhng	12/31/2007	0	0
364	MI150	WHSE-Whorse	12/31/2007	1	1
365	MI151	WIJA-Wijaya	12/31/2007	1	1
366	SI115	WLAN-Woodlan	12/31/2007	0	1
367	SI113	WLLI-Welli	3/31/2008	0	1
368	MI152	WTKH-WTK	12/31/2007	1	1
369	SI116	WWCB-WWCable	12/31/2007	0	1
370	SI117	WWTK-WWTKH	12/31/2007	0	1
371	MC82	XIAN-Xian Leng	1/31/2008	1	0
372	SI119	YAHO-Yahorn	1/31/2008	0	1
373	MI153	YCMS-YeChiu	12/31/2007	1	1
374	MC84	YHMS-YHS	12/31/2007	1	0
375	SC45	YIKO-Yikon	10/31/2007	0	0
376	MI157	YKGI-YunKong	12/31/2007	1	1
377	MI154	YLAI-Yilai	12/31/2007	1	1
378	MC83	YLEE-Yee Lee	12/31/2007	1	0
379	MI155	YLIH-YLI	3/31/2008	1	1
380	SC46	YONG-YongTai	6/30/2008	0	0
381	MC85	YSPS-YSPSAH	12/31/2007	1	0
382	MI156	YTLC-YTLCMT	6/30/2008	1	1
383	MC86	ZHCO-Zhulian	11/30/2007	1	0

DETAILED STATISTICAL FINDINGS:
THE DETERMINANTS OF TRADE CREDIT EXTENSION MODEL

Model 1

Dependent Variable: ARTO
Method: Least Squares
Date: 06/21/10 Time: 12:33
Sample: 1 383
Included observations: 383
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.38976	0.04161	9.36615	0.00000
LOGTA	-0.05651	0.01487	-3.80008	0.00020
STCREDIT	0.01794	0.01488	1.20605	0.22860
OPMARGIN	-0.00319	0.03090	-0.10331	0.91780
GROWTH	-0.00758	0.00429	-1.76513	0.07840
GPMARGIN	0.09509	0.05663	1.67927	0.09390
LIQUIDITY	-0.00632	0.00329	-1.92174	0.05540
COLLATERAL	-0.17455	0.04760	-3.66718	0.00030
BOARD	0.00448	0.01734	0.25857	0.79610
SECTOR	0.05283	0.01431	3.69308	0.00030
AUDITOR	-0.03468	0.01435	-2.41664	0.01610

R-squared	0.14681	Mean dependent var	0.22425
Adjusted R-squared	0.12388	S.D. dependent var	0.13798
S.E. of regression	0.12915	Akaike info criterion	-1.22740
Sum squared resid	6.20474	Schwarz criterion	-1.11401
Log likelihood	246.04770	F-statistic	6.40119
Durbin-Watson stat	1.99410	Prob(F-statistic)	0.00000

DETAILED STATISTICAL FINDINGS:
THE DETERMINANTS OF TRADE CREDIT EXTENSION MODEL

Model 2

Dependent Variable: ARTO
Method: Least Squares
Date: 06/21/10 Time: 12:44
Sample: 1 383
Included observations: 383
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.34936	0.04268	8.18627	0.00000
LOGTA	-0.05435	0.01389	-3.91218	0.00010
STCREDIT	0.01005	0.01808	0.55585	0.57860
OPPOS	0.01412	0.01547	0.91258	0.36210
OPNEG	-0.05220	0.10124	-0.51562	0.60640
GROWTHPOS	-0.00624	0.00421	-1.48455	0.13850
GROWTHNEG	-0.14445	0.10230	-1.41198	0.15880
GPMARGIN	0.33942	0.13711	2.47551	0.01380
GPMSQ	-0.37770	0.20159	-1.87366	0.06180
LIQUIDITY	-0.00750	0.00326	-2.29800	0.02210
COLLATERAL	-0.16071	0.04824	-3.33122	0.00100
BOARD	0.00381	0.01655	0.23037	0.81790
SECTOR	0.05386	0.01421	3.79061	0.00020
AUDITOR	-0.03540	0.01458	-2.42805	0.01570

R-squared	0.16842	Mean dependent var	0.22425
Adjusted R-squared	0.13912	S.D. dependent var	0.13798
S.E. of regression	0.12802	Akaike info criterion	-1.23739
Sum squared resid	6.04761	Schwarz criterion	-1.09307
Log likelihood	250.95980	F-statistic	5.74870
Durbin-Watson stat	1.98373	Prob(F-statistic)	0.00000

DETAILED STATISTICAL FINDINGS:
THE DETERMINANTS OF TRADE CREDIT EXTENSION MODEL

Model 3

Dependent Variable: ARTO
Method: Least Squares
Date: 06/21/10 Time: 12:41
Sample (adjusted): 1 382
Included observations: 287 after adj.
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.26142	0.03986	6.55923	0.00000
LOGTA	-0.04783	0.01396	-3.42687	0.00070
STCREDIT	0.01155	0.01938	0.59599	0.55170
OPPOS	-0.05087	0.10108	-0.50330	0.61520
OPNEG	0.02425	0.11042	0.21964	0.82630
GROWTHPOS	-0.00361	0.00469	-0.76846	0.44290
GROWTHNEG	-0.13342	0.09527	-1.40038	0.16250
GPMARGIN	0.17658	0.14977	1.17900	0.23940
GPMSQ	-0.17113	0.24018	-0.71252	0.47680
LIQUIDITY	-0.00576	0.00276	-2.08555	0.03800
COLLATERAL	-0.12458	0.04582	-2.71906	0.00700
BOARD	0.02620	0.01735	1.50953	0.13230
SECTOR	0.02372	0.01431	1.65789	0.09850
AUDITOR	-0.01877	0.01391	-1.34925	0.17840
COLLECTION	0.13345	0.01392	9.58644	0.00000

R-squared	0.35419	Mean dependent var	0.22574
Adjusted R-squared	0.32095	S.D. dependent var	0.13978
S.E. of regression	0.11519	Akaike info criterion	-1.43371
Sum squared resid	3.60878	Schwarz criterion	-1.24244
Log likelihood	220.73670	F-statistic	10.65550
Durbin-Watson stat	1.89404	Prob(F-statistic)	0.00000

DETAILED STATISTICAL FINDINGS:
ASSOCIATION BETWEEN LATE PAYMENT AND PROFITABILITY (OIROI)

Model 1: DSO

Dependent Variable: OIROI
Method: Least Squares
Date: 06/23/10 Time: 16:14
Sample: 1 287
Included observations: 287
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.040323	0.031806	1.26778	0.2059
DSO1	-0.0628	0.029187	-2.15157	0.0323
LOGTA	0.018286	0.013496	1.354942	0.1765
GROWTHPOS	0.009715	0.003759	2.584712	0.0103
GROWTHNEG	0.309188	0.062081	4.980415	0.0000
DEBTTL	-0.0407	0.019827	-2.05261	0.041
BOARD	0.03344	0.010966	3.049514	0.0025
SECTOR	-0.0105	0.012467	-0.84218	0.4004
AUDITOR	0.002177	0.010692	0.203595	0.8388
R-squared	0.343702	Mean dependent var		0.049873
Adjusted R-squared	0.324815	S.D. dependent var		0.099442
S.E. of regression	0.081711	Akaike info criterion		-2.14039
Sum squared resid	1.856133	Schwarz criterion		-2.02564
Log likelihood	316.1463	F-statistic		18.19848
Durbin-Watson stat	2.080225	Prob(F-statistic)		0.0000

DETAILED STATISTICAL FINDINGS:
ASSOCIATION BETWEEN LATE PAYMENT AND PROFITABILITY (OIROI)

Model 2: DODA

Dependent Variable: OIROI
Method: Least Squares
Date: 06/23/10 Time: 16:30
Sample: 1 287
Included observations: 287
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.022258	0.030793	0.722831	0.4704
DODA2	-0.03348	0.033211	-1.0081	0.3143
LOGTA	0.020798	0.01366	1.522607	0.129
GROWTHPOS	0.010667	0.004062	2.626334	0.0091
GROWTHNEG	0.324517	0.060318	5.3801	0.0000
DEBTTL	-0.04148	0.01977	-2.098	0.0368
BOARD	0.032923	0.010989	2.996022	0.003
SECTOR	-0.01125	0.012809	-0.87805	0.3807
AUDITOR	0.00238	0.0108	0.220331	0.8258
R-squared	0.336923	Mean dependent var		0.049873
Adjusted R-squared	0.317842	S.D. dependent var		0.099442
S.E. of regression	0.082132	Akaike info criterion		-2.13012
Sum squared resid	1.875303	Schwarz criterion		-2.01536
Log likelihood	314.6718	F-statistic		17.65722
Durbin-Watson stat	2.056685	Prob(F-statistic)		0.00000

DETAILED STATISTICAL FINDINGS:
ASSOCIATION BETWEEN LATE PAYMENT AND PROFITABILITY (OIROI)

Model 3: DODA

Dependent Variable: OIROI
Method: Least Squares
Date: 06/23/10 Time: 16:41
Sample: 1 287
Included observations: 287
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.024045	0.031119	0.772656	0.4404
DODP1	0.05723	0.030275	1.890304	0.0598
LOGTA	0.018952	0.01392	1.361504	0.1745
GROWTHPOS	0.010226	0.003824	2.674321	0.0079
GROWTHNEG	0.308229	0.062318	4.946098	0.0000
DEBTTL	-0.04252	0.019707	-2.15772	0.0318
BOARD	0.033252	0.010948	3.037304	0.0026
SECTOR	-0.01057	0.012653	-0.83508	0.4044
AUDITOR	0.003537	0.010652	0.332053	0.7401
R-squared	0.343606	Mean dependent var		0.049873
Adjusted R-squared	0.324717	S.D. dependent var		0.099442
S.E. of regression	0.081717	Akaike info criterion		-2.14025
Sum squared resid	1.856404	Schwarz criterion		-2.02549
Log likelihood	316.1253	F-statistic		18.19074
Durbin-Watson stat	2.063962	Prob(F-statistic)		0.00000